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Marine & Environmental Consultancy

Outline Construction Environmental Management Plan (CEMP) for the Proposed Construction of a Mixed-Use Large Scale Residential Development (LRD) at Kilbride, Arklow, Co. Wicklow.

22nd May 2025

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.
On behalf of: Certain Assets of Dawnhill and Windhill Limited.

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Document Control Sheet			
Client	Certain Assets of Dawnhill and Windhill Limited		
Project	Outline Construction Environmental Management Plan (CEMP) for the Proposed Construction of a Mixed Use Large Scale Residential Development (LRD) at Kilbride, Arklow, Co. Wicklow.		
Report	Outline Construction Environmental Management Plan (CEMP)		
Date	22nd May 2025		
Version	Author	Reviewed	Date
Planning	Gayle O'Farrell	Bryan Deegan	22nd May 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 Certain Assets of Dawnhill and Windhill Limited and it's appointed contractors during the demolition, construction, and development of a site at Kilbride, Arklow, Co. Wicklow. This CEMP is being submitted in tandem, and should be read in conjunction, with the Appropriate Assessment (AA) Screening report and Ecological Impact Assessment (EcIA) for the proposed development.

The purpose of the CEMP is to provide details of program of works, environmental sensitivities, impacts, mitigation, 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 Avoca River and Arklow Town Marsh.

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 Avoca River and the Arklow Town Marsh, of which the proposed boardwalk will traverse over. 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.

1. Introduction

Outline of CEMP

Altemar Ltd. has been commissioned by Certain Assets of Dawnhill and Windhill Limited to prepare an outline Construction Environmental Management Plan (CEMP) for the Proposed Construction of a Mixed Use Large-Scale Residential Development (LRD) at Kilbride, Arklow, Co. Wicklow.

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 Avoca River and the Arklow Town Marsh. 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

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. *Monitoring of the Avoca River and Arklow Town Marsh*
14. *Conclusions*

2. Project Description

Project outline and Site Context

The proposed mixed use Large scale Residential Development will result in the demolition of an existing dwelling, outbuilding and agricultural shed and the construction of a local and 666 No. residential units with a mix of semidetached, detached, and terraced houses along with duplex apartments and apartments. These will comprise 1, 2, 3 and 4 bed houses. All residential units will have associated private open space facing north/ south/ east/ west. The proposal will also deliver 3 No. retail units, 3 No. community/ medical units and 1 No. creche unit.

New pedestrian/ cyclist link connecting into Arklow Town Centre is proposed via a new boardwalk and bridge across the marsh and over the Avoca River adjoining the existing greenway and the Main Street. A new road is also proposed connecting to the north to Kilbride Road. Alterations to the surrounding road network to provide a section of the regional road and upgrades to provide pedestrian facilities are also included. Vehicular access to the site will be from the new proposed regional road. The development will also provide for landscaping, public open spaces and all associated site development works to enable the development including boundary treatments, attenuation storage area and other service provision including ESB substation.

Altemar has been involved in the project since initial concept stage and has provided ecological input into the design of the project. Extensive surveys have been carried out including within the Arklow town Marsh. The proposed site outline, site location and site plans are demonstrated in Figures 1-3.

Landscape

The landscape strategy for the proposed development has been prepared by NMP Landscape Architecture to accompany this planning application. A summary of the landscape design is as follows:

'Landscape design proposals for Kilbride Residential Development are driven by ecological influences in response to the sites context and relationship with surrounding character. Experienced sequentially as routes of discovery and exploration which weave themselves across the lands revealing a sensorium of spatial typologies.

The landscape design has been planned in such a way so as to maximise the site's orientation and anticipated microclimate to create habitable, quality spaces which respond to human comfort, encouraging residents and public into a safe and surveilled space. 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 connecting existing surrounding ecological stands with continuous tree canopies for bat and bird roosting and provision of specific plants for wildlife to forage through.

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 neighbourhood.'

The proposed landscape general arrangement plan is demonstrated in figure 5.

