ALTEMAR
Marine & Environmental Consultancy

Outline Construction Environmental Management Plan (CEMP) for a proposed development at Fortfield Road, Terenure, Co. Dublin.

13th March 2025

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.
On behalf of: 1 Celbridge West Land Limited.

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Document Control Sheet			
Client	1 Celbridge West Land Limited		
Project	Outline Construction Environmental Management Plan (CEMP) for a proposed development at Fortfield Road and College Drive, Terenure, Co. Dublin.		
Report	Outline Construction Environmental Management Plan (CEMP)		
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Draft 01	Bryan Deegan	Gayle O'Farrell	7th October 2024
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Appeal	Bryan Deegan		13th March 2025

Contents

Executive Summary

This outline Construction Environmental Management Plan (CEMP) has been developed to detail the commitments and mitigation measures to be implemented by 1 Celbridge West Land Limited and it's appointed contractors during site clearance, construction and development of a site at Fortfield Road, Terenure, Co. Dublin. This CEMP is being submitted in tandem, and should be read in conjunction, with the Appropriate Assessment (AA) Screening report, Natura Impact Statement (NIS), Outline Construction management Plan (OCMP) and Ecological Impact Assessment (EcIA) for the proposed development.

The purpose of the CEMP is to provide details of waste recovery and/or disposal, proposals for noise reduction, proposals for dust reduction, phasing of the project, and details on how the proposed project is intending to use a comprehensive and integrated approach to protecting sensitive receptors, including the River Dodder.

This CEMP also outlines the potential impacts of the development, details the sensitive receptors, environmental controls, and the mitigation measures that will be implemented to minimise any potential impacts. The sensitive receptors include the River Dodder, which traverses through the subject site. The CEMP also details the specific requirements that need to be addressed during project stages, and also includes the related roles and responsibilities of individuals involved in the project.

First Party Appeal

This CEMP has been updated to reflect an amendment to the proposed site layout to include a basement extension. This has been provided as part of the First Party Appeal response, which includes an expanded basement to address the DCC Reason for Refusal, should An Bord Pleanála consider it appropriate to condition as part of a decision to grant.

1. Introduction

Outline of CEMP

Altemar Ltd.[1] has been commissioned by 1 Celbridge West Land Limited to prepare an outline Construction Environmental Management Plan (CEMP) for a proposed residential development at Fortfield Road, Terenure, Dublin 6W.

The purpose of the CEMP is to provide details of the proposed project, construction, waste recovery and/or disposal, proposals for noise reduction, proposals for dust reduction, phasing of the project, and details on how the proposed project is intending to use a comprehensive and integrated approach to protecting sensitive environmental receptors including the onsite pond and woodland in addition to the River Dodder. The following CEMP outlines the potential impacts of the development, details the sensitive receptors, environmental controls, and the mitigation measures that will be implemented to minimise any potential impacts. The CEMP also details the specific requirements that need to be addressed during project stages, and also includes the related roles and responsibilities of individuals involved in the project.

This CEMP is subject to planning permission being granted for the development as per the drawings submitted. The CEMP is a live document subject to change based on the following:

1. comments from An Bord Pleanála
2. final planning permission granted and conditions
3. compliance requirements of Wicklow County Council
4. requirements by other bodies including Inland Fisheries Ireland
5. concerns raised by residents affected by the works

The final CEMP prepared for the development will be submitted prior to commencement of the relevant phase on site and will be subject to periodic review as part of the management of the construction process.

Structure of the CEMP

Structure of the CEMP

This CEMP is based on measures to ensure legal compliance and established good management practice on-site and includes the following sections:

1. *Introduction*
2. *Project Description*
3. *Analysis of the Potential Impacts*
4. *Mitigation Measures & Monitoring*
5. *Site Information*
6. *Logistics*
7. *Environmental Issues*
8. *Traffic Management*
9. *Provisions for Construction*
10. *Waste Management*
11. *Emergency Procedures*
12. *Invasive Species*
13. *Relevant legislation*
14. *Monitoring of the Pond on site.*
15. *Conclusions*

[1] Author. Bryan Deegan (MCIEEM), MSc Environmental Science, BSc Applied Marine Biology, Diploma in Applied Aquatic Science.

2. Project Description

Project outline and Site Context

The development will comprise a Large-Scale Residential Development (LRD) on a site at Fortfield Road, Terenure of 284 no. units delivering 19 no. houses and 265 no. apartments made up of studios; 1 beds; 2 beds; 3 beds; and 4 beds. The development will also provide community, cultural and arts space and a creche. Communal internal space for residents will also be delivered. Provision of car, cycle and motorbike parking will be provided throughout the development, including at basement and surface level. Vehicular/pedestrian/cyclist access from Fortfield Road. Proposed upgrade works to the surrounding road network is also included. All associated site development works, open space, services provision, ESB substations, plant areas, waste management areas, landscaping (both public and communal) and boundary treatments.

The Site context map, Subject site, Site layout plan and Site location map and the Proposed contiguous elevations are seen in Figures 1-5.

Landscape

A Landscape Design Statement was prepared by NMP for the proposed development at Fortfield Road, Terenure. The Landscape Design Statement outlines the Design Principles for the development as follows:

'*The use of native tree and shrub planting and wildflower meadow grass areas to respond to, support and promote the national pollination plan will have a positive net gain for biodiversity. This will enhance the existing ecological system, creating more habitat and diversity. Additional tree planting to promote Carbon Sequestration as well as a varied habitat, roosting for bird life and screening the development. The sites character is very much in tune with tree planting and this is a unique selling point for it.*

In contemplating the design strategies and concept for Fortfield Road, particularly with respect to environment and the existing lake habitat, the design finds itself rooted in its formative landscape years. A heathland landscape has emerged which successively transforms to a woodland typology as it journeys north to south. This is responsive to the lake's habitat, offering further diversity in the landscape.

Furthermore, the report states that:
It is proposed to retain almost all existing trees on site with only a few to be removed to facilitate development. Others have been indicated for removal due to condition and the remainder for some remedial works. Please refer to arborists' drawings for further detail.

It is proposed to re-plant 332no. new trees to as define spaces, enhance character and bio-diverse credentials. These will vary in specification of size and species. There will be a majority selected form native tree species and they will be deciduous and evergreen in nature and varying habit.

Proposed planting styles and types will vary depending on use. Within the public realm, plants will be more robust, evergreen and require less maintenance and consistent with other developments in the area. Street trees will be tried and tested urban species. Scale of planting and transition in shrub planting from low medium and high to create defensible space has been planned according to programme, thresholds and spatial hierarchy. Within the semi-private apartment courtyards, the palette should be softer, colourful and generally more shade tolerant.

The Pollinator Plan 2020 has richly informed the planting palate and soft landscape approach. This, in conjunction with a selection of native plant species will characterise the landscape design. Planting will inform and define public routes to differentiate from communal or private space. Planting will respond to the existing character in which it is located and enhance the sense of place to complement it and not compete with it.'

In relation to the Water Attenuation Strategy, the report states that: *The landscape surface water drainage strategy celebrates SUDS features. The story of water hugely influences the design of the open space. Opportunities to treat and celebrate these interventions such as swales and rain gardens become features in the landscape, contributing to creating a unique sense of identity. Water is collected at the surface and*

discharged to the local water course via attenuation ponds and swales. Bio Retention Tree pits have been proposed to streets Currently green roofs have been planned for 70% of the roof area. In addition, permeable paving has been specified for all parking bays and lightly pedestrianised trafficked zones. The soft landscape will allow water to drain freely to recharge the ground water if not captured by filter drains before release. In addition, it is proposed to create several rain gardens on the linear park to capture run off.'

In relation to the Landscape Design, the report states that: '*The landscape design for Fortfield brings together a cohesive series of spaces driven by historical and ecological influences in response to the sites context and relationship with surrounding lands. Experienced sequentially as routes of discovery and exploration weave themselves together revealing a sensorium of spatial typologies.*

A number of potential routes through the site have been identified to benefit connections with its surroundings and provide a better amenity for the wider community. Pedestrian and cycle routes complement this strategy underpinning the sustainable credentials associated with the development. In addition, it is anticipated that the development will offer a net gain to biodiversity through the development of additional habitat. An increased number of trees, areas for surface water treatment and wildflower meadows, coupled with best practice maintenance will ensure a sustainable landscape for the future. Edge conditions and relationships with neighbouring developments are sensitively integrated and screened. The primary objectives of the design are to encourage biodiversity through varied tree and shrub planting, create a series of interlinking spaces which 'blur' the boundaries and create 'moments' for interactions, crafting a sense and extension of the community for the wider Terenure neighbourhood.'

The Proposed Landscape General Arrangements is seen in Figures 6-11.

Figure 1. Subject site

Figure 2. Site context

Figure 3. Site layout plan

Figure 5. Proposed contiguous elevations

Figure 6. Landscape General Arrangements Plan (Sheet 1 of 6)

Figure 7. Landscape General Arrangements Plan (Sheet 2 of 6)

Figure 8. Landscape General Arrangements Plan (Sheet 3 of 6)

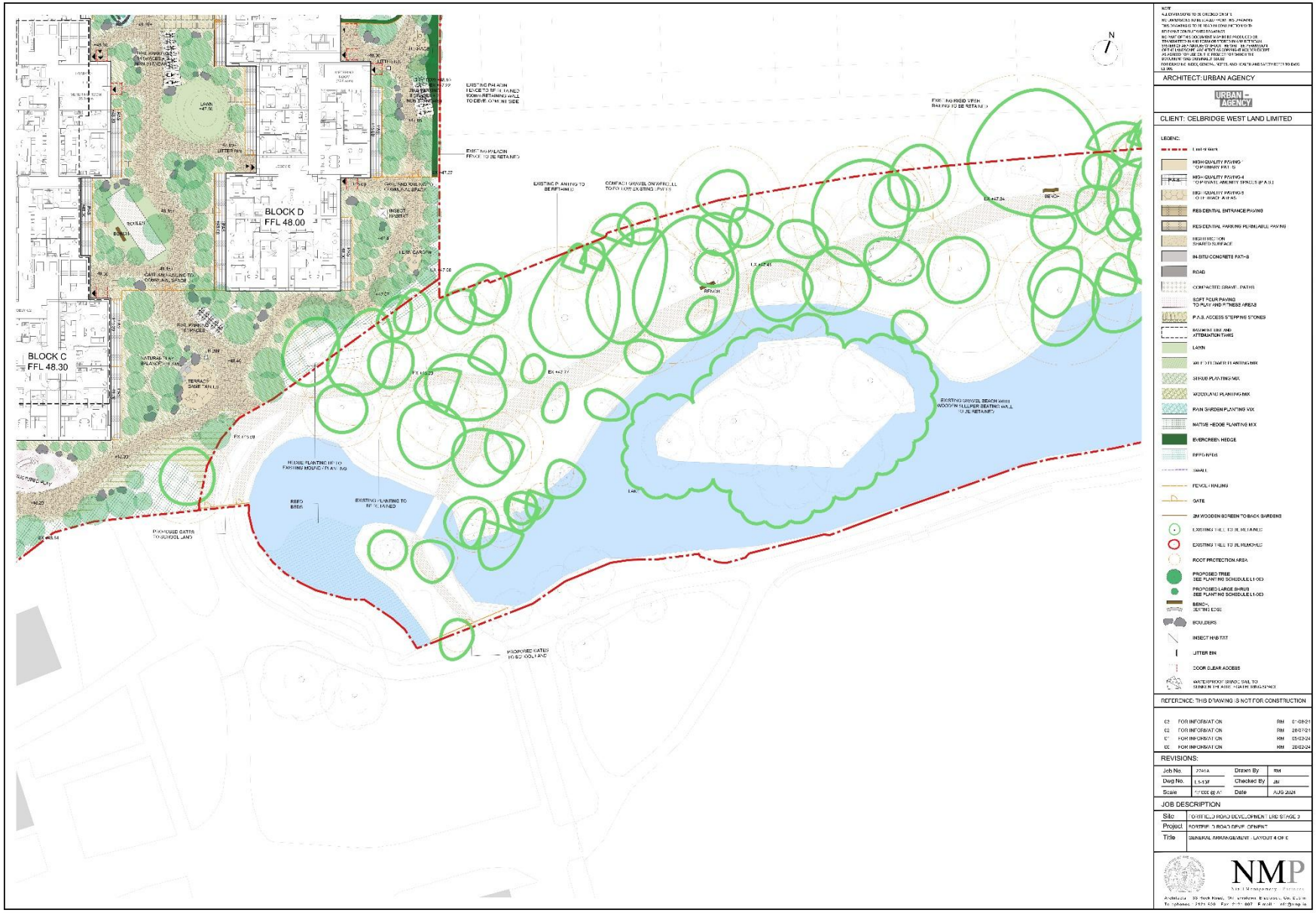


Figure 9. Landscape General Arrangements Plan (Sheet 4 of 6)

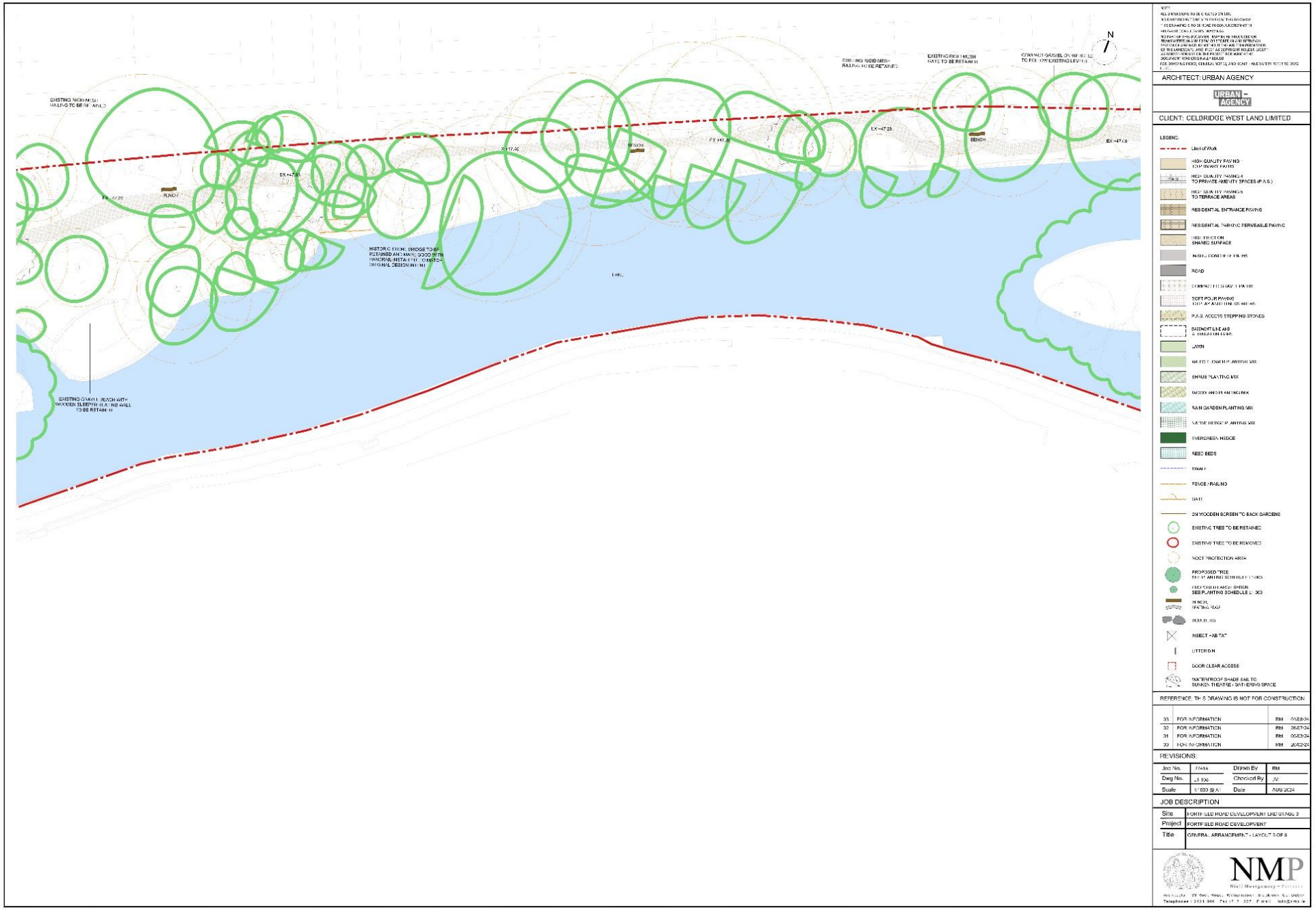


Figure 10. Landscape General Arrangements Plan (Sheet 5 of 6)

Figure 11. Landscape General Arrangements Plan (Sheet 6 of 6)

Drainage

An Engineering Planning Report was composed by PUNCH Consulting Engineers. The report outlines the proposed foul and surface water drainage networks for the proposed development site.

Foul Water Drainage

In relation to the existing foul water drainage, the report states that:

''Available records show the following foul water drainage infrastructure exists adjacent to the development site:

1. 225mm vitrified clay foul sewer flowing south to north along Fortfield Road. This sewer increases in size to a 300mm foul sewer and splits into two lines at the junction of Fortfield Road and Greenlea Road.