Figure 1. *Site outline and location context.*

Figure 2: *Site outline*

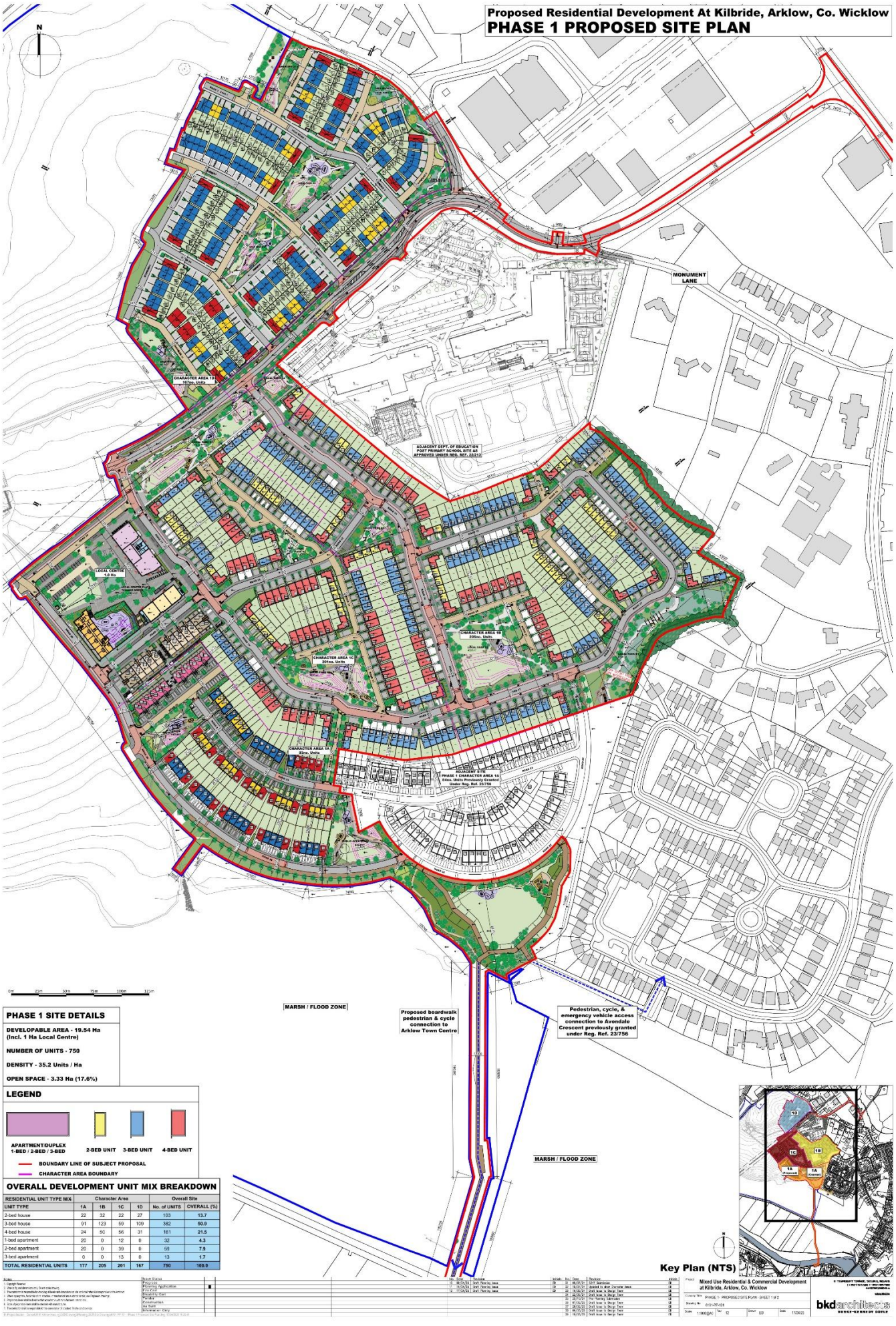


Figure 2. *Proposed Site Plan- sheet 1*

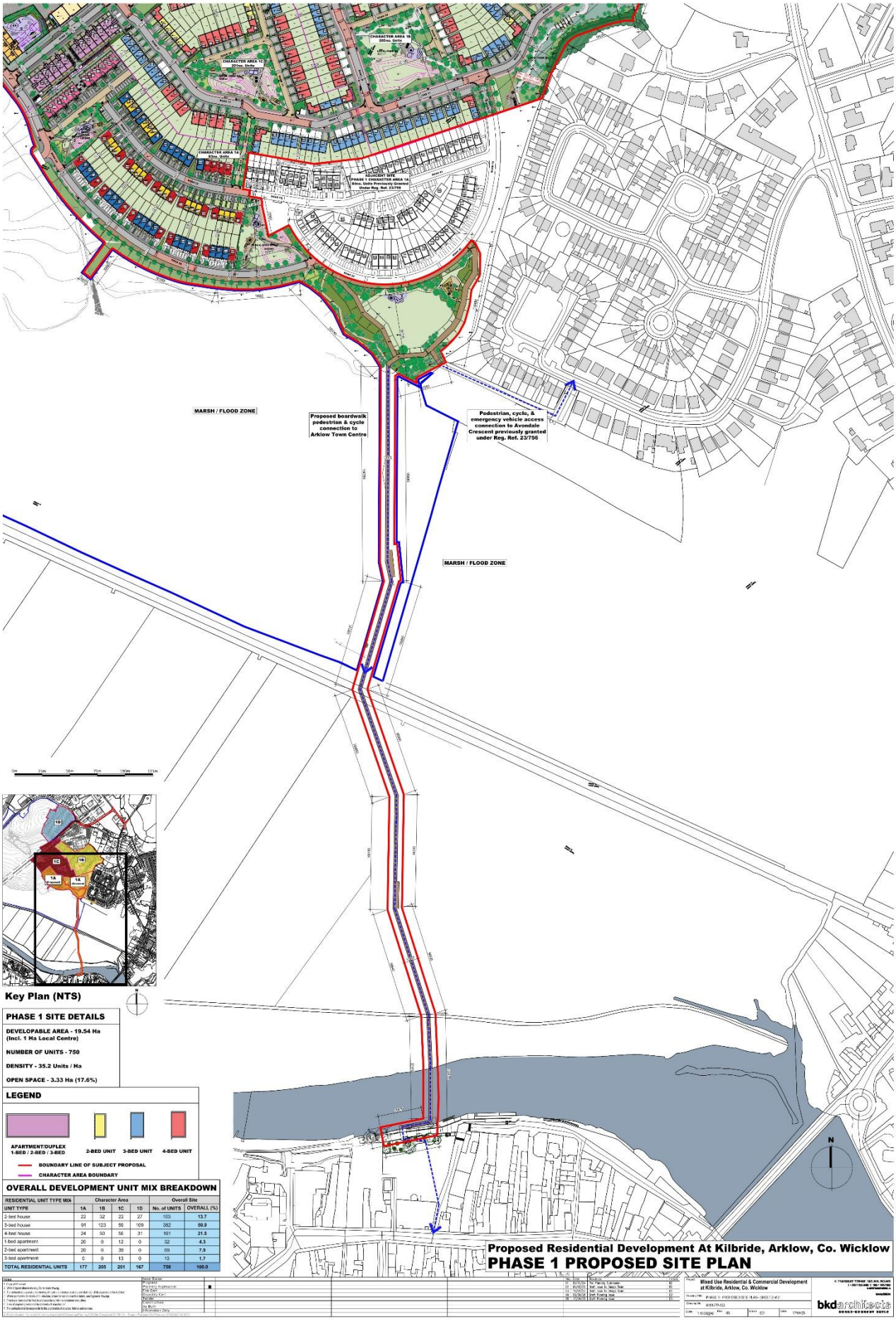


Figure 4. *Proposed Site Plan- sheet 2*

Figure 5. *Landscape Plan*

Arboricultural Assessment

An Arboricultural Impact Assessment Report was composed by Green Tree Arboricultural Consultants to accompany this planning application. This report details the following arboricultural impact of the proposed development:

'A total of 70 trees, 11 hedgerows and 1 group of riparian trees were assessed as part of the accompanying BS:5837 Arboricultural Report'

'The majority of the trees assessed were deemed to be trees of medium or low quality and are classified as category B or C trees. The majority of the trees are part of the older hedgerows that run throughout the site.

There are 4 category B trees, two Sycamore and two Oak, 1 category B group of riparian trees (GO1) and 29 category C are proposed for removal due to being in direct conflict with the proposed design layout.

There are 20 category U trees recommended for removal based on their physiological and structural condition. Of the 20 trees ten are Ash with seven heavily infected with Ash Dieback. The trees T379 through to T384 and the trees T447 and T448 have all been severely 'topped' or had half their canopies removed due to the presence of overhead ESB wires.

There are 7 hedgerows to be removed and sections of the hedgerows H1, H8, H15 and G01.

All trees identified to be removed are highlighted in red in the tree protection plan.

Of the 16 individual trees to be retained on site there are six category B and thirteen category C trees. Five of the six category B trees are important mature Oak trees and there are six category C Oak trees retained. Only five Oak trees are to be removed from the site due to conflict with the proposed design layout.'

The Tree Protection Plans are demonstrated in Figures 6-8.

Lighting

A Public Lighting Report has been prepared by Fallon Design Ltd. to accompany this planning application. This report details the following lighting design details for the proposed development:

'The design uses the following:
183 x Metro Streetlight LED 3000K with 0/5 degree tilt with the following wattages, optics and mounting arrangements:
15 x 27w Forward Throw A Optic (All single head) mounted on 6m columns to light the roads and paths
124 x 27w Street Optic R03 (All single head) mounted on 6m columns to light the roads and paths
29 x 68w Street Optic R03 (All single head) mounted on 8m columns to light the link road (Note: We may need confirmation on the extents of the link road as it wasn't clear to me from the drawings for the sections within the estate).
14 x 36w Symmetric Optic (7 x twin head) mounted on 7 x 6m columns in the carpark
1 x 36w Forward Throw A optic mounted on a 6m column at the carpark entrance

47 x City Streetlight 36w LED 3000K Street Optic R03 with internal black shield mounted on 6m columns with 0/5 degree tilt at the open areas / pathways
5 x City Streetlight 27w LED 3000K Forward Throw B Optic with internal black shield mounted on 6m columns with 0/5 degree tilt at the open areas / pathways

Light levels are as follows:
Road & Paths – Section 1 : 8.7 lux average, 1.7 lux minimum (0.20 uniformity).
Road & Paths – Section 2 : 7.5 lux average, 1.5 lux minimum (0.20 uniformity).
Road & Paths – Section 3 : 8.3 lux average, 1.6 lux minimum (0.20 uniformity).
Road & Paths – Section 4 : 8.0 lux average, 1.5 lux minimum (0.20 uniformity).
Road & Paths – Section 5 : 9.0 lux average, 1.7 lux minimum (0.20 uniformity).
Road & Paths – Section 6 : 9.8 lux average, 1.9 lux minimum (0.20 uniformity).

These levels comply with IS EN 13201-2:2015/BS 5489-1:2020 for residential roads and paths - Class P3 (7.5 lux average 1.5 lux minimum).

Link Road – Section 1 : 10.9 lux average, 2.1 lux minimum (0.20 uniformity).
Link Road – Section 2 : 10.7 lux average, 2.1 lux minimum (0.20 uniformity).
These levels comply with IS EN 13201-2:2015/BS 5489-1:2020 for roads and paths - Class P2 (10.0 lux average, 2.0 lux minimum).

Carpark : 10.6 lux average, 2.6 lux minimum (0.25 uniformity). This complies with IS EN 12464-2:2014 for parking areas – medium traffic (10 lux average, 0.25 uniformity).'

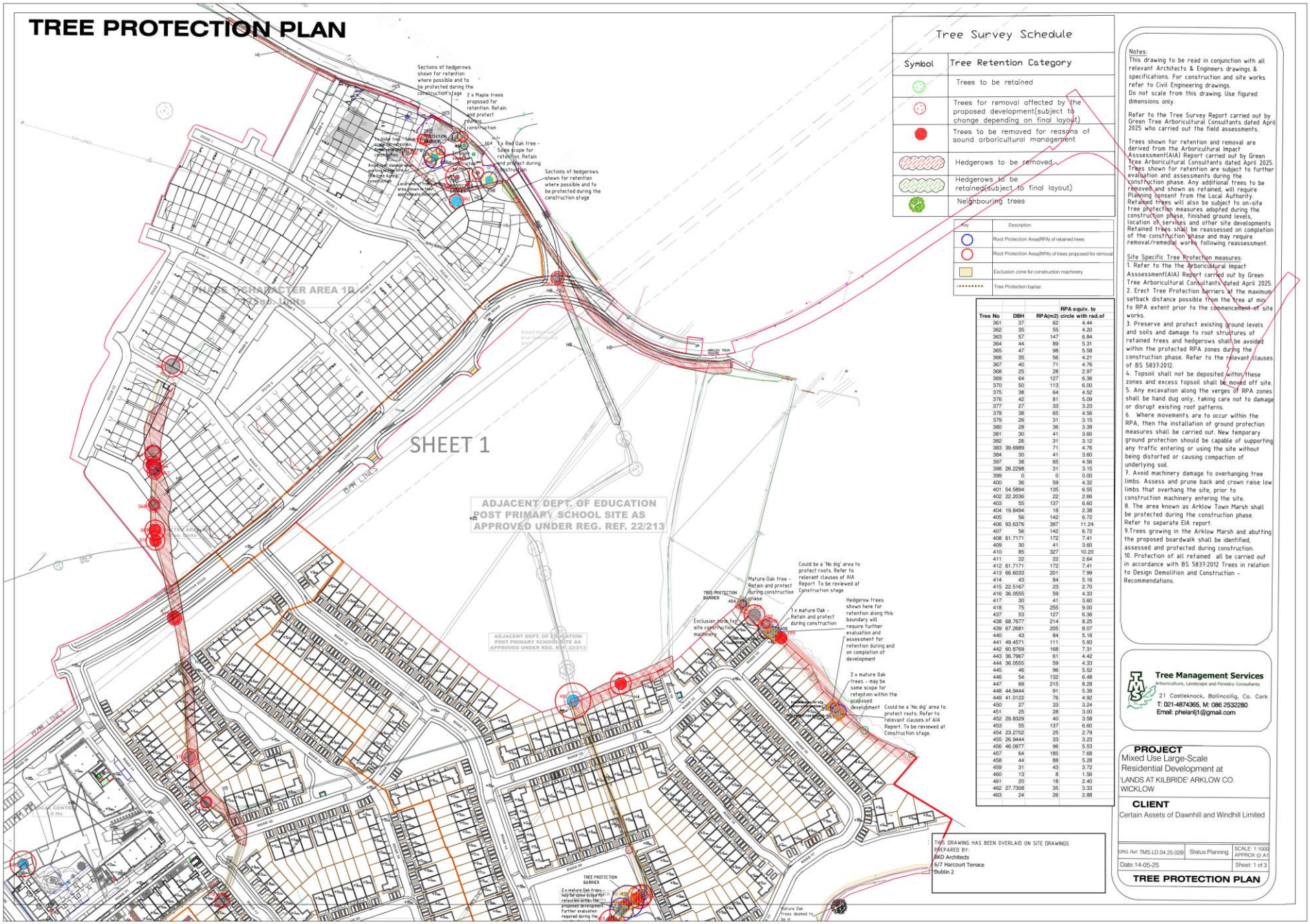
Additionally, the following ecological considerations have been implemented into the proposed lighting design:

'Careful consideration has been given to the design of Public Lighting with regard to the existing natural habitat and the wildlife. The chosen luminaire Veelight Metro Series has a full cut off lantern type, that offers with a G6 Glare rating and no upward light making it dark sky friendly.

The public lighting design has been developed in conjunction with the ecological impact assessment carried out for this application.

- *An inbuilt multi step dimming program within this luminaire allows for night time hours to be dimmed by up to 25%. This means during peak hours of nocturnal foraging, feeding and activity the adjacent public lighting can be further designed to minimize impact on the local wildlife.*
- *The colour rendering of the selected light fitting is 3000k making the LED fittings a warmer light, helping to further minimize the impact on the local wildlife.*
- *Greater energy savings will also result using the inbuilt multi-step dimming program during late hours of darkens along the public lighting spaces.*
- *Unnecessary light spill is controlled through a combination of directional lighting and luminaire optics design. - No floodlighting will be used on the scheme.*
- *The design is in reference to the Bats and Lighting in the UK*
- *Bats and the Built Environment Series (Institute of Lighting Professionals, September 2011;*
- *Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011.*
- *Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland);'*

The proposed public lighting layout (sheets 1-5) is demonstrated in Figures 9-13.



Tree No	DBH	RPA(m2)	RPA equiv. to circle with rad.of
361	37	62	4.44
362	35	55	4.20
363	57	147	6.84
364	44	89	5.31
365	47	98	5.58
366	35	56	4.21
367	40	71	4.76
368	25	28	2.97
369	64	127	6.36
370	50	113	6.00
375	38	64	4.52
376	42	81	5.09
377	27	33	3.23
378	38	65	4.56
379	26	31	3.15
380	28	36	3.39
381	30	41	3.60
382	26	31	3.12
383	39.6989	71	4.76
384	30	41	3.60
397	38	65	4.56
398	26.2298	31	3.15
399	0	0	0.00
400	36	59	4.32
401	54.5894	135	6.55
402	22.2036	22	2.66
403	55	137	6.60
404	19.8494	18	2.38
405	56	142	6.72
406	93.6376	397	11.24
407	56	142	6.72
408	61.7171	172	7.41
409	30	41	3.60
410	85	327	10.20
411	22	22	2.64
412	61.7171	172	7.41
413	66.6033	201	7.99
414	43	84	5.16
415	22.5167	23	2.70
416	36.0555	59	4.33
417	30	41	3.60
418	75	255	9.00
437	53	127	6.36
438	68.7677	214	8.25
439	67.2681	205	8.07
440	43	84	5.16
441	49.4571	111	5.93
442	60.8769	168	7.31
443	36.7967	61	4.42
444	36.0555	59	4.33
445	46	96	5.52
446	54	132	6.48
447	69	215	8.28
448	44.9444	91	5.39
449	41.0122	76	4.92
450	27	33	3.24
451	25	28	3.00
452	29.8329	40	3.58
453	55	137	6.60
454	23.2702	25	2.79
455	26.9444	33	3.23
456	46.0977	96	5.53
457	64	185	7.68
458	44	88	5.28
459	31	43	3.72
460	13	8	1.56
461	20	18	2.40
462	27.7308	35	3.33
463	24	26	2.88