2. 375mm concrete combined sewer flows west-east along Greenlea Road.

The proposed foul water sewers have been designed using Causeway Flow software in accordance with Irish Water's Code of Practice for Wastewater Infrastructure and the DOE's Recommendations for Site Development Works for Housing Areas. The foul loading has been calculated in accordance with the Code of Practice for Wastewater Infrastructure (particularly Section 3.6, Appendix C and Appendix D) published by Irish Water.

It is proposed that the foul sewer will discharge by gravity to the sewer on Fortfield Road. All foul water drainage shall be designed in accordance with Irish Water's Wastewater Code of Practice and Standard Details.

To ensure the proposed foul drainage can connect to the existing foul sewer on Fortfield Road, and to ensure pipe gradients are provided in accordance with Irish Water's Wastewater Code of Practice, the proposed site levels have been raised to achieve adequate cover, with a concrete surround proposed to pipes where adequate cover as per Irish Water's Wastewater Code of Practice cannot be achieved.

The construction phase of the proposed development is estimated to have a duration of 36 months. Therefore, the timeline for connection to the public foul drainage system will be approx. 34-36 months after commencement of construction on site. Irish Water have confirmed via the Pre-Connection Enquiry process that the development can be supported by the public foul water network.''

The foul water from the site will then be pumped to and treated at Ringsend Wastewater Treatment Plant. Irish Water Confirmation of Feasibility is seen in Appendix I.

Storm Water Drainage

In relation to the existing storm water drainage, the Engineering Planning Report states that:

'Based on available records, the following stormwater drainage exists adjacent to the development site:

1. 300mm concrete stormwater sewer flowing south to north along Fortfield Road. This increases to 450mm on approach to the Greenlea Road junction.

2. There is an existing lake located at the site's south-eastern boundary adjacent to Terenure College Rugby Club. According to the drainage records the pond is fed from an existing offtake on the River Poddle, known as Lakelands Overflow, which is located at Wainsfort Manor to the west of the subject site. The overflow is piped underground via a 1230mm x 1230mm concrete box culvert for a distance of 1.4km before discharging into the pond. The pond discharges to the River Dodder located to the southeast of the subject site via a 1450mm x 1480mm concrete box culvert.'

In relation to the proposed storm water drainage, the report states that:

''The proposed surface water drainage system has been designed using Causeway Flow software in accordance with the Department of Environment and Local Government's guidance document "Recommendations for Site Development Works for Housing Areas", with guidance taken from the "Greater Dublin Strategic Drainage Study" (GDSDS) and the Dublin City Development Plan.

The model will analyse a range of storms at the 1% AEP (1 in 100-year return period storm), with a 20% additional rainfall to allow for climate change. The network will be modelled with the proposed attenuation tank volumes and associated hydrobrake flow control outlets included.

Depths of water in the network model (including pipework, manholes, the attenuation tanks and hydrobrakes) have been assessed for surcharging and flood risk. The model is established such that a flood risk is identified in the simulation results if the water rises to within 300mm of the cover level. If the water level rises to a level below this, it is identified as a surcharge within the model results. It is important to note that this warning is given related to proposed ground level at the node and not related to Finished Floor level. All proposed drainage is within roadways, and the adjacent Floor levels will be higher than the road level at that location. The maximum water level in the attenuation tanks is more than 500mm below the Finished Floor level of the adjacent property. This aligns with Criterion 3 of the GDSDS.

Causeway includes a design setting called "additional storage". This is included in the software to account for storage volume in the network provided by secondary drainage including access junctions, inspection chambers, service connections etc. This provides additional storage in the network above the storage provided within the attenuation tank and primary drainage network. 20m3/ha is the standard allowance provided for in Causeway Flow and was utilised for this design.''

In relation to Sustainable Urban Drainage Systems (SuDS) the report states that:

''The proposed development has been assessed in relation to Sustainable Urban Drainage Systems (SuDS). A variety of SuDS measures have been proposed to comply with Council recommendations. All SuDS measures are to be implemented with reference to the UK SuDS Manual and Dublin City Council drainage requirements.

Relatively small volumes of rainwater collected on the respective SuDS systems will enter the public sewer network during typical low intensity storms. This is because the proposed SuDS measures will retain rainwater until it is either used via evapotranspiration in the green areas or infiltrated to the ground.

The SuDS processes decrease the impact of the development on the receiving environment by providing amenity and biodiversity in many cases. Regular maintenance of the SuDS proposals is required to ensure they are operating to their optimal level throughout their design life.'' The proposed drainage layout is seen in Figures 12-13.

Flood Risk Assessment

A Site-Specific Flood Risk Assessment has been prepared by PUNCH Consulting Engineers. In conclusion, the report states that:

'PUNCH Consulting Engineers were appointed to carry out a Site-Specific Flood Risk Assessment (SSFRA) for a proposed development at Fortfield Road, Terenure, Dublin 6W. This SSFRA report evaluates the potential flood risks to the site, ensuring that the development proposals are safe, sustainable, and resilient to flooding. The following document forms part of the planning application to be submitted to Dublin City Council and should be reviewed alongside the planning drawings prepared by Urban Agency Architects.

A flood risk identification exercise was undertaken for the development site as part of this SSFRA which revealed that the pond within the site has not been included in the Catchment Flood Risk Assessment and Management Study (CFRAMS) for the area. Additionally, a review of the Dublin City Development Plan (DP) 2022-2028 Strategic Flood Risk Assessment (SFRA) mapping showed the site to be partially located within Flood Zones A and B.

To adequately assess the flood risk from the pond within the site, a 1D hydraulic model of the water-feature was developed and analysed. The results of the hydraulic modelling indicate that flood waters from the 1%AEP and 0.1%AEP events are retained within the contoured lands around the pond and do not pose a flood risk to the proposed development.

To further investigate the flooding shown on the Dublin City DP SFRA mapping, PUNCH consulted Dublin City Council (DCC) and Nicholas O'Dwyer, their appointed engineers for the Poddle Flood Alleviation Scheme, and confirmed that the flooding is pluvial in nature. Section 2.24 of the OPW's "The Planning System and Flood Risk Management Guidelines" states that "..flood zones are determined on the basis of the probability of river and coastal flooding only..". This point is echoed in Section 1.4.1 of the Dublin DP 2022-2028 SFRA report. As pluvial flooding should not be used in the designation of flood zones, and in the absence of any identifiable fluvial or coastal flood risk to the site, it is concluded that the proposed development site is wholly located in Flood Zone C.

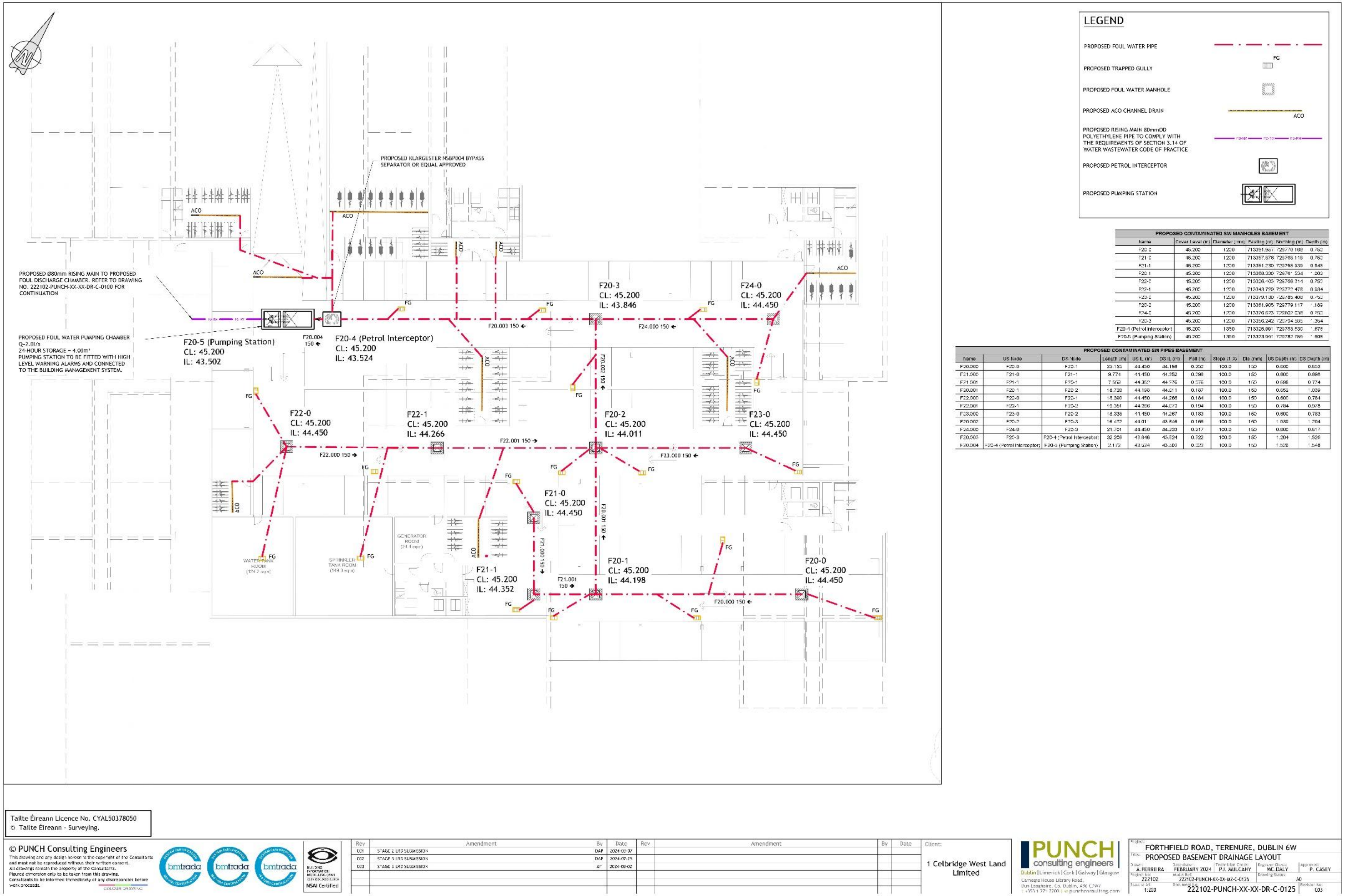
To alleviate concerns relating to pluvial flooding at the site, the associated pluvial flow paths and flood volumes were examined. A proposal has been developed, in direct consultation with DCC, to address the pluvial flooding on Fortfield Road, which includes the provision of a detention basin within the proposed development site boundary. These flood alleviation measures will also remove pluvial flooding from a section of Fortfield Road for storm events up to and

including the 1%AEP event, offering a significant reduction in pluvial flood risk to that area over existing conditions. A further exercise was carried out which confirmed that there is sufficient storage available within the site to ensure that the development will not flood even in the extreme 0.1%AEP pluvial event. The redevelopment of the site will not adversely affect pluvial flood levels or extents in the area.

To mitigate against fluvial flood risk to the site, the Finished Floor Levels (FFL) of the ground floor of the proposed buildings will be set at or above 48.0mOD. This level equates to the 0.1%AEP fluvial flood level including a 20% allowance for climate change and 300mm freeboard. The proposed basement will be isolated from the flood zone and the entrance will be set at a level at or above 48.0mOD.

It is asserted that the proposed development site is wholly located in Flood Zone C and therefore a Justification Test is not strictly required as part of this SSFRA report. However, given that the site is shown within Flood Zones A and B on the DP SFRA mapping it was deemed prudent to complete the Justification Test.

The mitigation measures proposed in this SSFRA will ensure that the development is in compliance with the relevant sections of the Dublin City DP as well as in full compliance with the Dublin City DP SFRA and OPW's The Planning System & Flood Risk Management Guidelines.''



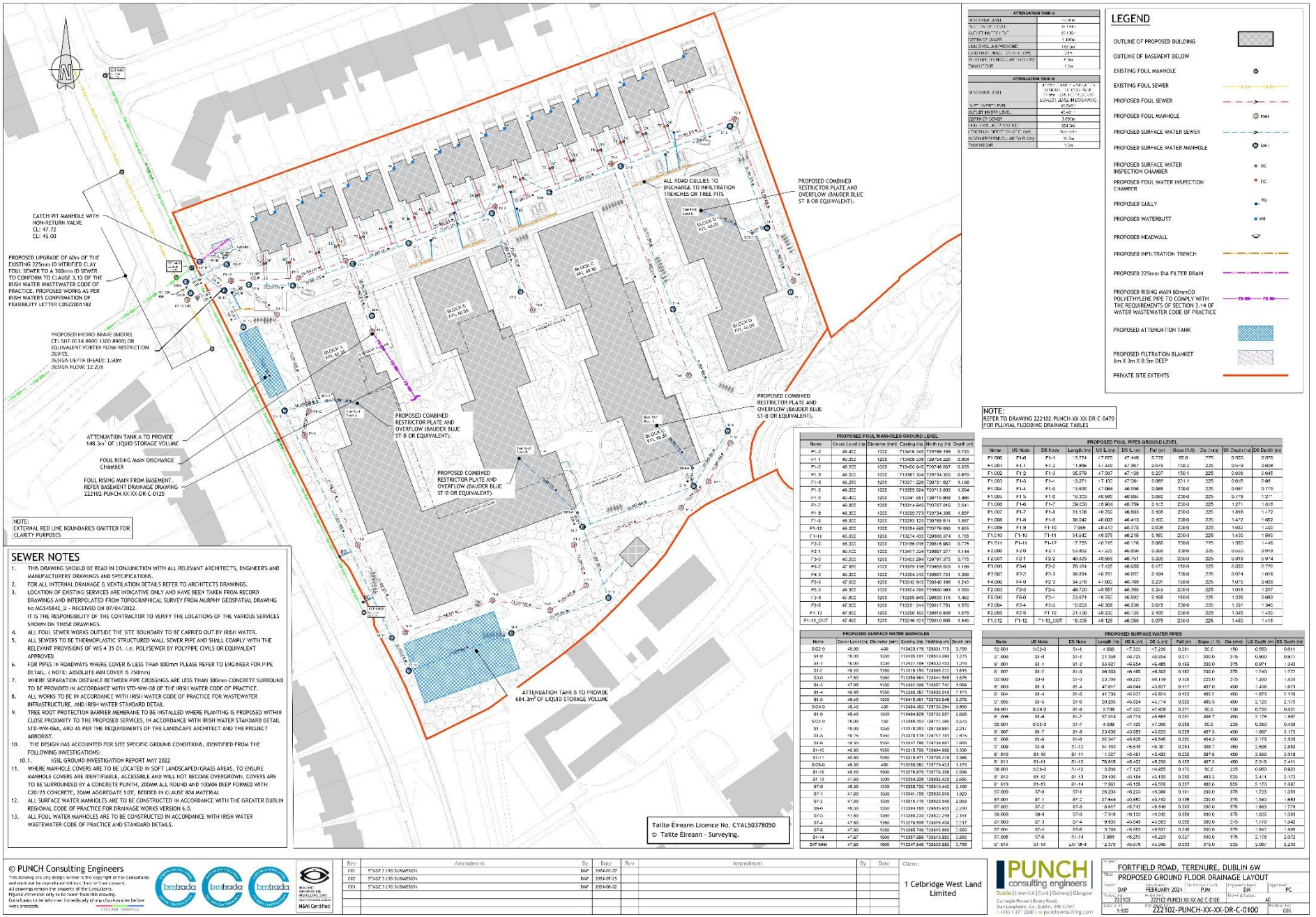
PROPOSED CONTAMINATED SW MANHOLES BASEMENT

Name	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
F20-0	45.200	1200	713391.957	729770.168	0.750
F21-0	45.200	1200	713357.676	729766.119	0.750
F21-1	45.200	1200	713361.230	729758.838	0.848
F20-1	45.200	1200	713360.330	729761.534	1.002
F22-0	45.200	1200	713326.403	729766.314	0.750
F22-1	45.200	1200	713343.729	729772.478	0.934
F23-0	45.200	1200	713379.130	729785.408	0.750
F20-2	45.200	1200	713361.905	729779.117	1.189
F24-0	45.200	1200	713376.673	729802.038	0.750
F20-3	45.200	1200	713356.242	729794.505	1.354
F20-4 (Petrol Interceptor)	45.200	1350	713325.891	729783.530	1.676
F20-5 (Pumping Station)	45.200	1350	713323.961	729782.785	1.698

PROPOSED CONTAMINATED SW PIPES BASEMENT

Name	US Node	DS Node	Length (m)	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	US Depth (m)	DS Depth (m)
F20.000	F20-0	F20-1	25.155	44.450	44.198	0.252	100.0	150	0.600	0.852
F21.000	F21-0	F21-1	9.774	44.450	44.352	0.098	100.0	150	0.600	0.698
F21.001	F21-1	F20-1	7.568	44.352	44.276	0.076	100.0	150	0.698	0.774
F20.001	F20-1	F20-2	18.720	44.198	44.011	0.187	100.0	150	0.852	1.039
F22.000	F22-0	F22-1	18.380	44.450	44.266	0.184	100.0	150	0.600	0.784
F22.001	F22-1	F20-2	19.351	44.266	44.072	0.194	100.0	150	0.784	0.978
F23.000	F23-0	F20-2	18.336	44.450	44.267	0.183	100.0	150	0.600	0.783
F20.002	F20-2	F20-3	16.472	44.011	43.846	0.165	100.0	150	1.039	1.204
F24.000	F24-0	F20-3	21.701	44.450	44.233	0.217	100.0	150	0.600	0.817
F20.003	F20-3	F20-4 (Petrol Interceptor)	32.206	43.846	43.524	0.322	100.0	150	1.204	1.526
F20.004	F20-4 (Petrol Interceptor)	F20-5 (Pumping Station)	2.172	43.524	43.502	0.022	100.0	150	1.526	1.548

Figure 12. Proposed basement drainage layout



ATTENUATION TANK A	
INVERT LEVEL	45.00m
TOP WATER LEVEL	46.50m
OUTLET INVERT LEVEL	45.00m
DEPTH OF WATER	1.40m
LIQUID VOLUME PROVIDED	162.3m³
FREEBOARD ABOVE TOP WATER LEVEL	0.3m
MINIMUM HEIGHT OF BOTTOM OF TANK ABOVE GROUND LEVEL	0.1m
TANK DEPTH	1.7m

ATTENUATION TANK B	
INVERT LEVEL	47.00m / 46.90m / 46.80m / 46.70m / 46.60m / 46.50m
TOP WATER LEVEL	48.50m
OUTLET INVERT LEVEL	46.40m
DEPTH OF WATER	2.10m
LIQUID VOLUME PROVIDED	684.3m³
FREEBOARD ABOVE TOP WATER LEVEL	0.3m
MINIMUM HEIGHT OF BOTTOM OF TANK ABOVE GROUND LEVEL	46.7m
TANK DEPTH	1.8m

LEGEND

- OUTLINE OF PROPOSED BUILDING
- OUTLINE OF BASEMENT BELOW
- EXISTING FOUL MANHOLE
- EXISTING FOUL SEWER
- PROPOSED FOUL SEWER
- PROPOSED FOUL MANHOLE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- PROPOSED FOUL WATER INSPECTION CHAMBER
- PROPOSED GULLY
- PROPOSED WATERBUTT
- PROPOSED HEADWALL
- PROPOSED INFILTRATION TRENCH
- PROPOSED 225mm DIA FILTER DRAIN
- PROPOSED RISING MAIN 80mmOD POLYETHYLENE PIPE TO COMPLY WITH THE REQUIREMENTS OF SECTION 3.14 OF WATER WASTEWATER CODE OF PRACTICE
- PROPOSED ATTENUATION TANK
- PROPOSED FILTRATION BLANKET 6m X 3m X 0.5m DEEP
- PRIVATE SITE EXTENTS

NOTE:
REFER TO DRAWING 222102 PUNCH XX XX DR C 0470 FOR PLUVIAL FLOODING DRAINAGE TABLES

SEWER NOTES

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, ENGINEER'S AND MANUFACTURERS' DRAWINGS AND SPECIFICATIONS.
2. FOR ALL INTERNAL DRAINAGE & VENTILATION DETAILS REFER TO ARCHITECTS DRAWINGS.
3. LOCATION OF EXISTING SERVICES ARE INDICATIVE ONLY AND HAVE BEEN TAKEN FROM RECORD DRAWINGS AND INTERPOLATED FROM TOPOGRAPHICAL SURVEY FROM MURPHY GEOSPATIAL DRAWING No MGS45842 U - RECEIVED ON 07/04/2022.
   IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF THE VARIOUS SERVICES SHOWN ON THESE DRAWINGS.
4. ALL FOUL SEWER WORKS OUTSIDE THE SITE BOUNDARY TO BE CARRIED OUT BY IRISH WATER.
5. ALL SEWERS TO BE THERMOPLASTIC STRUCTURED WALL SEWER PIPE AND SHALL COMPLY WITH THE RELEVANT PROVISIONS OF WIS 4 35 01, i.e. POLYSEWER BY POLYPIPE CIVILS OR EQUIVALENT APPROVED
6. FOR PIPES IN ROADWAYS WHERE COVER IS LESS THAN 800mm PLEASE REFER TO ENGINEER FOR PIPE DETAIL. (NOTE: ABSOLUTE MIN COVER IS 750mm)
7. WHERE SEPARATION DISTANCE BETWEEN PIPE CROSSINGS ARE LESS THAN 300mm CONCRETE SURROUND TO BE PROVIDED IN ACCORDANCE WITH STD-WW-08 OF THE IRISH WATER CODE OF PRACTICE.
8. ALL WORKS TO BE IN ACCORDANCE WITH IRISH WATER CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE, AND IRISH WATER STANDARD DETAIL
9. TREE ROOT PROTECTION BARRIER MEMBRANE TO BE INSTALLED WHERE PLANTING IS PROPOSED WITHIN CLOSE PROXIMITY TO THE PROPOSED SERVICES, IN ACCORDANCE WITH IRISH WATER STANDARD DETAIL STD-WW-06A, AND AS PER THE REQUIREMENTS OF THE LANDSCAPE ARCHITECT AND THE PROJECT ARBORIST.
10. THE DESIGN HAS ACCOUNTED FOR SITE SPECIFIC GROUND CONDITIONS, IDENTIFIED FROM THE FOLLOWING INVESTIGATIONS:
    10.1. IGSL GROUND INVESTIGATION REPORT MAY 2022
11. WHERE MANHOLE COVERS ARE TO BE LOCATED IN SOFT LANDSCAPED/GRASS AREAS, TO ENSURE MANHOLE COVERS ARE IDENTIFIABLE, ACCESSIBLE AND WILL NOT BECOME OVERGROWN, COVERS ARE TO BE SURROUNDED BY A CONCRETE PLINTH, 200MM ALL ROUND AND 100MM DEEP FORMED WITH C20/25 CONCRETE, 20MM AGGREGATE SIZE, BEDDED IN CLAUSE 804 MATERIAL
12. ALL SURFACE WATER MANHOLES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE FOR DRAINAGE WORKS VERSION 6.0.
13. ALL FOUL WATER MANHOLES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH IRISH WATER WASTEWATER CODE OF PRACTICE AND STANDARD DETAILS.

PROPOSED FOUL MANHOLES GROUND LEVEL

Name	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
F1-2	48.400	1200	713416.345	729786.193	0.725
F1-1	49.250	1200	713438.208	729794.226	0.804
F1-2	48.300	1200	713400.943	729746.037	0.855
F1-3	48.300	1200	713367.304	729734.303	0.870
F1-4	48.250	1200	713377.228	729721.827	1.166
F1-5	48.300	1200	713359.924	729713.895	1.004
F1-6	48.400	1200	713341.881	729716.968	1.486
F1-7	48.800	1200	713314.843	729707.015	2.041
F1-8	48.300	1200	713299.773	729734.336	1.697
F1-9	48.300	1200	713285.123	729768.511	1.887
F1-10	48.300	1200	713284.588	729776.093	1.835
F1-11	48.300	1200	713274.603	729800.374	1.765
F2-5	48.300	1200	713436.018	729816.983	0.775
F2-1	48.100	1200	713417.334	729807.577	1.144
F2-2	48.200	1200	713402.294	729797.375	0.775
F2-3	47.950	1200	713370.118	729853.528	1.156
F4-2	48.300	1200	713354.312	729807.721	1.300
F2-3	47.800	1200	713342.643	729840.198	1.245
F5-2	48.300	1200	713354.789	729800.983	1.550
F2-4	47.800	1200	713295.849	729829.118	1.460
F2-5	47.800	1200	713321.344	729817.751	1.570
F1-12	47.800	1200	713290.163	729816.808	1.675
F1-13_OUT	47.900	1200	713246.404	729810.905	1.840

PROPOSED FOUL PIPES GROUND LEVEL

Name	US Node	DS Node	Length (m)	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	US Depth (m)	DS Depth (m)
F1.000	F1-0	F1-1	13.774	47.675	47.446	0.229	60.0	225	0.600	0.678
F1.001	F1-1	F1-2	11.898	47.446	47.267	0.179	150.2	225	0.978	0.908
F1.002	F1-2	F1-3	35.379	47.067	47.130	0.237	150.1	225	0.908	0.645
F1.003	F1-3	F1-4	3.271	47.130	47.084	0.046	211.1	225	0.645	0.991
F1.004	F1-4	F1-5	13.835	47.084	46.896	0.088	200.0	225	0.991	0.778
F1.005	F1-5	F1-6	19.333	46.960	46.904	0.092	200.0	225	0.778	1.227
F1.006	F1-6	F1-7	29.200	46.904	46.759	0.145	200.0	225	1.271	1.816
F1.007	F1-7	F1-8	31.106	46.759	46.603	0.156	200.0	225	1.816	1.472
F1.008	F1-8	F1-9	36.042	46.603	46.413	0.192	200.0	225	1.472	1.662
F1.009	F1-9	F1-10	7.988	46.413	46.373	0.040	200.0	225	1.662	1.626
F1.010	F1-10	F1-11	31.942	46.373	46.215	0.160	200.0	225	1.626	1.660
F1.011	F1-11	F1-12	17.753	46.215	46.126	0.089	200.0	225	1.660	1.448
F2.000	F2-0	F2-1	10.802	47.225	46.996	0.229	200.0	225	0.950	0.919
F2.001	F2-1	F2-2	40.625	46.996	46.793	0.203	200.0	225	0.919	0.974
F3.000	F3-0	F2-2	70.034	47.128	46.656	0.472	150.0	225	0.850	0.770
F3.001	F3-1	F3-2	38.834	46.781	46.657	0.124	300.0	225	0.974	1.018
F4.000	F4-0	F2-3	34.376	47.000	46.769	0.231	150.0	225	1.075	0.900
F2.003	F2-3	F2-4	49.720	46.687	46.300	0.244	200.0	225	1.018	1.297
F5.000	F5-0	F5-1	23.674	46.592	46.508	0.158	150.0	225	1.326	0.983
F2.004	F2-4	F2-5	19.853	46.300	46.230	0.070	200.0	225	1.297	1.345
F2.005	F2-5	F1-12	21.130	46.230	46.125	0.105	200.0	225	1.345	1.450
F1.012	F1-12	T1-13_OUT	15.305	46.125	46.050	0.075	200.0	225	1.450	1.415

PROPOSED SURFACE WATER MANHOLES

Name	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SCS-0	48.00	450	713423.179	729831.775	0.700
SI-0	48.00	1200	713435.131	729810.283	1.275
SI-1	48.00	1200	713427.789	729833.153	1.295
SI-2	48.10	1350	713418.153	729865.220	1.615
SI-3	47.80	1350	713358.984	729864.585	1.535
SI-3	47.95	1350	713387.336	729887.747	1.906
SI-4	48.05	1350	713388.357	729838.318	2.175
SI-5	48.40	1350	713415.401	729759.048	2.075
SCS-0	48.00	450	713484.483	729750.394	0.900
SI-6	48.40	1350	713464.828	729732.697	2.625
SCS-0	48.00	450	713469.193	729761.395	0.975
SI-7	48.00	1350	713470.993	729739.991	2.017
SI-8	48.75	1350	713378.178	729717.741	2.405
SI-9	48.90	1350	713317.765	729734.867	2.965
SI-10	48.80	1350	713315.735	729804.980	3.359
SI-11	48.80	1350	713310.471	729795.229	3.368
SCS-0	48.30	450	713258.382	729779.473	1.175
SI-12	48.10	1500	713276.879	729779.336	2.936
SI-13	47.80	1500	713264.329	729802.429	2.690
SI-0	48.30	1500	713350.733	729813.442	2.100
SI-1	47.80	1500	713241.789	729835.350	1.929
SI-2	47.80	1500	713215.119	729825.849	2.000
SI-0	48.30	1350	713284.169	729805.959	2.200
SI-0	47.80	1350	713288.230	729822.249	2.164
SI-4	47.80	1350	713279.535	729815.439	2.137
SI-5	47.80	1350	713265.749	729815.883	2.580
SI-14	47.67	1500	713257.999	729813.883	2.990
EXT MH4	47.80	1500	713247.949	729803.983	2.798

PROPOSED SURFACE WATER PIPES

Name	US Node	DS Node	Length (m)	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	US Depth (m)	DS Depth (m)
S2.001	SCS-0	SI-1	4.888	47.333	47.286	0.047	50.0	150	0.550	0.911
S1.000	SI-0	SI-1	21.398	46.725	46.654	0.071	300.0	375	0.950	0.971
S1.001	SI-1	SI-2	35.827	46.654	46.485	0.168	200.0	375	0.971	1.240
S1.002	SI-2	SI-3	54.353	46.485	46.353	0.132	200.0	375	1.240	1.777
S3.000	SI-3	SI-3	23.793	46.225	46.119	0.106	225.0	375	1.200	1.439
S1.003	SI-3	SI-4	47.917	46.044	45.927	0.117	409.0	450	1.456	1.673
S1.004	SI-4	SI-5	41.736	45.927	45.824	0.103	405.0	450	1.673	2.139
S1.005	SI-5	SI-6	29.255	45.824	45.774	0.050	585.0	450	2.139	2.179
S4.001	SCS-0	SI-6	5.739	47.333	47.286	0.047	50.0	150	0.550	0.921
S1.006	SI-6	SI-7	57.314	45.774	45.583	0.191	456.7	450	2.179	1.887
S5.001	SCS-0	SI-7	4.089	47.425	47.386	0.038	50.0	225	0.300	0.439
S1.007	SI-7	SI-8	23.636	45.683	45.625	0.058	407.5	450	1.887	2.175
S1.008	SI-8	SI-9	52.347	45.625	45.545	0.080	454.5	450	2.175	2.535
S1.009	SI-9	SI-10	54.193	45.545	45.461	0.084	645.7	450	2.505	2.899
S1.010	SI-10	SI-11	1.327	45.461	45.432	0.029	397.5	450	2.899	2.918
S1.011	SI-11	SI-12	78.915	45.432	45.290	0.142	457.5	450	2.918	2.481
S6.001	SCS-0	SI-12	3.558	47.125	46.955	0.170	50.0	225	0.950	0.920
S1.012	SI-12	SI-13	29.105	45.184	45.135	0.050	493.3	525	2.441	2.170
S1.013	SI-13	SI-14	7.951	45.135	45.076	0.059	485.6	525	2.170	2.097
S7.000	S7-0	S7-1	26.230	46.230	46.086	0.131	200.0	375	1.725	1.359
S7.001	S7-1	S7-2	27.844	45.982	45.742	0.138	200.0	375	1.543	1.683
S7.002	S7-2	S7-3	18.417	45.742	45.648	0.093	200.0	375	1.683	1.779
S8.000	S8-0	S7-3	7.378	46.120	46.080	0.039	200.0	375	1.805	1.383
S7.003	S7-3	S7-4	9.905	45.648	45.562	0.086	200.0	375	1.779	1.942
S7.004	S7-4	S7-5	9.783	45.583	45.537	0.046	200.0	375	1.842	1.888
S7.005	S7-5	S1-14	7.955	45.253	45.223	0.027	300.0	375	2.175	2.072
S1.014	S1-14	EXT MH4	12.379	45.076	45.045	0.032	375.0	525	2.097	2.230

Rev	Amendment	By	Date
CO1	STAGE 3 IRS SUBMISSION	DAP	2024-05-07
CO2	STAGE 3 IRS SUBMISSION	DAP	2024-07-25
CO3	STAGE 3 IRS SUBMISSION	DAP	2024-08-02

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Project: FORTFIELD ROAD, TERENURE, DUBLIN 6W
Title: PROPOSED GROUND FLOOR DRAINAGE LAYOUT
Issue Date: FEBRUARY 2024 | Drawn: DAP | Checked: PJM | Engineer Check: DW | Approved: PC
Project No.: 222102 | Model File: 222102-PUNCH-XX-XX-M2-C-0100 | Drawing Status: S0
Scale @ A1: 1:500 | Revision: 03
222102-PUNCH-XX-XX-DR-C-0100

Figure 13. Proposed ground floor drainage layout

Arboricultural Assessment

An Arboricultural Report was composed by The Tree File Ltd, in relation to the trees at the proposed site at Fortfield Road, Terenure. In summary, the report states that:

'Ultimately, sustainable tree retention is based on protecting and conserving existing ground, particularly soil conditions. Excavation works can directly sever, and damage tree roots, and general site activity and vehicular and plant passage denatures soil to a point where it cannot support tree roots or root function. If a tree is to be retained, then such activity must be excluded from a minimum area surrounding the tree, as defined in the tree survey table at Appendix 2, Table 1.

Though the overall site area supports many trees, the form and location of the proposed development works are such as to affect very few. Much of the historic landscape and wooded area to the north of the ponds remains wholly unaffected. Those trees that are most likely to be adversely affected, tend to be small enough to be readily replaced, or of poor quality and offering limited sustainability.

The proposed development will retain 192 of the 213 trees reviewed. This accounts for the immediate loss of all 17 category "U" trees; however, some might be retained with management for the short term. This represents a retention rate of circa 98%, of the site's sustainable category A, B and C trees (see category system at "Survey Key, Appendix 2). Notwithstanding the issues outlined in this report, this outcome is considered particularly positive.

All 17 trees attain their "U" grade categorisation because of their poor conditions (see category system at "Survey Key, Appendix 2). The loss of these trees is not linked with the development of the eastern site. These trees must be regarded as unsustainable and the future use and occupancy of the area will likely require the removal of these trees within the short term and on site-safety grounds.