Figure 6. *Tree Protection Plan (Sheet 1)*

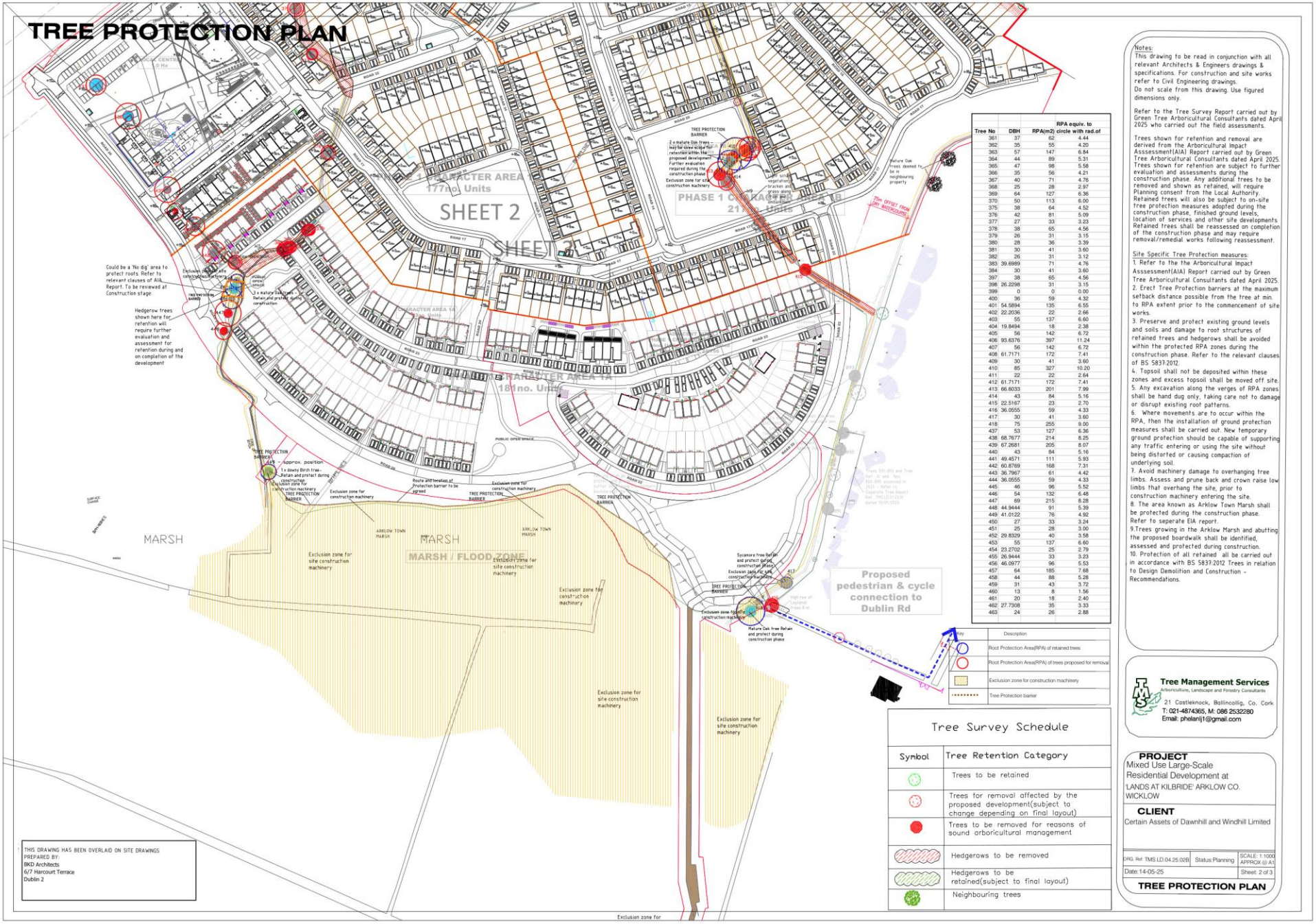
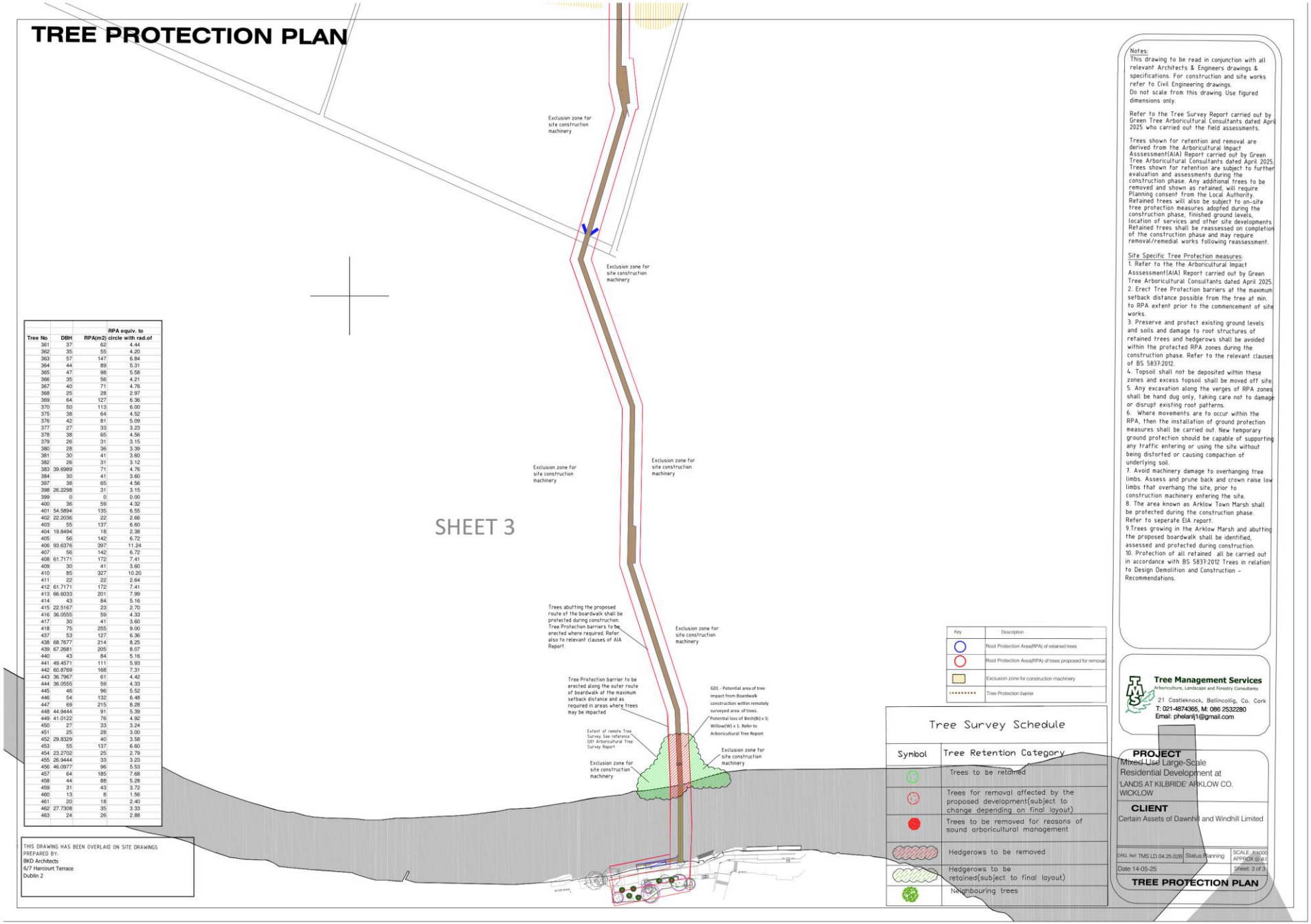


Figure 7. *Tree Protection Plan (Sheet 2)*



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368	25	28	2.97
369	64	127	6.36
370	50	113	6.00
375	38	64	4.52
376	42	81	5.09
377	27	33	3.23
378	38	65	4.56
379	26	31	3.15
380	28	36	3.39
381	30	41	3.60
382	26	31	3.12
383	39.6989	71	4.76
384	30	41	3.60
397	38	65	4.56
398	26.2298	31	3.15
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400	36	59	4.32
401	54.5894	135	6.55
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403	55	137	6.60
404	19.8494	18	2.38
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410	85	327	10.20
411	22	22	2.64
412	61.7171	172	7.41
413	66.6033	201	7.99
414	43	84	5.16
415	22.5167	23	2.70
416	36.0555	59	4.33
417	30	41	3.60
418	75	255	9.00
437	53	127	6.36
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459	31	43	3.72
460	13	8	1.56
461	20	18	2.40
462	27.7308	35	3.33
463	24	26	2.88

Figure 8. *Tree Protection Plan (Sheet 3)*

Figure 9. *Public Lighting Layout (Sheet 1)*

Figure 10. *Public Lighting Layout (Sheet 2)*

Figure 11. *Public Lighting Layout (Sheet 3)*

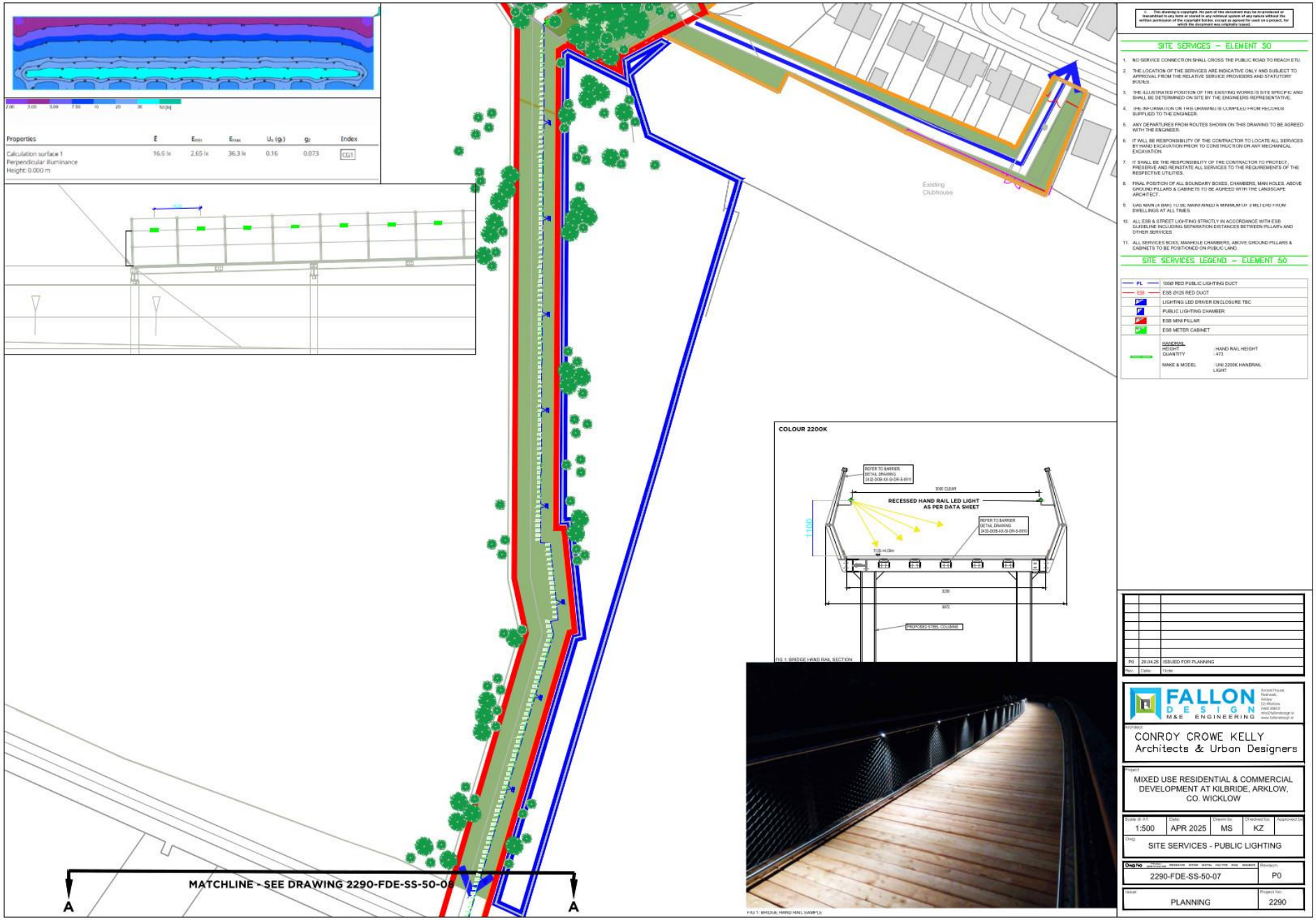

Figure 12. *Public Lighting Layout (Sheet 4)*

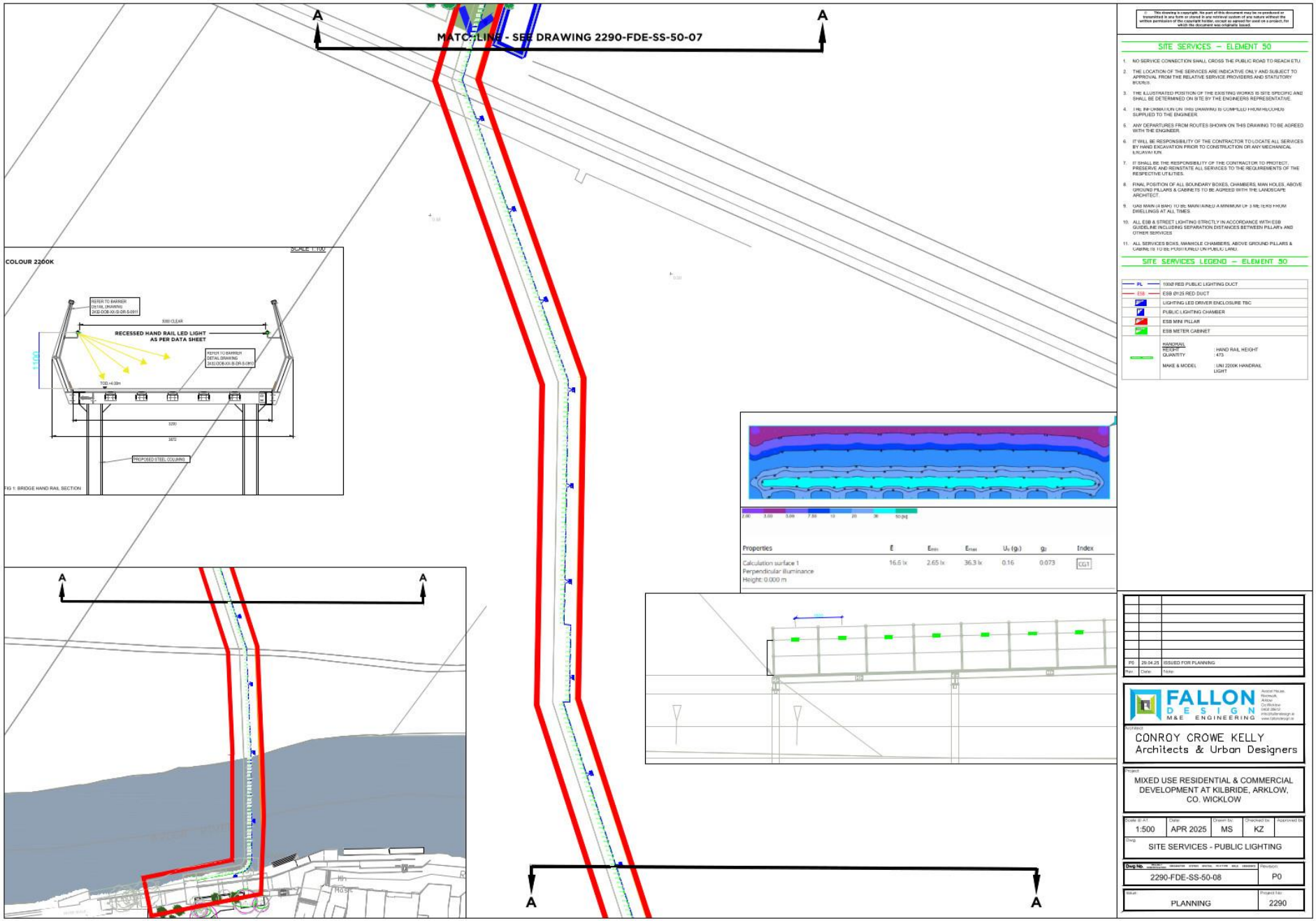

Figure 13. *Public Lighting Layout (Sheet 5)*

Drainage

An Infrastructure Design Report was developed by Donnachadh O'Brien & Associates Consulting Engineers (DOBA). The report details the proposed drainage network for the proposed development at Kilbride, Arklow.