The Lombardy Poplars to the north of the development will be retained. These trees are of reduced quality, all having been severely decapitated in the past. This has resulted in sucker growth, some of which is breaking, as well as varying degrees of decay and deterioration about the cutting zone. While potentially suitable for retention, such retention will require ongoing maintenance over time, both to address the deterioration and also to manage size development in light of the potential for growth associated with Lombardy Poplars.

The Lombardy Poplars will be encroached upon to a minor extent by the proposed work, though the terracing of garden spaces to address floor levels disparities and the restriction of construction activities to the building footprints with access from the south only, will assist in limiting such effects. The trees will be retained in what will become private open space.

Along Fortfield Road, several trees, typical Small Hornbeams, will be affected by secondary works associated with site entrances, the provision of site services and the provision of traffic and particularly bus infrastructure. Though inarguably an impact on the tree population, many of these trees are particularly small and could, if required, be replaced with new stock. In this respect and appreciating that their loss can be mitigated if required, then the loss in the short term might be considered acceptable.

Elsewhere near Fortfield Road and College Drive, we note that the majority of works will occur within existing road structures where encountering tree roots is far less likely. Note is also made that in some instances, much of the infrastructure already exists in situ and thus will not require tree disturbance, an example of this being the existing water main lines along Fortfield Road near Hornbeams Nos.29 to 38 and at the entrance to College Drive near Sycamore No.39 (See western side of drawing "Fortfield Road Tree Constraints Plan West" and "Fortfield Road Tree Impacts Plan West")

Tree retention and protection during the construction phase will be achieved by simple "construction exclusion". This will entail the erecting of robust tree protection fencing prior to the commencement of any on-site works (See drawing inserts on drawing "Fortfield Road Tree Protection Plan" – East and West and guidance at "Appendix 1"). The intention of such fencing is to prevent inadvertent access by plant, machinery and vehicles and to limit works to manual landscape works or other controlled works only.

As standard tree protection methodologies will interfere with existing pedestrian access, discussion and agreement with local authorities regarding tree protection within public realm areas will be required. Some trees, for example,

on Fortfield Road and College Drive, may require temporary and localised tree protection at certain times of the construction process. However, this must be coordinated with public access and the closure or restriction of pedestrian footpaths. In most instances, the tree protection will be orientated to protecting open/soft ground from disturbance; consideration must be given also to tree canopies, for example, where overhanging existing hard surfaces or roadways that would otherwise offer protected access.

Longer-term tree and woodland management will also require discussion and agreement, for example as part of a site-wide management scheme. Though the historic woodland area has already gained some impromptu social use, it is likely that the level of use will increase. In this respect, a management plan should be agreed upon that addresses both site safety and the conservation of a historic landscape context.''

Fig 1

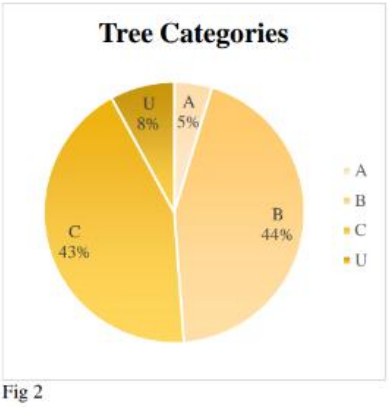


Fig 2

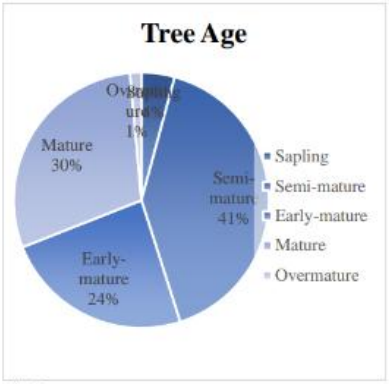


Fig 3

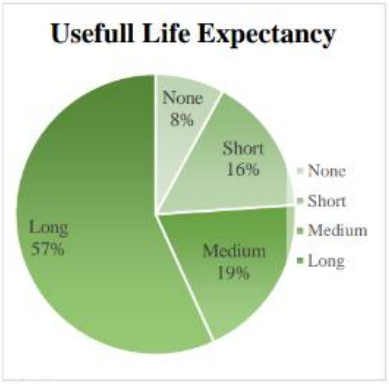
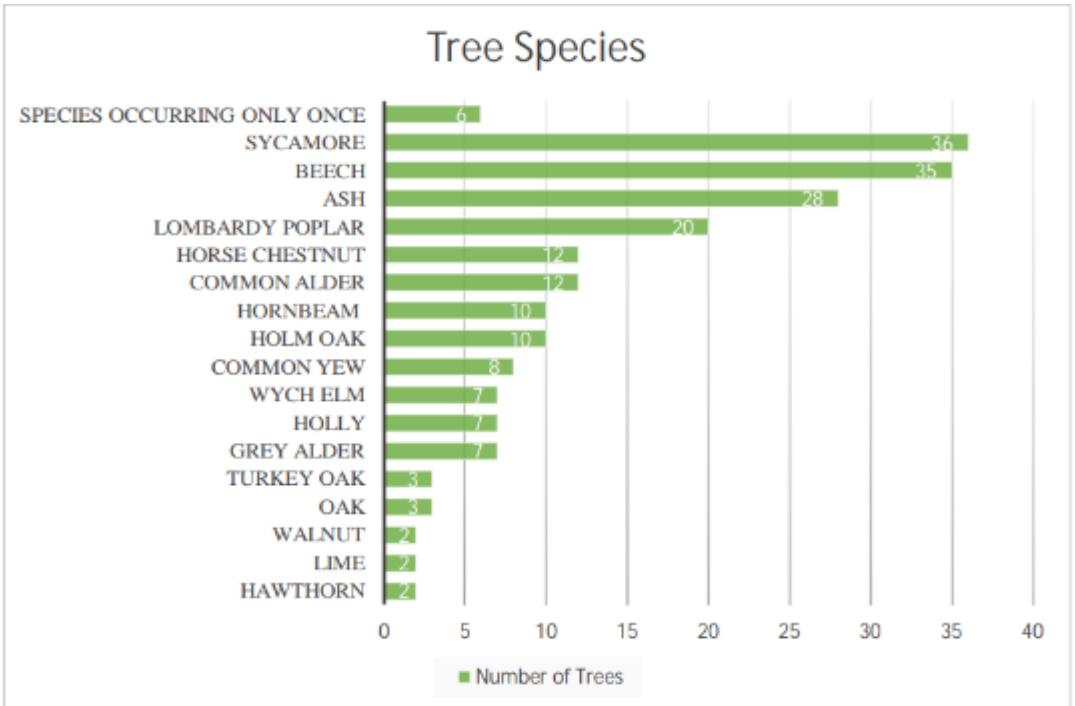


Fig 4



The Tree Constraints Plan, Tree Impact Plan and Tree Protection Plan are displayed in Figures 11-16.

Lighting

A Public Lighting Report has been prepared by OCSC Consulting Engineers to accompany this planning application. This report outlines the following public lighting design for the proposed development:

'The lighting scheme has been designed to adhere to the following lighting characteristics:

• The minimum level of appropriate/required lighting level will be provided within the developed/residential areas;

• Light fittings will be fitted with low intensity, horizontal cut-off LED light fittings employing a narrow directional light or cowled light. This will avoid the effect of light spill arising within the residential area;

• No light spill into biodiversity areas. In particular there will be no light spill from the development area onto the woodland/ pond area to the east of the development;

• The lighting includes dimming the 4m poles by 30% post curfew hours;

• Light fittings and associated lighting will be directed away from areas of open space;

• No floodlighting will be used in the development;

The lighting design adheres to the following standard guidance

• Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010);
• Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2018).
Also:
• Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011);''

Due to the high levels of bat activity over the pond and to ensure that the levels of foraging continue on site, no lighting is proposed in the pond area or in the vicinity off the large trees on site.

The proposed public lighting layout is outlined in figure 18. Lighting is compliant with bat lighting guidelines.

Figure 11. *Tree Constraints Plan- East*

Figure 12. *Tree Constraints Plan- West*

Figure 14. *Tree Impacts Plan-West*

Figure 15. *Tree Protection Plan - East*

Figure 16. *Tree Protection Plan - West*

Figure 17. *Public Lighting Layout*

Outline Construction Management Plan (OCMP)

An Outline Construction Management Plan was prepared by Punch Consulting Engineers which outlines the general activities required for the construction of the proposed Fortfield Road development. As outlined in the OCMP:

Indicative Construction Programme

It is estimated that the construction programme for the works associated with the proposed works will last 30-36 months from the date of commencement. This estimation is based on the typical construction programmes for other similar developments that are currently underway. It is envisaged that construction of the proposed building and external works will be carried out over a single phase. The Main Contractor will be required to prepare a detailed construction programme as part of their tender proposal.

Site Set-Up and Security

The Main Contractor will be required to submit a site layout plan that will detail the proposed location of the site compound. The Contractor will ensure that the site compound will be serviced as required and will be secured with appropriate fencing/hoarding. The site compound will be used as the primary location for the storage of materials, plant and equipment, site offices and worker welfare facilities. As Project Supervisor Construction Stage (PSCS), the Contractor will be responsible for site security and they are to ensure that the site and site compound are adequately secured at all times. As with the other construction activities that are being carried out within the Dublin City Council local authority area, activities associated with the construction compounds will be subject to restrictions to the nature and timing of operations so that they do not cause undue disturbance to neighbouring areas and communities. The site layout plan will also include the site perimeter and the proposed detail with regards the hoarding and gate system.

Site Access

A new access route is proposed from Fortfield Road to the west of the site. The proposed scheme will integrate the site into the surrounding footpath networks providing construction and operational vehicle access and convenient pedestrians/cyclist routes linking the site with the surrounding area. Construction related traffic will enter the site via Fortfield Road. Construction traffic associated with the development can proceed along the Fortfield Road to the Templeogue Road (R137) to the M50 or other route depending on destination. Furthermore, in order to reduce the requirement for site parking for employees, public transport such as Dublin Bus should be utilised.

Material Storage and Delivery

The Contractor will ensure that the delivery of materials is coordinated to minimise impacts to adjacent properties. The Contractor will ensure that all materials are adequately stored and secured in their site compound. For more details please refer to the 'Outline Resource & Waste Management Plan' prepared and included in the planning submission. The Contractor will ensure the roads adjacent to the site are kept clean and free of debris.

Traffic Management Plan

The Contractor will be required to prepare and submit a detailed traffic management plan as part of their tender submission. Once appointed, the preferred Contractor will further develop the traffic management plan as required for the developer to submit to the local authority for approval in advance of works commencing onsite. The Contractor will ensure that advanced warning signs are erected on approaches to the site as required by the PSCS. The Contractor will use a competent sign provider and all signage that meets the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual. Any proposed temporary road markings must also confirm to the requirements of Chapter 8 of the Traffic Signs Manual.

The Main Contractor will be responsible for all site access and works activity and must ensure the continued operation of the surrounding local road network as a result of its construction traffic. The management of construction traffic on the public and private road networks in and around the proposed development is a critical part of the overall project and must be actively managed by the Contractor.

The Contractor must submit a Construction Traffic Management Plan to the Local Authority for approval. Haulage vehicle movements should be fully coordinated to comply with the requirements of the agreed plan:

- Construction vehicles must not stop or park along the routes at any time;
- Haulage vehicles must not travel in convoys greater than two vehicles at any time;
- Site entrance to remain free of parked or stationary vehicles at all times;
- All loading of demolition material will occur within the site boundary;
- All off-loading of deliveries will take place within the site, remote from the public road and will access via the agreed construction access point.

The site is located in an established suburban area where the road and junction space is shared with public road users and construction traffic associated with other nearby developments. Therefore, the flow of construction traffic will need to be marshalled and controlled to ensure that potential conflicts are avoided as much as possible.

There are no proposals to introduce temporary road closures or temporary traffic light signals to facilitate construction of the proposed development. There are also no proposals to amend the existing local access arrangements to the surrounding areas. For more details please refer to the 'Outline Resource & Waste Management Plan' prepared and included in the planning submission.

General Construction Approach

Construction Working Space

Construction working space will be set out in the detailed construction management plan at compliance stage. Construction access routes, haul routes and delivery routes to the site are to be agreed with the Engineer/Employer's Representative in advance of works commencing onsite. Any road closures required will be submitted and approved in advance with the local authority. It is the responsibility of the Main Contractor to prepare and submit the road closure application to the local authority in advance of works commencing onsite.

Outline Phasing Strategy

It is currently envisaged that the proposed development will be completed in a single phase, as detailed below. For further details relating to the works, please refer to the more detailed planning drawings (architectural, engineering, landscape, etc.).

Phase 1:

1. Establish secure site perimeter (fencing/hoarding) and establishment of the construction compound(s).
2. Construction of access road and connections from Fortfield Road to the Fortfield Road development entrance.
3. Construction of associated services along the access road and Fortfield Road to enable connection to relevant service tie-in locations (to be progressed in tandem with Item 1).
4. Topsoil removal and stockpiling as required throughout development lands.
5. Site regrading throughout development extents to establish construction levels and introduce berms.
6. Construction of the basement car park and associated bulk excavation. Stockpiling of excavated material, testing and re-use as required.
7. Completion of internal construction access routes (temporary surfacing) throughout the development interior and completion of associated service routes and ancillary works.
8. Establish proposed and future potential access routes to adjoining lands as required, e.g. adjacent school and park lands.
9. Installation of drainage/SuDS elements throughout the site.
10. Construction of residential units in defined sequence.
11. Completion of internal road network to permanent status, including associated private realm SuDS measures.
12. Delivery of landscaping and parks/recreation elements throughout the development extents.

Outline Works Description

The construction works will involve an indicative sequence of works, as described in short below. The Contractor will outline works which impact public spaces within the Construction Management Plan that shall be subject to submission and agreement with Dublin City Council.

Hoarding, Site Set-up and Formation of Site Access/Egress
The site area will be enclosed with hoarding details of which are to be agreed with DCC. Hoarding panels will be maintained and kept clean for the duration of the works. This will involve erecting hoarding around the proposed site perimeter in line with the finished development extents.
The available site footprint will enable the Contractor to set up the site compound within the site boundary. The Contractor will be responsible for the security of the site. The Contractor will be required to:
• Operate a Site Induction Process for all site staff;
• Ensure all site staff shall have current 'Safe Pass' cards and appropriate PPE;
• Install adequate site hoarding to the site boundary;
• Maintain site security at all times;
• Install access security in the form of turn-styles and gates for staff;
• Separate public pedestrian access from construction vehicular traffic.

Site Clearance and Demolition
The location is a greenfield site. It will require minimal site clearance beyond topsoil removal and some tree removal. It is noted that the proposed development consists of the excavation and construction of a single level basement parking level, the subsequent construction of multiple storeys of residential apartments and the associated site landscaping and ancillary development.

Construction Sequence of Development
The construction of Blocks A-C will follow completion of the excavation/grading works and associated establishment of the basement formation levels. The subsequent superstructure will consist of construction of reinforced concrete framed structures on ground floor transfer structure (where applicable and coincident with the basement footprint) and on ground bearing substructure elsewhere.
The construction of Block D will consist of construction of RC framed structures on ground bearing substructure.
The construction methodology and programme of these activities will be dictated by the Contractor.

Site Grading
The proposed basement will involve the excavation of approximately 16,250m3 of material. Site investigations and a geotechnical desktop review of the site shows that the predominant soils in the area consist of low permeability soils overlying limestone and shale bedrock. Based on site investigation results and a review of the external GSI geotechnical boreholes in the immediate vicinity of the development site, rock is typically not encountered at depths down to 5 or 10m bgl. The basement formation level is at approx. 44.80mOD (relative to existing ground levels of 47.50mOD, so excavation into the underlying rock is not anticipated during excavation.
The Contractor must prepare a Construction and Demolition Waste Management Plan in accordance with the best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA 2021) and ensure that all material is disposed of at an appropriately licensed land fill site. As outlined in the appended 'Waste Characterisation Assessment' for Fortfield Road and the 'Geotechnical Report' by IGSL included as an appendix to the Engineering Planning Report, all samples tested were classified as non-hazardous. The Contractor must also outline detailed proposals within the Construction Management Plan to accommodate construction traffic.

Basement Level Construction
The construction of the basement level will involve the excavation of the basement footprint and immediate surrounds to enable construction of an RC foundation slab with thickenings coinciding with column locations. The basement level will include a perimeter wall along its sunken extents relative to surrounding finished levels and will consist of RC construction (likely a pre-cast component). The spoil generated from the basement level construction will be recycled and re-used (in accordance with the 'Outline Resource & Waste Management Plan') and, where necessary, disposed at an appropriate licensed land fill site. The concrete operations associated with the basement structure will require concrete deliveries to site.
The groundwater level is to be confirmed by on-site testing by the SI Contractor. To prevent any potential risk of groundwater intrusion into the lower structure the basement car park will be constructed as a water-tight box, the proposed grade for the basement is Grade 1, as per BS 8102:2009. The proposed structural integrity of the basement perimeter walls and their ability to prevent groundwater intrusion into the site is deemed

sufficient to mitigate the potential risk to acceptable limits. The concrete works will involve concrete deliveries to site and adequate wash-down and wheel wash facilities must be provided for the concrete wagons.

Construction Sequence of Superstructure

The construction of the various superstructures will involve complex sequencing of activities and various construction methodologies could be adopted to deliver the Contract. The nature of the buildings throughout the development, the column grids and economic factors, among other issues, would suggest that the buildings will be constructed utilising reinforced concrete frames.

As noted, the construction methodology and therefore the programme of the construction activities will be dictated by the Contractor.

Building Structures – Blocks D:

- Construction of the ground floor foundation slabs and substructure.
- Construction of rising elements to Level 1 and construction of Level 1 floor slab;
- Similar sequence of construction of rising elements and floor slabs

Building Structure – Block A, B and C:

- Construction of the basement level (including substructure elements and permanent basement parking perimeter wall structures;
- Construction of rising elements to Level 0 and construction of Level 0 floor slab and transfer structures;
- Similar sequence of construction of rising elements and floor slabs

Envelope / Cladding – All Blocks:

- Commencement of envelope works to Level 1 when structure has progressed to approximately Level 2/3;
- Advancing of Cladding two levels behind the structure.

Envelope / Cladding – All Blocks:

- The structural blockwork will also act as the envelope for the structure, and cladding will follow completion of the blockwork.

Mechanical & Electrical Fit-Out:

- First fix will commence from ground floor level upwards;
- This will be followed by the second fix and final connections.

Fit-Out:

- Initial installation of stud work when cladding completed and floor is weather tight;
- Installation of equipment and associated connection to services;
- Completion of finishes.

Commissioning:

- The final commissioning period will commence during fit-out.

The above represents a high-level indicative construction sequence only. The actual sequence will be dictated by the Contractor. The Contractor will issue a detailed construction programme outlining the various stages prior to commencement of works.

It is envisaged that multiple tower cranes will be temporarily erected to accommodate the apartment block construction works for the distribution of building materials and plant. The Contractor is required to obtain all necessary licences from DCC.

A high level illustration of the potential construction sequence is provided in a series of sketches in Appendix A.

Communications and Local Stakeholder Management

The Contractor will, as required, liaise with owners of the local properties in advance of works commencing onsite. The Contractor will use a competent sign provider and all signage used will meet the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual.

Aboricultural Impact and Tree Protection Strategy

The overall objectives are to retain the maximum number of good quality trees whilst also achieving densities of housing compliant with current standards and planning recommendations. Proposed new tree planting is contained within the Landscape Masterplan drawings by Niall Montgomery & Partners, submitted as part of the planning package. These plantings will provide a new generation of trees which have the potential to develop and add to the existing tree cover on the site.

A Tree Protection Strategy will be provided as part of the arboricultural element of the submission with the aim of ensuring retained trees are maintained for the duration of the construction stage of the development free of negative construction related impacts.
A Site Arborist shall be appointed prior to the commencement of site construction works and will be responsible for the setting up and monitoring of tree protection, liaising with local authority tree / planning officers and providing feedback and advice to the design construction teams on issues relevant to trees. The Site Arborist shall be retained for the duration of construction works and should be appointed to carry out a post-construction tree survey/assessment.
For full details please refer to the Arboricultural Assessment, Aboricultural Impact and Tree Protection Strategy Report Plan to be prepared by The Tree File Ltd. and included in the planning submission.

Construction Noise, Dust and Vibration
The Main Contractor will be required to monitor noise, dust and vibration as will be outlined in the planning conditions. The Contractor will establish baselines for noise, dust and vibration in advance of works commencing onsite. It is noted that a baseline noise survey has been undertaken at the development site by AWN Consulting Limited to determine the existing environment at the site. Please refer to the 'Noise & Vibration Impact Assessment for Planning' included in the planning application for details.

As part of their detailed construction management plan, the Contractor will be required to clearly indicate how they plan on monitoring noise, dust and vibration throughout the course of the project. This will be especially critical in relation to the basement construction and associated piling works. The Contractor will also be required to clearly outline the mitigation measures they plan on putting in place to ensure that permissible construction noise, dust and vibration levels for a development of this scale (as directed by Dublin City Council by way of planning condition) are not exceeded.

For more details, please refer to the 'Outline Resource & Waste Management Plan' by PUNCH Consulting Engineers and the 'Noise & Vibration Impact Assessment for Planning' by AWN Consulting Limited prepared and included in this planning submission.

Working Hours
The proposed hours of work on site will be 07:00 hrs to 18:00 hrs Monday to Friday and 08:00 hrs to 14:00 hrs Saturday unless otherwise specified by planning conditions. It is anticipated that construction working hours will be stipulated in the planning conditions attached to the planning grant. Any working hours outside the normal construction working hours will be agreed with Dublin City Council. The planning of such works will take consideration of sensitive receptors, in particular any nearby businesses and residents. For more details please refer to the 'Outline Resource & Waste Management Plan' prepared and included in the planning submission.

Lighting
During construction there are no proposals to alter the existing lighting arrangements in the area. It is not envisaged that any existing public lighting will need to be disconnected as a result of the proposed works. Appropriate lighting will be provided as necessary at construction compounds. All lighting will be installed as per lighting plan. Ecological supervision will be in place to minimise light spillage from the site.

Construction Employment
Construction employment numbers will vary depending on the construction stage of the project and the actual approach adopted by the Contractor. However, it is anticipated that at the peak of construction there may be a workforce of approximately 150 people employed (maximum).

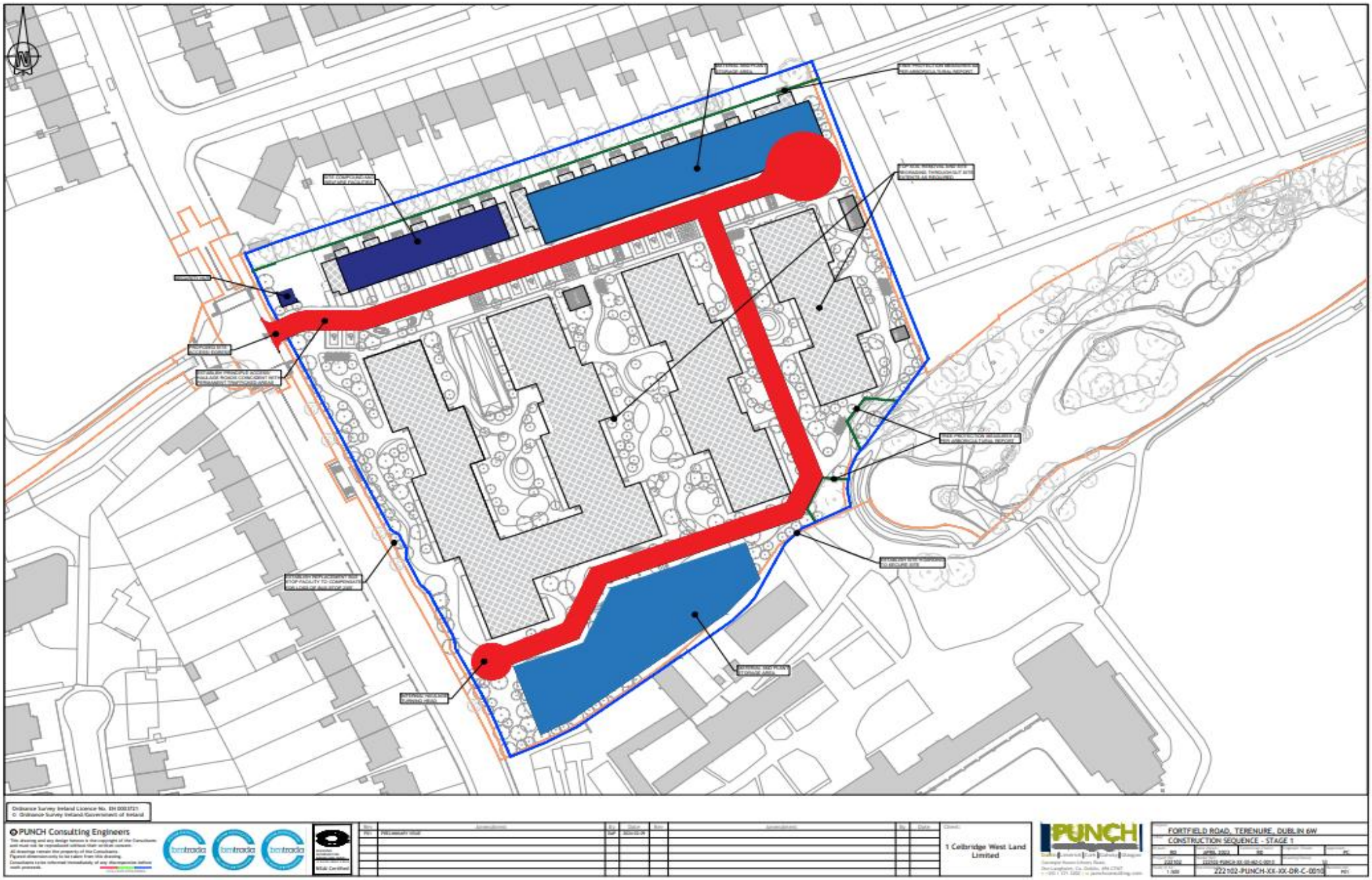


Figure 18. Construction Sequence -Stage 1.

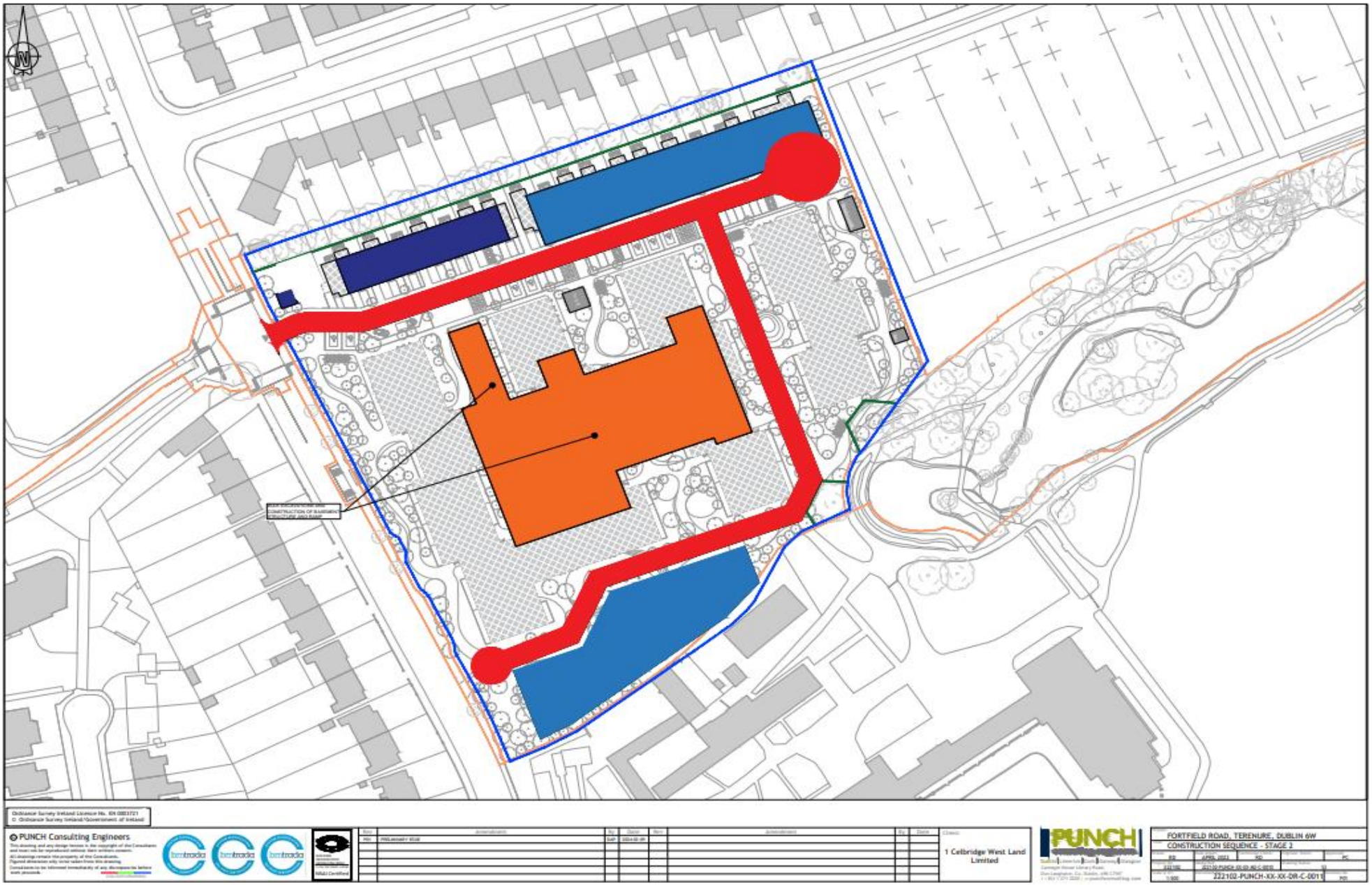


Figure 19. Construction Sequence -Stage 2.

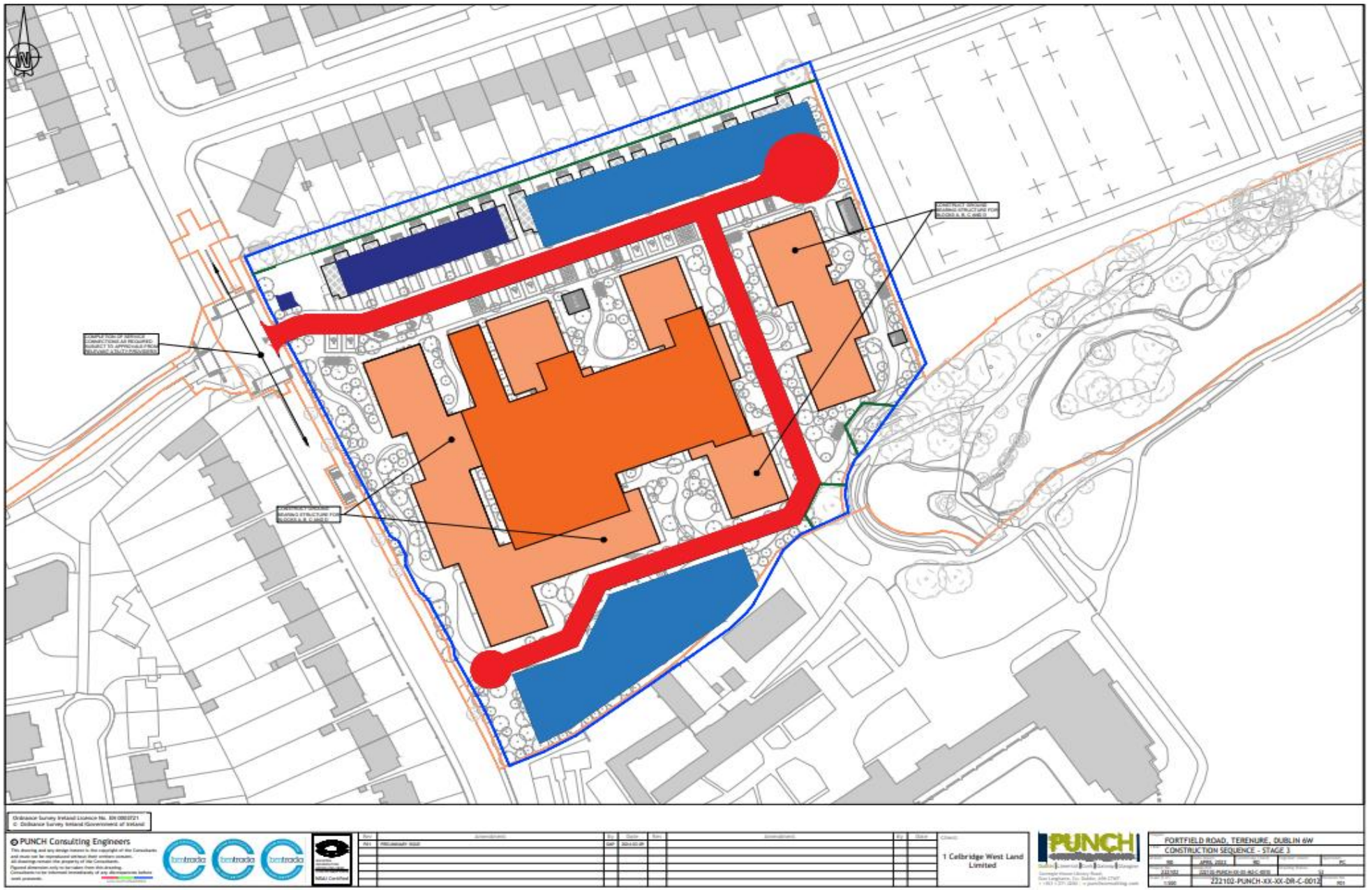


Figure 20. Construction Sequence -Stage 3.