Surface Water Drainage
In relation to the existing surface water drainage network, the report states that:

'*There is no formal surface water network on site with run-off from the greenfield eventually discharging via overland flows and adjacent dry ditches to the Marsh area, located to the south of the proposed development.*'

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

'The applicant engaged with Wicklow County Council regarding the proposed development during the S247 meeting on 15th May 2024, the Section 32B meeting 18th December 2024 and the LRD Opinion received on 21st January 2025. As part of the engagement with Wicklow County Council through the LRD staged process, consideration has been given to the below criteria as part of the development proposal: -

- *Low permeability soils do not permit the discharge of surface water directly to the ground using infiltration techniques, and Soil Type 4 may be used in the calculation of Qbar for the site*
- *Surface water is to be attenuated on site to facilitate a 1:100 Year plus 20% Climate Change event*
- *Attenuated surface water shall discharge to an existing watercourse, where eventually flows shall be conveyed to the Arklow Marsh area, which is a natural flood plain and also a proposed Natural Heritage Area (pNHA).*
- *Surface water run-off shall be attenuated in above-ground retention basins where feasible with supplementary underground tanks and restricted using a flow control device*
- *Petrol interceptors shall be used to treat surface water prior to discharging to the watercourse*
- *Permeable paving shall be provided to the car parking bays with linear filter drains*
- *Treepits/ bio retention areas shall be used where possible to treat surface water and to provide additional surface water storage, minimising the extent of underground attenuation required.*

Proposed SuDS Elements
'Porous & Permeable paving
Porous and permeable paving shall be provided to all car parking hardstanding surfaces at ground level throughout the development. Permeable paving systems will reduce peak discharges into the drainage system and treat run-off by providing a 70-90% removal efficiency rate for hydrocarbons and 60-95% removal of suspended solids thereby improving the quality of water discharging. The base of the porous paving build-up shall also benefit from any available infiltration to ground. The porous paving shall be underlain by linear filter drains which shall provide a second treatment to the run-off preventing ingress of fine materials from the paved areas prior to discharge into the surface water drainage system.

Bioretention Systems & Tree Pits
Bioretention systems are landscaped and planted depressions that reduce run-off rates, provide infiltration where possible and treat pollution through the use of engineered soil and vegetation. Runoff collected by the system ponds temporarily on the surface and filters through the vegetation and underlying engineering filter medium. A drainage layer beneath the filter medium is wrapped in a geotextile to prevent the washing of fines from the filter medium to the drainage layer. The drainage layer is provided with a 100mm dia. perforated uPVC pipe which discharges to the adjacent surface water network. In addition, an overflow in the form of a standpipe is provided to direct flows to the downstream surface water network once the volume of the system has been exceeded.

Proprietary Surface Water Treatment System
Proposed Class 1 bypass petrol interceptors shall be incorporated into the drainage system to intercept run-off and improve the quality of surface water discharging into the receiving watercourse in compliance with best

drainage practice and SuDS requirements. The interceptors shall serve to provide interception of run-off and deliver removal efficiency rates of up to 80% for suspended solids and hydrocarbons.

Retention Basins
The site will utilise bioretention basins as part of the nature based SuDS strategy and to provide attenuation for surface water runoff from roof and paved areas where feasible. The proposed basins shall contain water levels that will be designed to provide a minimum of 300mm freeboard to adjoining ground and road levels while also providing a minimum of 500mm freeboard to finished floor levels of all buildings on the site. Basins will be vegetated and planted as part of a biodiverse landscaping solution which has been coordinated with the engineering solution with the project landscape consultant.

Surface Water Attenuation
The development will utilise an underground attenuation tank consisting of a proprietary parabolic arched "Stormtech" or equivalent system lined with a woven impermeable geotextile liner. The discharge manhole of the attenuation tank or adjacent manholes shall be fitted with a flow control device in the form of a hydrobrake throughout the site discharging at a rate that complies with the GDSDS River Regime Protection criterion (189.10/s combined 2 No. Catchment discharge to the receiving watercourses to the east and south). A non-return valve shall be placed on the outfall manhole along with a high-level overflow for rainfall events exceeding a 1:100 storm + 20% C.C. Access to the attenuation tank shall be provided via manholes at each end which shall contain 500mm deep silt traps. A perforated distribution pipe shall be placed beneath the base of the tank which can be jetted and cleaned through ongoing maintenance. The total volume of surface water storage provided in the attenuation tanks across the development for a 1:100 Year plus 20% Climate Change is 13,549m3.

Proposed Riparian Buffers
With the development located adjacent to the discharging watercourse to the east, consideration has been given in the site layout to the protection of wildlife and the reduction of impacts on the existing riparian environment along the watercourse.

The site layout and design has been developed to consider a buffer from the watercourse in accordance with the Wicklow County Development Plan Objective CPO 13.1 and CPO 17.26 to protect the watercourse and associated wildlife by the integration of riparian buffers of 25.0m, free from development.

The site layout and design has followed the Inland Fisheries Ireland's guidance documents 'Planning for Watercourses in the Urban Environment' and a 25.0m riparian buffer along the watercourse has been considered to protect and enhance the riparian environment to the adjacent watercourse. The measures that are being taken to ensure appropriate protection of the riparian zones include the following:

- *Streamside zone of 10m left intact and undisturbed with existing hedgerows, trees, and stream vegetation. Vegetation enhancement will be provided with native marginal and emergent vegetation where required.*
- *Middle zone of 10m to 20m will be left intact and where disturbed due to proximity of road construction, will be landscaped appropriately with native plants and vegetation*
- *Outer zone beyond the 20m middle zone contains both undisturbed ground and enhanced biodiverse landscaping. This area also incorporates bioretention areas as part of the nature-based SuDS solutions for the site*

As part of the landscape treatment, it is proposed to plant native tree and scrub planting within the site to help visually integrate the proposed development and enhance site biodiversity. The proposed planting will strengthen the existing riparian corridor along the watercourse. The proposed planting consists of native woodland planting between 10-20m in width along the riparian corridor, with gaps along the watercourse to provide variability. The planting area shall include bat and bird boxes.

Proposed Foul Water Drainage
The following sections describes the proposed foul drainage solutions following confirmation of the identified route to discharge foul flows from the site. Foul flows generated from the proposed development shall be

conveyed to the south with foul infrastructure constructed fully coordinated with the proposed upgrade works before discharging to the upgraded UE wastewater infrastructure and Arklow WWTP. The details of the discharge to UE infrastructure shall be agreed with UE and shall comply with the received Confirmation of Feasibility.' The proposed drainage layout drawings are demonstrated in figures 14 & 15.

Flood Risk Assessment

A Flood Risk Assessment was developed by Donnachadh O'Brien & Associates Consulting Engineers (DOBA). The report concludes the following in relation to the proposed drainage network for the proposed development at Kilbride, Arklow.

'This site-specific Flood Risk Assessment has been carried out to assess the impact of flooding on a masterplan development. This report was written with The Planning System and Flood Risk Management Guidelines for Planning Authorities in mind and generally follows the requirements of a Stage 1 and 2 Flood Risk Assessment. The proposed development comprises 750 no. residential units at a greenfield site in Arklow.