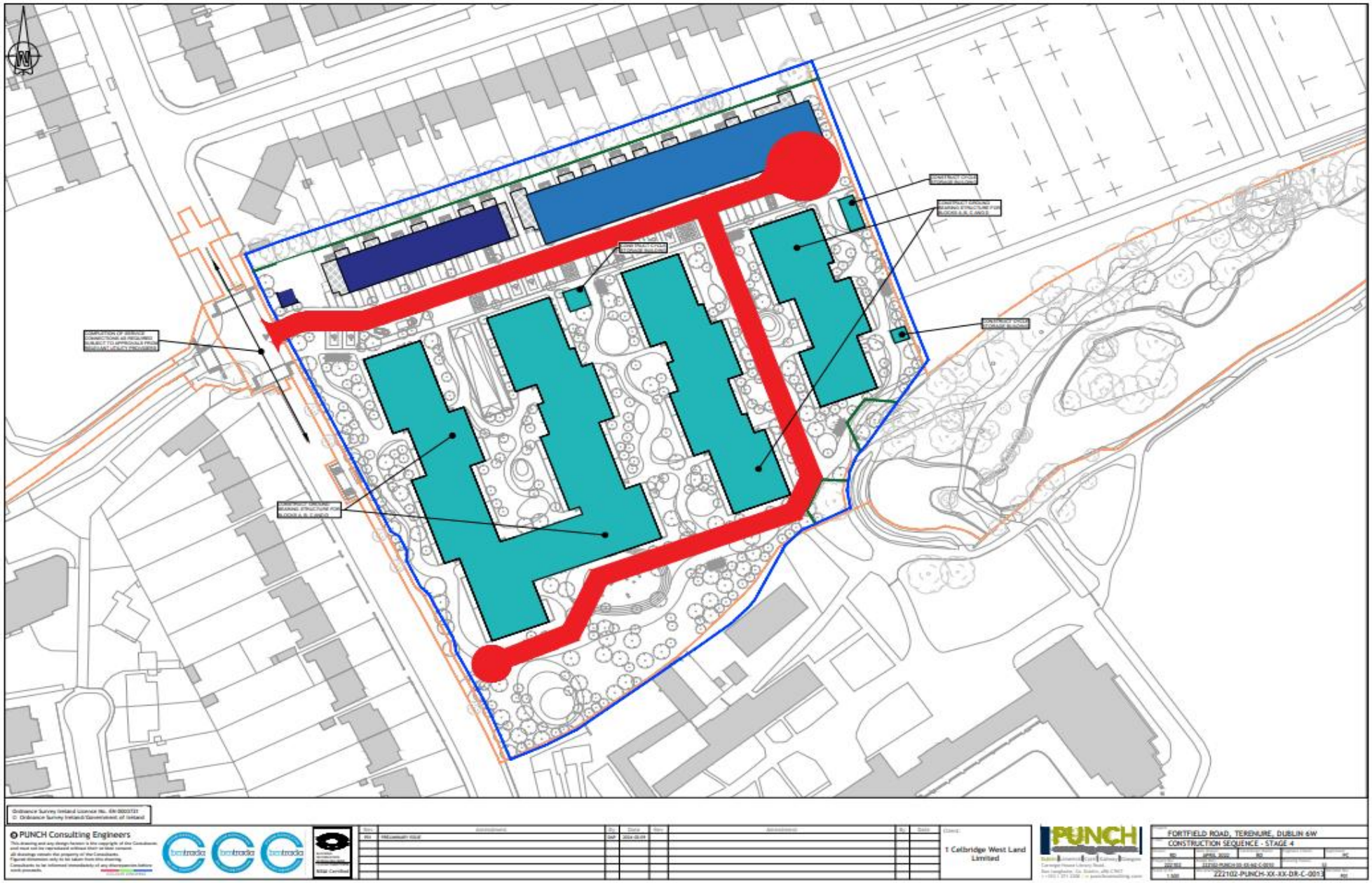


Figure 21. Construction Sequence -Stage 4.

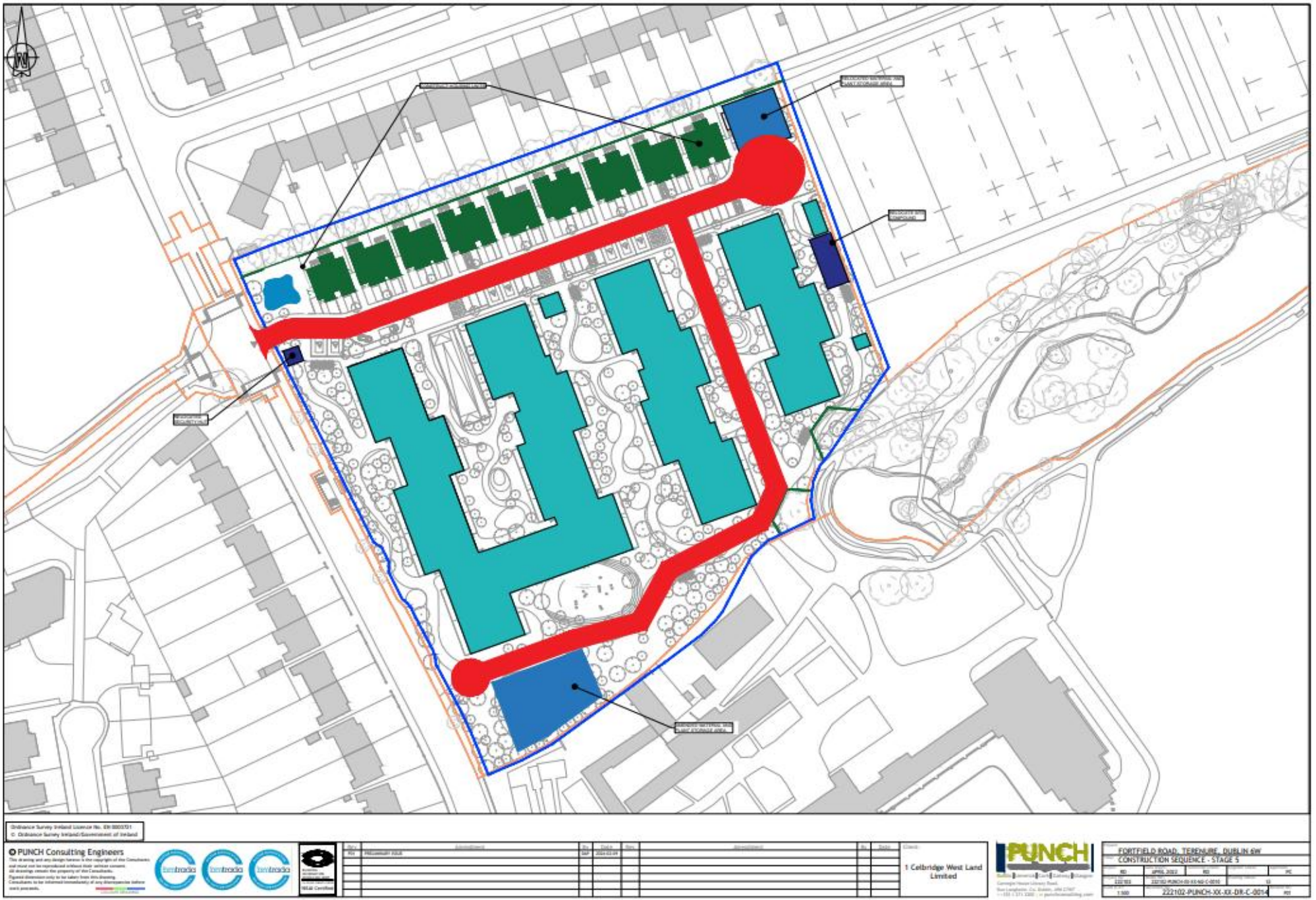


Figure 22. Construction Sequence -Stage 5.

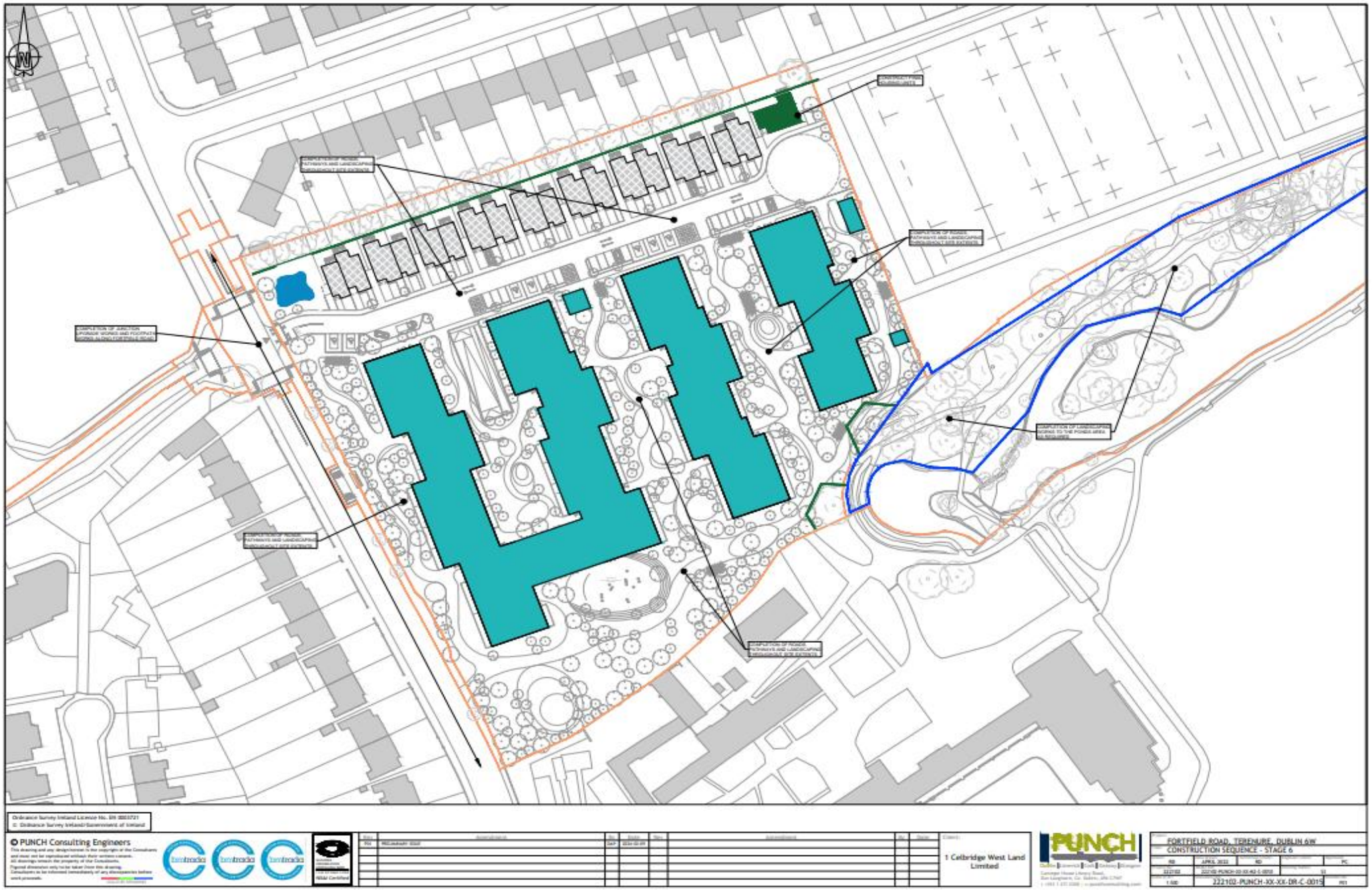


Figure 23. Construction Sequence -Stage 6.

Sensitive Receptors

The sensitive receptors in the vicinity of the proposed development are summarised and the potential impact/mitigation are seen in Table 1. Satellite imagery of the site is seen in Figure 1.

Table 1. Sensitive Receptors and Potential Impact.

Sensitive Receptor	Location / Potential Impact
Watercourses	The pond on site, fed by a tributary of the River Dodder and its associated woodland are of significant local importance and contain species of conservation importance. Mitigation measures will be put in place to avoid significantly impacting the watercourse, pond and biodiversity within the subject site. Onsite works will involve ground clearance, re-profiling, groundworks and construction, with potential for runoff, dust, pollution, light and noise impacts that could impact on the biodiversity and/or water quality of the pond with potential for downstream impacts.
Residents	In proximity of the proposed development As seen in Figure 1, the proposed development is proximate to residential areas that would be sensitive to noise, dust and lighting impacts. Mitigation measures (Table 6) will be put in place to avoid impacting the residents proximal to the proposed development during the construction phase of the project.
Terrestrial Fauna and flora	No terrestrial species of conservation importance have been recorded on site (NBDC records) or were observed on site during the site survey. However, pond on site and associated bat population would be considered to be of importance. The onsite works will involve ground clearance, re-profiling, groundworks and construction with potential for runoff, dust, light and noise impacts. Remedial works are proposed within the pond (cleaning and installation of reedbed).
Birds	Clearance of the northern section of the site and the fact that breeding birds are present on-site, will result in the loss of foraging and nesting habitat in the northern section of the site (treeline and hedgerow). Subsequent planting should be supplemented with bird boxes. The integrity of the woodland and pond will remain. However, works are proposed in the vicinity of these areas which could result in disturbance and negative impacts on these species in the absence of mitigation (Table 6).
Bats	Soprano pipistrelles were noted emerging from a tree on site. Numerous trees on site do have bat roosting potential and a high level of foraging was noted in the vicinity of the pond.
Mammals	No evidence of mammals of conservation importance were noted on site.

3. Analysis of the Potential Impacts

The proposed development will involve the removal of the existing terrestrial habitats (outside of the area of the pond and woodland) and considerable re-profiling and excavations. It should be noted that an Ecological Impact Assessment (EcIA) and a Natura Impact Statement (NIS) have been prepared by Altemar Ltd. and accompany this CEMP.

Potential Construction Impacts

In the absence of mitigation measures the overall development of the site is likely to have direct negative impacts upon the existing habitats, fauna and flora within the site outline. It should be noted that the pond on site drains to the River Dodder, which ultimately outfalls to the River Liffey and the marine environment at Dublin Bay. In the absence of mitigation measures there is potential for pollutants to enter the watercourse via the surface water network and travel downstream to South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and North-West Irish Sea SPA. Mitigation measures are outlined in table 8. Site clearance and construction on site will take place primarily in the vicinity of the amenity grassland and adjacent habitats on site.

Designated Conservation sites within 15km

The proposed development is not within a designated conservation site. The nearest Natura 2000 sites is South Dublin Bay and River Tolka Estuary SPA (5.8 km). An Appropriate Assessment Screening and Natura Impact Statement have been carried out for the proposed project and accompany this submission. There are no National Heritage Areas (NHAs) within 15 km of the proposed development and no potential hydrological pathways from the proposed development site to any NHAs located further than 15 km. Noise pollution created during the construction of the proposed development will be localised to the immediate site area and will not have a likely significant effect on the conservation objectives of the features of interest of any European sites. During construction, surface water from the proposed development shall discharge to Dublin Bay via the River Dodder and River Liffey. Mitigation is required to protect downstream designated sites.

Foul wastewater will be directed to the Ringsend Wastewater Treatment Plant (WwTP) via a public foul sewer network. Foul wastewater drainage will ultimately be treated along this public network. The treated effluent from the WwTP will discharge into Dublin Bay There will, therefore, be an indirect pathway from the proposed development site to European sites within Dublin Bay, namely, South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and North-West Irish Sea SPA. However, given the distance from the site to European sites (5.8 km minimum distance) any pollutants, silt laden run off or dust will be dispersed or diluted within the marine environment to negligible levels prior to reaching European sites. Potential Impacts in the absence of mitigation: Moderate Adverse, National, negative Impact, Not significant & short-term. Mitigation measures will be required to protect designated sites.

Biodiversity

In the absence of mitigation, the impact of the development during construction phase will be a loss of existing habitats and species on site with potential for downstream effects. Potential impacts are outlined as per EPA EIAR guidelines (EPA, 2022).

Terrestrial mammalian species

No signs of badgers (*Meles meles)* or otters (*Lutra lutra*) inhabiting or foraging were noted onsite. No protected non-volant mammals were recorded on site. There is potential for disturbance of common mammal species on site particularly during site clearance works.

Potential Impacts in the absence of mitigation: Low adverse, site, Negative Impact, Not significant & short term. Mitigation is needed in the form of a pre-construction inspection for terrestrial mammals of conservation importance.

Flora

No protected flora was noted on site. Site clearance will remove the flora species on site. None of the flora species to be removed are of conservation significance. Invasive species were noted on site: The invasive Three Cornered Leek *(Allium triquetrum) and* Curly Waterweed (*Lagarosiphon major*) were noted on site.

Potential Impacts in the absence of mitigation: Low adverse, site, Negative Impact, Not Significant & Short term. Mitigation is required in relation to invasive species on site.

Bat Fauna

No trees or buildings of bat roosting potential are to be removed as part of the proposal. Lighting during the construction phase has the potential to impact on bat foraging on site and particularly over the pond area.

Potential Impacts in the absence of mitigation: Low adverse, site, Negative Impact, Not significant & short term. Mitigation is needed in the form of control of light spill during construction and pre construction inspections.

Aquatic Biodiversity

There is a culverted watercourse and pond onsite which will drain the surface water runoff from the proposed development site. The pond then drains to the River Dodder, which ultimately discharges to the River Liffey and the marine environment at Dublin Bay. Due to the extent of the proposed works and the potential for surface runoff and pollution to enter the pond there is potential for negative effects directly on the biodiversity associated with the pond and downstream biodiversity.