All existing information has been reviewed regarding the flood risk in the area and the Avoca Flood Relief Scheme flood risk mapping is considered to have the most up to date and reliable estimates of extreme water levels. This mapping provides estimated water levels associated with a 10% AEP event, 1% AEP event (Flood Zone A) and 0.1% AEP event (Flood Zone B), 2.03 m OD Malin, 2.72 m OD Malin, and 3.24 m OD Malin, respectively. The lowest proposed Finished Floor (6.865 m OD Malin) and Road (5.250 m OD Malin) Levels within the development are above the predicted 1% AEP and 0.1% AEP water levels.

The proposed Finished Floor and Road levels and the surface water drainage network associated with the developed site will result in the risk of pluvial flooding within the site being reduced further from that indicated by the PFRA. In addition, the proposed SuDS measures and restriction of run-off to greenfield run-off rates mean that there will not be an increase in flood risk as a result of the proposed development.

The proposed development is classified as Highly Vulnerable Development by the Planning System and Flood Risk Management Guidelines and would be best suited to Flood Zone C. The proposed Finished Floor Levels are above the estimated 1 in 1000-year return period fluvial flood event placing the units within Flood Zone C. The proposed finished road levels are also above the estimated 1 in 1000-year return period fluvial flood level which means that access to and from the residential units is at a low risk of flooding. The proposed greenway and associated embankments located within the flood zone to the south of the site have been calculated to displace approximately 2025m3 of flood volume during the 1:1000 year event. It is proposed to provide compensatory storage in the southern greenspace (located in Flood Zone C) to account for any displaced volume lost to the greenway embankments. An area of approximately 1492m2 has been identified as being suitable to regrade the ground 1.35m lower than existing to allow for lost flood volume to be catered for. Section 7.1.4 outlines the justification test for the minimal portion of embankments/ landscaping located within Flood Zone A/ B which concludes that the proposals outlined do not increase the risk of flooding on the subject site or adjacent developments.'