Potential Impacts in the absence of mitigation: Medium adverse, county/ Negative Impact& short term. Robust mitigation is needed in the form of control of silt, petrochemical and dust entering the watercourse during construction.

Bird Fauna

Due to the presence of breeding birds on site and the removal of nesting and foraging habitat the construction will result in a loss of foraging and nesting habitat for breeding habitat for breeding birds. However, these effects will not be in the vicinity of the pond which is the primary area of breeding bird activity on site. Planting throughout the development, particularly of native hedgerows, could result in a positive impact through the provision of both nesting and foraging habitat.

Potential Impacts in the absence of mitigation: Low adverse, Local, Negative Impact, Not significant, short term. Mitigation is needed in the form of control site clearance and the provision of compensatory nesting habitat.

4. Mitigation Measures & Monitoring

Standard construction and operational controls will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the Zone of Influence (ZoI) including the River Dodder, downstream biodiversity, European sites and local biodiversity within / proximate to the subject site are outlined in Table 6. It should be noted that the measures in relation to the protection of the River Dodder will be robust.

Table 6. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
South Dublin Bay SAC North Dublin Bay SAC South Dublin Bay and River Tolka Estuary SPA North Bull Island SPA North-West Irish Sea SPA Aquatic and avian biodiversity	• Habitat degradation • Dust deposition • Pollution • Silt ingress from site runoff • Downstream impacts • Negative impacts on the aquatic environment, habitats, aquatic species, bird fauna, and qualifying interests.	The accompanying NIS EcIA and Outline Resource & Waste Management Plan outline the required mitigation measures in detail. These measures will be carried out. The OCEMP has incorporated these mitigation measures. The outlined mitigation measures and ecological supervision and monitoring will prevent impacts on the River Dodder which would be seen as the pathway for potential impacts on European sites. **Construction Phase Mitigation** • *A project ecologist will be appointed to oversee all works.* • *A preconstruction inspection for mammals Including Otter (Annex II & IV of the Habitats Directive) will be carried out.* • *Local watercourses (River Dodder), the onsite pond and drains will be protected from dust, silt and surface water throughout the works.* • *Local silt traps established throughout site.* • *Mitigation measures on site include dust control, stockpiling away from watercourse and drains* • *Stockpiling of loose materials will be kept to a minimum of 40m from watercourses, ponds and drains.* • *Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses.* • *Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, ditches or the watercourse, excavations and other locations where it may cause pollution.* • *Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the stream. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality.* • *Mitigation measures on site include dust control, stockpiling away from watercourses and drains* • *Fuel, oil and chemical storage will be sited within a bunded area. A risk based approach will be taken.* • *Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination.* • *During the construction works silt traps will be put in place in the vicinity of all runoff channels of the river to prevent sediment entering the watercourse.* • *Petrochemical interception and bunds in refuelling area* • *On-site inspections to be carried out by project ecologist.* • *Maintenance of any drainage structures (e.g. de-silting operations) will not result in the release of contaminated water to the surface water network.* • *The diversion works will be undertaken before any other major works, minimizing the potential for down impact ie. Silting of the downstream watercourse.* • *No discharges will be to the watercourse or pond during works.* • *No abstraction of water from the pond or watercourse will be carried out during woks.*

Table 6. Mitigation Measures.		
Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		• *Silt traps established throughout site including a double silt fence between the site and the watercourse.* • *Sufficient onsite cleaning of vehicles prior to leaving the site and on nearby roads, will be carried out, particularly during groundworks.* • *The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained.* • *The site compound will include a dedicated bund for the storage of dangerous substances including fuels, oils etc.* • *Refuelling of vehicles/machinery will only be carried out within the bunded area.* • *A project ecologist will be appointed and be consulted in relation to all onsite works during construction.* • *Dewatering of excavations may be necessary. Appropriate monitoring of groundwater levels during site works will be undertaken. Standard construction phase filtering of surface water for suspended solids will be carried out. Unfiltered surface water discharges or runoff are not permitted from the site into the watercourse during the works. Any discharges will have twice daily turbidity, oxygen and pH monitoring (between 11am-1pm & 3.30pm-5pm). These records will be taken upstream of any discharge, within the discharge and downstream of the discharge. Photographic records of the site to be sampled at each sampling event will be catalogued and held for inspection by the ecologist and Inland Fisheries Ireland. In the absence of discharges on site monitoring will be carried out during working days at the inflow and outflow of the pond in site for the length of construction works on site. It is recommended that sufficient baseline readings are made prior to construction commencing to understand the existing turbidity on site particularly in the inflow area as this appeared turbid during the site visit. Anoxic sediments were also located in this area.* • *Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains and drainage ditches.* • *Abstraction of water from watercourses/ponds will not to be permitted.* • *Spill containment equipment shall be available for use in the event of an emergency. The spill containment equipment shall be replenished if used and shall be checked on a scheduled basis. Booms will be placed "ready to be deployed" proximate to any risk areas identified by the ecologist.* • *All site personnel will be trained in the importance of good environmental practices including reporting to the site manager when pollution, or the potential for pollution, is suspected. All persons working on-site will receive work specific induction in relation to surface water management and run off controls. Daily environmental toolbox talks / briefing sessions will be conducted to outline the relevant environmental control measures and to identify any environment risk areas/works.* • *Environmental risks due to construction and operation of the proposed development do potentially exist, particularly in relation runoff, drains that could lead to the watercourse/pond. Ecological supervision will be required during construction works stages. Silt interception measures will need to be in place to ensure that the watercourses are not impacted during works and in particular during the site clearance and reprofiling stages. Landscaping of the areas of the site proximate to the watercourse/pond will take place immediately following any re-profiling where possible, to act as a buffer to protect the watercourse.* • *Materials, plant and equipment shall be stored in the proposed site compound location;*

Table 6. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		• *Plant and equipment will not be parked within 50m of the watercourse at the end of the working day;Hazardous liquid materials or materials with potential to generate run-off shall not be stored within 50m of the watercourse.* • *All oils, fuels and other hazardous liquid materials shall be clearly labelled and stored in an upright position in an enclosed bunded area within the proposed development site compound. The capacity of the bunded area shall conform with EPA Guidelines – hold 110% of the contents or 110% of the largest container whichever is greater;* • *Fuel may be stored in the designated bunded area or in fuel bowsers located in the proposed compound location. Fuel bowsers shall be double skinned and equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages;* • *Smaller quantities of fuel may be carried/stored in clearly labelled metal Jeri cans. Green for diesel and red for petrol and mixes. The Jeri cans shall be in good condition and have secure lockable lids. The Jeri cans shall be stored in a drip tray when not in use. They will not be stored within 50m of the watercourse.* • *Drip trays will be turned upside down if not in use to prevent the collection of rainwater;* • *Waters collected in drip trays will be assessed prior to discharge. If classified as contaminated, they shall be disposed by a permitted waste contractor in accordance with current waste management legal and regulatory requirements;* • *Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained and have no evidence of leaks or drips;* • *No plant used shall cause a public nuisance due to fumes, noise, and leakage or by causing an obstruction;* • *Re-fuelling of machinery, plant or equipment will be carried out in the site compound as per the appointed Construction Contractor re-fuelling controls;* • *The appointed Construction Contractor EERP will be implemented in the event of a material spillage;* • *All persons working will receive work specific induction in relation to material storage arrangements and actions to be taken in the event of an accidental spillage. Daily environmental toolbox talks / briefing sessions will be conducted for all persons working to outline the relevant environmental control measures and to identify any environment risk areas/works.* • *Consultation with Inland Fisheries Ireland will be carried out pre and post works is essential and to be led by the project ecologist.* • *No entry of solids to the associated stream or drainage network during the connection of pipework to the public water system.* • *Landscaping of the Riparian corridor will be carried out to the satisfaction of IFI and the project ecologist.* • *Any works in the vicinity of the pond will be subject to approval of the project ecologist.* **Operational Phase Mitigation** • *A project ecologist will be appointed to oversee completion of all landscape and drainage works.* • *Petrochemical interception will be inspected by the project ecologist to ensure compliance with Water Pollution Acts.* • *Post Construction assessment/compliance with proposed lighting strategy*

Table 6. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		OCMP ***'Site Set-Up and Security*** *The Main Contractor will be required to submit a site layout plan that will detail the proposed location of the site compound. The Contractor will ensure that the site compound will be serviced as required and will be secured with appropriate fencing/hoarding. The site compound will be used as the primary location for the storage of materials, plant and equipment, site offices and worker welfare facilities. As Project Supervisor Construction Stage (PSCS), the Contractor will be responsible for site security and they are to ensure that the site and site compound are adequately secured at all times.* *As with the other construction activities that are being carried out within the Dublin City Council local authority area, activities associated with the construction compounds will be subject to restrictions to the nature and timing of operations so that they do not cause undue disturbance to neighbouring areas and communities. The site layout plan will also include the site perimeter and the proposed detail with regards the hoarding and gate system.'* ***'General Construction Approach*** ***Construction Working Space*** *Construction working space will be set out in the detailed construction management plan at compliance stage. Construction access routes, haul routes and delivery routes to the site are to be agreed with the Engineer/Employer's Representative in advance of works commencing onsite. Any road closures required will be submitted and approved in advance with the local authority. It is the responsibility of the Main Contractor to prepare and submit the road closure application to the local authority in advance of works commencing onsite.'* ***'Hoarding, Site Set-up and Formation of Site Access/Egress*** *The site area will be enclosed with hoarding details of which are to be agreed with DCC. Hoarding panels will be maintained and kept clean for the duration of the works. This will involve erecting hoarding around the proposed site perimeter in line with the finished development extents. The available site footprint will enable the Contractor to set up the site compound within the site boundary. The Contractor will be responsible for the security of the site. The Contractor will be required to:* *•Operate a Site Induction Process for all site staff;* *•Ensure all site staff shall have current 'Safe Pass' cards and appropriate PPE;* *•Install adequate site hoarding to the site boundary;* *•Maintain site security at all times;* *•Install access security in the form of turn-styles and gates for staff;* *•Separate public pedestrian access from construction vehicular traffic'* ***'Construction Noise, Dust and Vibration*** *The Main Contractor will be required to monitor noise, dust and vibration as will be outlined in the planning conditions. The Contractor will establish baselines for noise, dust and vibration in advance of works*

Table 6. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		commencing onsite. As part of their detailed construction management plan, the Contractor will be required to clearly indicate how they plan on monitoring noise, dust and vibration throughout the course of the project. This will be especially critical in relation to the basement construction and associated piling works. The Contractor will also be required to clearly outline the mitigation measures they plan on putting in place to ensure any breaches in the baselines are mitigated. For more details please refer to the 'Outline Resource & Waste Management Plan 'prepared and included in the planning submission.' ***Outline Resource & Waste Management Plan*** *Prevention of Waste* *The primary effort therefore should be to engage in waste prevention and reduce the amount of waste generated in the first place i.e. minimise the resources needed to do the job. Prevention is financially advantageous as it reduces the purchase of construction materials and obviates the need to remove wastes from site. It is important to emphasise the potential for certain purchasing procedures to contribute to areduction in excessive material wastage on site. Examples include:* *•ensuring materials are ordered on an "as needed" basis to prevent over supply to site;* *•purchasing constructionmaterials in shape, dimensions and form that minimises the creation of excessive scrap waste on site;* *•ensuring correct storage and handling of construction materials to minimise generation of damaged materials/waste, e.g. keeping deliveries packaged until they are ready to be used;* *•ensuring correct sequencing of operations; and* *•assigning individual responsibility (through appropriate contractual arrangements) to sub-contractors for the purchase of raw materials and for the management of wastes arising from their activities, thereby ensuring that available resources are not expended in an extravagant manner at the expense of the main contractor.* ***Reuse of Waste*** *Waste material that is generated should be reused on site or salvaged for subsequent reuse to the greatest extent possible and disposal should only be considered as a last resort. Initiatives should be put in place to maximise the efficient use/reuse of materials.* ***Recycling of Waste*** *There are a number of established markets available for the beneficial use of C&D waste:* *•waste timber can be:* *•recycled as shuttering or hoarding, or* *•sent for reprocessing as medium density fibreboard;* *•waste concrete can be utilised as fill material for roads or in the manufacture of new concrete when arising at source; and* *•in addition, the technology for the segregation and recovery of stone, for example, is well established, readily accessible and there is a large reuse market for aggregates as fill for roads and other construction projects.*

Table 6. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		Overall Management of Construction and Demolition Waste *Waste minimisation, reuse and recycling can best be managed operationally by nominating a "Construction and Demolition Waste Manager" to take responsibility for all aspects of waste management at the different stages of the Project.* *This C&D Waste Manager may well be a number of different individuals over the life-cycle of the Project, but in general is intended to be a reliable person chosen from within the Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project Waste Management Plan are delivered and who is assigned the requisite authority to secure achievement of this purpose.* *Specifically, the function of the C&D Waste Manager will be to communicate effectively with colleagues in relationto the aims and objectives for waste management on the Project. The primary responsibility for delivery of the objectives of the Waste Management Plan will fall upon the C&D Waste Manager designated at the demolition/ construction stage. A key objective for the C&D Waste Manager should be to maintain accurate records on the quantities of waste/ surpluses arising and the real cost (including purchase) associated with waste generation and management.* *The preparation, application and documentation of a Project Waste Management Plan should enable all parties -including contractors, designers and competent authorities -to learn from the systematic implementation and assessment of best practice, particularly through the recording of summary information on performance outcomes.* ***'Disposal of Water, Wastewater and Sewage*** *'All site facilities during construction will be located entirely within the site. The facilities will include canteen, toilet block and drying room for all staff/workers. These facilities will be connected to the Local Authority sewage system with local authority approval.'* ***'Water Disposal*** *Throughout the works, all surface water (water from excavations etc.) will be pumped to a holding tank on site. From here the water will be pumped to a series of settlement tanks. These tanks will act as primary and secondary settlement. The settlement tanks will be of sufficient number and size to allow the necessary retention time for solids to settle. The discharge water from the final tank will be routed to the existing surface water system with approval from the local authority. Visual checks of the pumping and settlement system will be carried out on a routine basis.'* ***'Control of Fuels and Lubricants*** *In order to provide fuel to the relevant items of plant on site, a certified double skinned metal fuel tank with integrated pump, delivery hose, meter, filter and locking mechanism will be situated in a secure area on the construction site. It will be situated within a bund. This tank will be certified for lifting when full. Sand piles and emergency clean up spill kits will*

Table 6. Mitigation Measures.		
Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		be readily available in the event of a fuel spill. A hazardous bin will also be available to contain any spent sand or soak pads. New metal gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site. Drip trays will be used under items of small plant at all times. Any waste oils etc. contained in the drip trays or the bunded area will be emptied into a waste oil drum, which will be stored within the bund. Metal gerry cans and any other items of fuel containers will be stored in certified metal bunded cabinets. Any gas bottles will be stored in a caged area at a secure location on the site. All will be properly secured at point of work. ***'Construction Noise, Dust and Vibration*** *The Main Contractor will be required to monitor noise, dust and vibration as will be outlined in the planning conditions. The Contractor will establish baselines for noise, dust and vibration in advance of works commencing onsite. It is noted that a baseline noise survey has been undertaken at the development site by AWN Consulting Limited to determine the existing environment at the site. Please refer to the 'Noise & Vibration Impact Assessment for Planning' included in the planning application for* *details. As part of their detailed construction management plan, the Contractor will be required to clearly indicate how they plan on monitoring noise, dust and vibration throughout the course of the project. This will be especially critical in relation to the basement construction and associated piling works. The Contractor will also be required to clearly outline the mitigation measures they plan on putting in place to ensure that permissible construction noise, dust and vibration levels for a development of this scale (as directed by Dublin City Council by way of planning condition) are not exceeded. For more details please refer to the 'Outline Resource & Waste Management Plan' by PUNCH Consulting Engineers and the 'Noise & Vibration Impact Assessment for Planning' by AWN Consulting Limited prepared and included in this planning submission.'* ***Air Quality*** *There is the potential for a number of emissions to the atmosphere during the bulk excavation/demolition stage of the project. In particular, activities may generate quantities of dust. Construction vehicles, generators etc., will also give rise to some exhaust emissions. Vehicular movements to and from the site will make use of existing roads. It is estimated that peak construction HGV movements will be 6HGV'sper hour. Considering the existing traffic levels in the area, the likely air quality impact associated with construction traffic is not significant. A dust minimisation plan will be formulated for the bulk excavation/demolition and construction phase of the project, as construction activities are likely to generate dust emissions. The potential for dust to be emitted depends on the type of activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the potential source and any impacts from dust deposition will typically be within several hundred metres of the construction area. In order to ensure that no dust nuisance occurs, a series of measures will be implemented.* *Roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface. Furthermore, any road that has the potential to give rise to fugitive dust*

Table 6. Mitigation Measures.		
Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		must be regularly watered, as appropriate, during dry and/or windy conditions. Vehicles delivering material with dust potential both on and off the site shall be enclosed or covered with tarpaulin at all times to ensure no potential for dust emissions. All vehicles exiting the site shall make use of a wheel wash facility, if required, prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Public roads outside the site shall be regularly inspected for cleanliness and cleaned as necessary. Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind. Water misting or sprays shall be used as required particularly dusty activities are necessary during dry or windy periods. At all times, the procedures put in place will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, satisfactory procedures will be implemented to rectify the problem. The dust minimisation plan shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practise and procedures.'
Bats (International Protection)	• Lighting Impacts	• Lighting at all stages will be done sensitively on site in line with Bat Lighting Guidelines with no direct lighting of treelines or hedgerows. • Post Construction assessment/compliance with proposed lighting strategy. • A pre-construction assessment of trees to be felled will be carried out. If bats are found during the pre construction inspection NPWS will be informed, a Derogation Licence will be applied for and any conditions imposed complied with. • A post construction lighting assessment will be carried out by the project ecologist.
Amphibians	• Death/injury	• Pre-construction inspection for frogs and newts. • Protection of the pond and watercourse from dust, surface water and pollution (See above mitigation)
Mammals	• Death/injury • Destruction of resting/breeding places • Disturbance	• Badgers may construct setts in the intervening period between the initial survey and the commencement of construction. A pre-construction inspection will be conducted to ensure that there are no badger setts on site. If badgers are found during the pre construction inspection NPWS will be informed and any conditions imposed complied with. • Lighting at all stages should be done sensitively on site with no direct lighting of treelines. • Post Construction assessment/compliance with proposed lighting strategy.
Birds	• Death/injury • Destruction of resting/breeding places • Disturbance	• "Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2023) in relation bird nesting. Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. • 20 Nest boxes placed on site to compensate for nesting resource loss resource loss due to the removal of existing vegetation. • Planting will provide suitable cover for nesting birds and encourage insect diversity that would sustain birds. • During construction light falling upon any areas of benefit to birds such will not exceed 3 lux to ensure that resting and nesting species are not unnecessarily disrupted. All lighting during construction phase will be to the

Table 6. Mitigation Measures.		
Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		satisfaction of the project ecologist, will be point inwards to the site and will be downward facing so as not to impact on surrounding habitats.
Plants	• Invasive Species	• Invasive plant species are present on site. Prior to commencing construction on site an invasive species management plan will be developed and implemented to control the three cornered leek (*Allium triquetrum*) and curly waterweed (*Lagarosiphon major*) on site.

Figure 24. *Location of silt fences*

Silt Fences along hoarding line

5. Adverse Effects likely to occur from the project (post mitigation)

Standard construction and operational mitigation measures are proposed. These would ensure that water entering the surface water drainage network and pond is clean and uncontaminated. However, early implementation of ecological supervision and consultation with Inland Fisheries Ireland, prior initial mobilisation and enabling works is seen as an important element to the project, particularly in relation to the implementation of surface water runoff, dust mitigation, bat, amphibian, mammal and avian mitigation.

With the successful implementation of standard mitigation measures to limit surface water impacts on the watercourses, biodiversity mitigation/supervision, no significant impacts are foreseen from the construction or operation of the proposed project on terrestrial or aquatic ecology. Residual impacts of the proposed project will be localised to the immediate vicinity of the proposed development.

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on terrestrial biodiversity, aquatic biodiversity and bats through the application of the standard construction and operational phase controls as outlined above. In particular, mitigation measures to ensure compliance with Water Pollution Acts and prevent silt and pollution entering the pond/watercourse satisfactorily address the potential impacts on downstream biodiversity and European sites. An increase in disturbance would be seen on site and mitigation measures will be carried out to ensure that bats continue to roost and forage and breeding waterbirds are maintained on site. No significant adverse impacts on the conservation objectives of European sites are likely in the absence of mitigation measures outlined above.

It is essential that these measures outlined are complied with, to ensure that the proposed development does not have “downstream” environmental impacts and significant impacts on biodiversity on site.
Potential Residual Impacts: Low adverse / local / Negative Impact / Not significant / long term.

6. Residual Impacts and Conclusion

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on the sensitive receptors through the application the standard construction and operational phase controls. The overall impact on the ecology of the proposed development will result in a Low adverse / local / Negative Impact / Not significant / long term on the ecology of the area and locality overall. This is primarily as a result of the loss of terrestrial habitats on site, supported by the creation of additional biodiversity features including sensitive landscaping and lighting strategy.

7. Site Information

a) Roles and Responsibilities

The roles and responsibilities of the personnel involved in the construction works are outlined in Table 3. However, it will be necessary that all personnel involved in the project are responsible for ensuring the requirements of the CEMP are followed.

Table 3. Roles and responsibilities of the personnel involved in the development project

Role	Roles and responsibilities
Applicant	1 Celbridge West Land Limited will have overall responsibility for the compliance with the CEMP. They will appoint staff and contractors to deliver the various elements of the development and oversee works carried out on site.
Contractor	Contractors will be hired to carry out all works on site. Works carried out will be overseen by 1 Celbridge West Land Limited and on a day to day basis by the site manager. All contractors on site are required to comply with all elements of the CEMP.
Site Manager	The Site Manager will be responsible for the day to day management of the site including compliance of all personnel with the CEMP, in addition to Health and Safety, Environmental and Quality elements. The Site Manager is responsible for ensuring that all people on-site are provided with relevant information concerning environmental protection. The Site Manager will be responsible for overseeing any environmental monitoring programmes, carrying out site environmental inspections and audits as necessary, and will co-ordinate the environmental monitoring programme. All records of incidents and environmental issues will be collated and maintained by the site manager. The Site Manager will also be responsible for reviewing all risk assessment method statements and ensuring an appropriate programme of tool box talks are developed and effectively communicated. The site manager will be responsible for overall waste management issues arising from the project. These would include: Implementation and monitoring of waste minimisation, segregation, and safe disposal measures, Dissemination of waste reduction and waste management procedures to all relevant personnel on site.
Monitoring	Noise and Dust specialists will be appointed to oversee mitigation measures on site and to act as liaison with the County Council.
All Staff and Subcontractors	All staff and subcontractors have the responsibility to comply with the CEMP including environmental procedures on site to minimise environmental impacts, avoid pollution on-site, including noise and dust, and to respond quickly and effectively to an incident to avoid or limit environmental impacts. All incidents must be reported to the Site Manager immediately.

b) Training and Raising Awareness

As part of site induction for all personnel, a copy of the CEMP will be provided to and discussed with all onsite staff. This would include discussing the elements outlined in the CEMP including sensitive receptors on site and measures in place to mitigate impacts on these receptors.

As part of tool box talks relevant elements of the CEMP should be discussed particularly when working in areas with sensitive receptors e.g. near the pond, watercourse and woodland, or, where there is potential to impact sensitive receptors on site. Training records of all personnel on site should be reviewed and copies held centrally. This is particularly important for those operating excavators, other heavy machinery and with environmental certification to deal with incidents on site.

c) Reporting

The Site Manager / Project Manager is responsible for collating and maintaining all reporting. This would include all environmental and compliance documentation.

d) Environmental Targets and Objectives

Targets

- Zero pollution incidents;
- Segregation of site waste to include timber, general waste and other materials;
- Completion of environmental checklists as required;
- Fuel spill kit to be present on each site at all times;
- Maintain all waste licences and waste transfer notes for all waste movements including contractors;

Reporting Specific Objectives

- Environmental incidences to be reported to Site Manager without delay;
- The following documentation will be reported to 1 Celbridge West Land Limited on a 4 weekly basis:
    - Environmental incidents and nonconformities raised, including nature, status, corrective and preventive actions and potential for statutory intervention;
    - Key environmental issues raised by others;
    - Significant environmental incidents;
    - Complaints and the current status of those complaints;
    - Actions or interventions undertaken by enforcement organisations;

Site Specific Objectives

- Reduce waste, water and energy use on the project including within all of the site offices;
- Ensure that everyone comply with the environmental requirements in the contract;
- Seek ways to incorporate environmental opportunities within the design;
- Seek ways to reduce the carbon footprint of the contract;
- Reduce the amount of construction waste and excavated material generated which goes to landfill;
- Zero pollution incidents onsite;
- Recycle construction waste where possible;
- Maximise beneficial reuse of the materials: and
- Ensure that all waste documentation (waste transfer dockets, permits etc.) is available for inspection at the site office / in head office.

To ensure the CEMP remains 'fit for purpose' for the duration of the project it should be reviewed prior to commencement of the relevant phase of development and, if necessary, updated during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project environmental commitments. The environmental review would consider past performance from inspections, audit report and monitoring data, plan actions required to mitigate forthcoming risks and disseminate best practice.

e) Environmental Complaints and Incidents

The site manager will develop and implement an appropriate queries / complaints procedure. Records will include full details of the concerns expressed and ensure that a formal assessment is commenced of the reported concern. The site manager will also discuss complaints with 1 Celbridge West Land Limited and oversee an initial response to the person who has submitted the complaint/concern confirming its receipt.

An investigation to assess the issue of concern will be carried out and decisions made to see what corrective and/or preventive action, or further investigation is necessary. With overall responsibility for complaints, the site manager will respond within a reasonable timescale and maintain records of all correspondence. If significant corrective action and external stakeholder involvement is required, the site manager / project manager will oversee all elements of the process.

Complaints that may be received will be logged, assessed and appropriate action taken as soon as practical. The construction company will be actively seeking liaison with all parties throughout the construction periods. It will be critical to the success of the project that key issues are properly addressed from the outset to create a good working relationship and an integrated team approach to resolving potential issues before they arise.

In the event of spillages or other incident, steps will be taken to prevent environmental pollution, for example through protection of drains by use of drain covers or booms, use absorbent granules following and oil / chemical spill, and turning off equipment or other sources of noise or dust.

Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the corporation and relevant authorities and recorded in the site environmental register.

8. Waste Management

An Outline Resource & Waste Management Plan has been prepared by Punch Consulting Engineers to accompany this planning application. As outlined in the report "*The purpose of the Construction and Demolition Waste Management Plan (C&D WMP) is to provide the information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with current legal and industry standards including the Waste Management Act 1996 and associated Regulations, Litter Act 1997 and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021*."

This section was prepared in accordance with the 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects' for the planning application of the proposed development and represents an 'Outline Resource & Waste Management Plan' for the proposed construction works at the site. The following information is contained within the Outline Resource & Waste Management Plan:

Best Practice

"*The management of construction and demolition waste should reflect the waste management hierarchy, with waste prevention and minimisation being the first priority succeeded by reuse and recycling.*

During site clearance and construction works, there are numerous opportunities for the beneficial reuse and recycling of the demolition materials. The subsequent use of recycled materials in construction works also reduces the quantities of waste which ultimately needs to be consigned to landfill sites."

Prevention of Waste

"*The primary effort therefore should be to engage in waste prevention and reduce the amount of waste generated in the first place i.e. minimise the resources needed to do the job.*

Prevention is financially advantageous as it reduces the purchase of construction materials and obviates the need to remove wastes from site. It is important to emphasise the potential for certain purchasing procedures to contribute to a reduction in excessive material wastage on site.

Examples include:

• ensuring materials are ordered on an "as needed" basis to prevent over supply to site;

• purchasing construction materials in shape, dimensions and form that minimises the creation of excessive scrap waste on site;

• ensuring correct storage and handling of construction materials to minimise generation of damaged materials/waste, e.g. keeping deliveries packaged until they are ready to be used;

• ensuring correct sequencing of operations; and

• assigning individual responsibility (through appropriate contractual arrangements) to sub-contractors for the purchase of raw materials and for the management of wastes arising from their activities, thereby ensuring that available resources are not expended in an extravagant manner at the expense of the main contractor."

Reuse of Waste

Waste material that is generated should be reused on site or salvaged for subsequent reuse to the greatest extent possible and disposal should only be considered as a last resort. Initiatives should be put in place to maximise the efficient use/reuse of materials.

Recycling of Waste

"*There are a number of established markets available for the beneficial use of C&D waste:*

• waste timber can be:

• recycled as shuttering or hoarding, or

• sent for reprocessing as medium density fibreboard;

• waste concrete can be utilised as fill material for roads or in the manufacture of new concrete when arising at source; and

• in addition, the technology for the segregation and recovery of stone, for example, is well established, readily accessible and there is a large reuse market for aggregates as fill for roads and other construction projects."

Overall Management of Construction and Demolition Waste

"*Waste minimisation, reuse and recycling can best be managed operationally by nominating a "Construction and Demolition Waste Manager" to take responsibility for all aspects of waste management at the different stages of the Project.*

This C&D Waste Manager may well be a number of different individuals over the life-cycle of the Project, but in general is intended to be a reliable person chosen from within the Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project Waste Management Plan are delivered and who is assigned the requisite authority to secure achievement of this purpose.

Specifically, the function of the C&D Waste Manager will be to communicate effectively with colleagues in relation to the aims and objectives for waste management on the Project. The primary responsibility for delivery of the objectives of the Waste Management Plan will fall upon the C&D Waste Manager designated at the demolition/ construction stage. A key objective for the C&D Waste Manager should be to maintain accurate records on the quantities of waste/ surpluses arising and the real cost (including purchase) associated with waste generation and management.

The preparation, application and documentation of a Project Waste Management Plan should enable all parties - including contractors, designers and competent authorities - to learn from the systematic implementation and assessment of best practice, particularly through the recording of summary information on performance outcomes."

9. Emergency Procedures

The risk of spilling fuel is at its greatest during refuelling of plant. All refuelling of major plant and equipment will take place on an impermeable surface within a designated area of the site compound, greater than 10m away from any drains. The vehicles and equipment will not be left unattended during refuelling. Spill kits and hydrocarbon absorbent packs will be stored in this area and operators will be fully trained in the use of this equipment.

Diesel pumps and similar equipment will be placed on drip trays to collect minor spillages or leaks. All equipment must be checked regularly.

All materials will be stored in accordance with the manufacturer's instructions. Epoxy mortars and chemical based materials/sealants will be stored in secure containers with relevant warnings shown on the storage unit. Spill kits will be located adjacent to storage areas and used in the event of spillages.

10. Invasive Species

Invasive species (Three cornered leek) were noted on site. The invasive species are located within the tree protection zone of the woodland and soil from these areas will not be removed. However, the invasive species will be treated on site.

11. Relevant Legislation

The key legislation which will be adhered to during the proposed project are defined as follows:

- Water Framework Directive (2000/60/EC);
- Local Government (Water Pollution) Act, 1977–1990;
- Water Quality (Dangerous Substances) Regulations, 2000;

- Arterial Drainage Act, 1945;
- S.I. No. 41 of 1999 Protection of Groundwater Regulations, resulting from EU Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (the Groundwater Directive);
- S.I. No. 249 of 1989 Quality of Surface Water Intended for Abstraction (Drinking Water),resulting from EU Directive 75/440/EEC concerning the quality required of surface water HES Report No.: P1293 FINAL - Rev 0 Report Date: 31st August 2015 intended for the abstraction of drinking water in the Member States (repealed by 2000/60/EC in 2007);
  S.I. No. 439 of 2000 Quality of Water intended for Human Consumption Regulations and S.I. No. 278 of 2007 European Communities (Drinking Water No. 2) Regulations, arising from EU Directive 98/83/EC on the quality of water intended for human consumption (the Drinking Water Directive) and WFD 2000/60/EC (the Water Framework Directive); S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations; and, S.I. No. 9 of 2010 European Communities Environmental Objectives (Groundwater) Regulations 2010.
- The Fisheries Consolidation Act 1959 (as amended).
- The Fisheries (Amendment) Act 1997.
- The Inland Fisheries Act 2010.
- Council Directive 78/659/EEC on the Quality of Freshwaters Needing Protection or Improvement in Order to Support Fish Life.
- The European Communities (Quality of Salmonid Waters) Regulations 1988 (S.I. 293 of 1988).
- The Wildlife Act 1976.
- The Wildlife (Amendment) Act 2000.
- The Local Government (Water Pollution) Act 1977.
- The Local Government (Water Pollution) Amendment) Act 1990.
- The Habitats Directive (92/43/EEC).
- The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).
- The Water Framework Directive (2000/60/EC).
- The European Communities (Water Policy Regulations 2003 (S.I. 722 of 2003).
- The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272 of 2009).
- The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations(2009) (S.I. 296 of 2009).

12. Monitoring of Pond and Watercourse

A project Ecologist will be appointed to oversee the project and mitigation measures, prior to the commencement of works on site. During the construction works there will be ongoing monitoring of adjacent waterbodies for any visible signs of pollution (suspended solids, silt, hydrocarbon sheen and or other products). If any evidence of pollution is observed, then immediate corrective action will be taken to eliminate the source of the pollution. The project ecologist will be consulted to oversee installation of mitigation for the works and consultation with Inland Fisheries Ireland and County Council in relation to environmental matters. Twice daily checks of turbidity will be made on site from the commencement of site works to the completion of enabling works and the data sent to IFI if requested. No works will be carried out within the woodland or pond without prior consultation with the project ecologist.

13. Conclusions

This CEMP has been submitted to show 1 Celbridge West Land Limited's commitment to Environmental Management of the proposed project. This CEMP has outlined the environmental principles that will be adopted to ensure that potential environmental impacts and health and safety issues associated with the construction processes are effectively managed, minimised and / or eliminated. The plan details the roles and responsibilities of the applicant, the site manager, project manager and site workers and how these controls are to be implemented. The CEMP will require regular updating and monitoring throughout the construction period to ensure potential risks are adequately managed throughout the construction works.