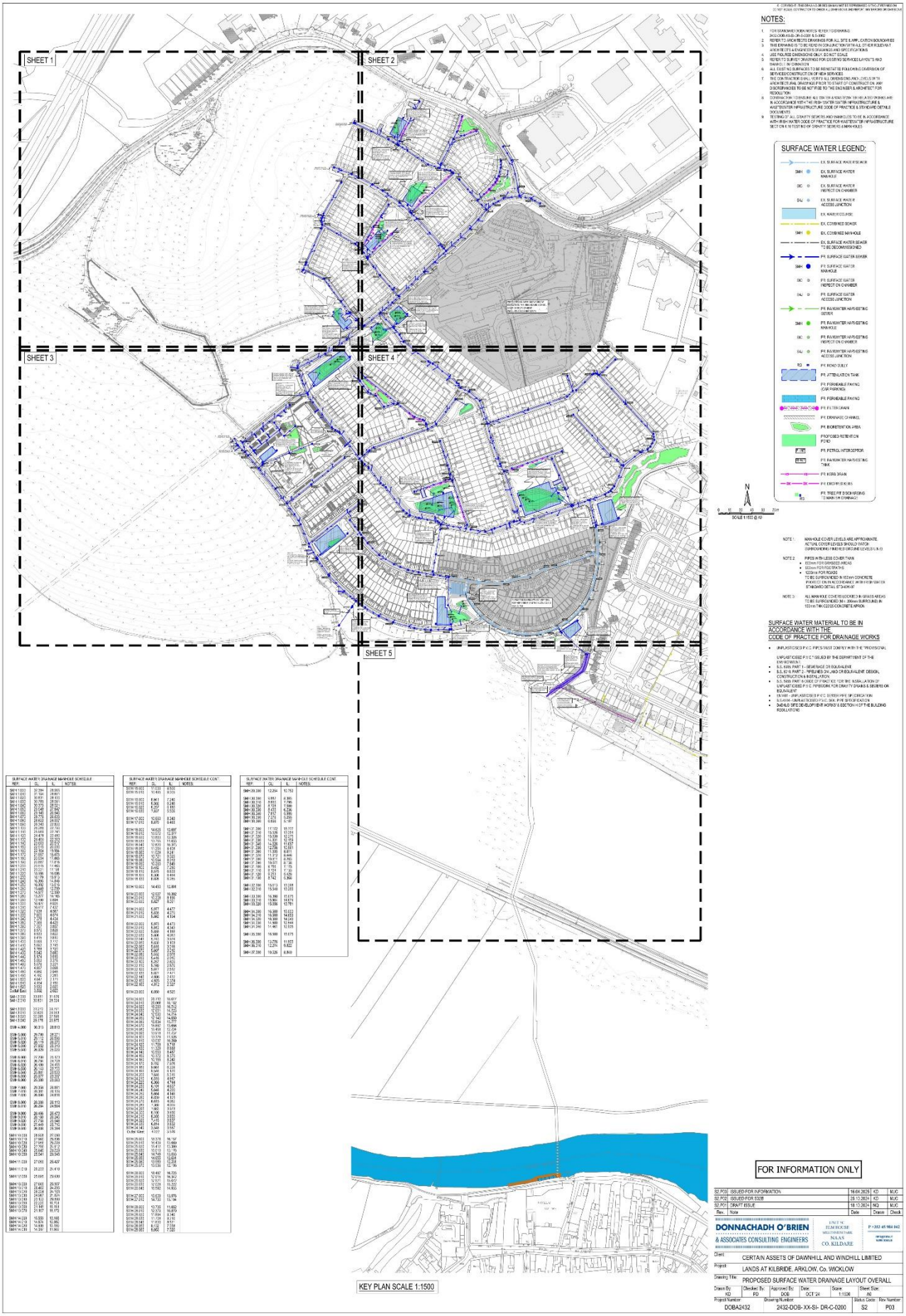

Figure 14. *Proposed Overall Surface Water Drainage Layout*

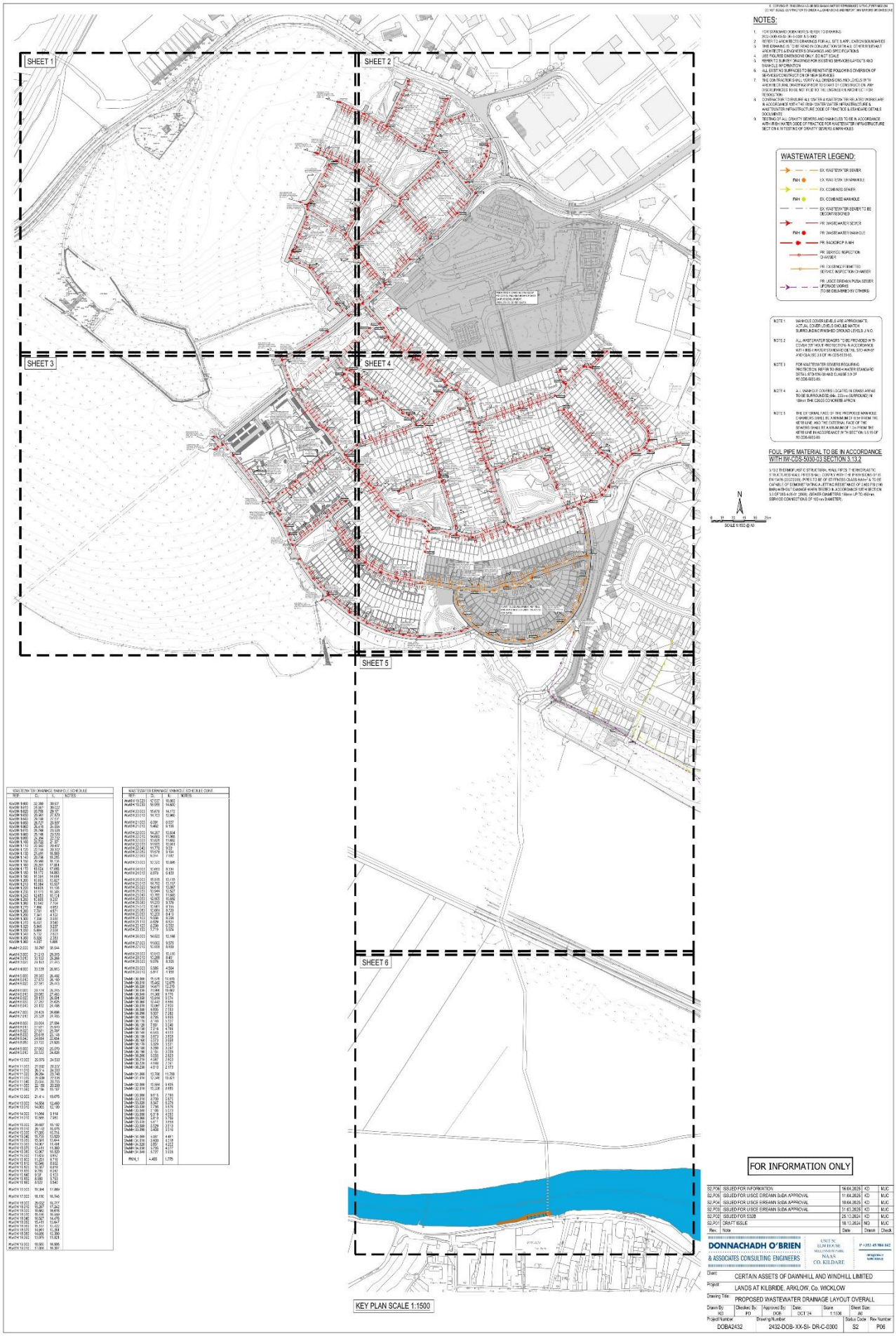

Figure 15. *Proposed Overall Foul Water Drainage Layout*

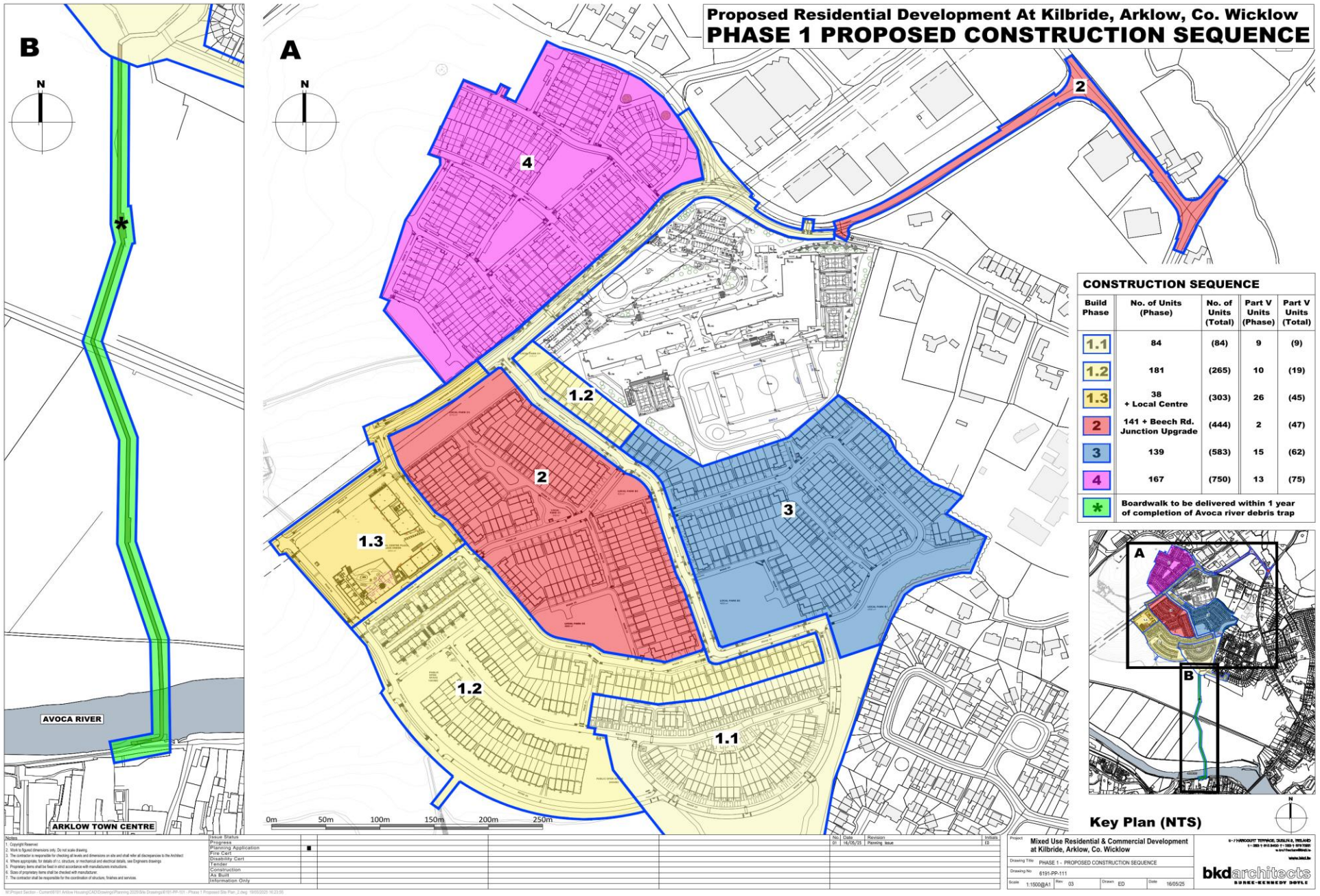

Figure 16. *Proposed Construction Sequence*

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 and sensitive habitats	The southern portion of the development site is located within Arklow Town Marsh pNHA. A tributary of the Avoca River is located along the eastern site boundary which flows into Arklow Town Marsh. The Avoca River Estuary is located at the south of the site. Mitigation measures will be put in place to avoid significantly impacting the watercourse and the marsh. Onsite works will involve demolition, ground clearance, re-profiling, groundworks, instream works and construction, with potential for runoff, dust, pollution, light and noise impacts that could impact on the biodiversity and/or water quality of the marsh, stream and Avoca River.
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 should be put in place to avoid impacting the residents proximal to the proposed development during the demolition and construction phase of the project.
Terrestrial Fauna and flora	On-site Fauna and flora of conservation importance No protected terrestrial mammals were noted within the proposed housing development site. Evidence of badger (*Meles meles*) transiting through the site was noted. An active badger sett was recorded 250m to the west of the site. Loss of habitat and habitat fragmentation may affect some common mammalian species. Otter is noted on the Avoca River, but no holts were noted in the vicinity of the proposed works. The onsite works will involve ground clearance, re-profiling, groundworks, instream works and construction with potential for runoff, dust, light and noise impacts. However, as no flora species of conservation importance or potential breeding sites e.g. ponds, were noted on site. No specific mitigation measures need to be put in place.
Birds	Clearance of the site, and the fact that breeding birds are present on-site, will result in the loss of foraging and nesting habitat. Subsequent planting should be supplemented with bird boxes.
Bats	Bat surveys were carried out. Three bat species were noted foraging on site. No bats were noted roosting on site. Lighting during construction has the potential to impact on bat foraging. Mitigation measures should include a pre-construction bat survey on trees of bat roosting potential proposed for felling and buildings proposed for demolition.

3. Analysis of the Potential Impacts

The proposed development will involve the removal of the existing terrestrial habitats on site and considerable re-profiling and excavations. It should be noted that a Biodiversity Chapter and an Appropriate Assessment (AA) Screening report have been prepared by Altemar Ltd. to accompany this CEMP. The Biodiversity Chapter provides detailed information in relation to the sensitive receptors on site.

Potential Construction Impacts

In the absence of mitigation, the overall development of the site is likely to have direct negative impacts upon the existing habitats, fauna and flora. Direct negative effects will be manifested in terms of the removal of the site's internal habitats. The removal of these habitats will result in a loss of species of low biodiversity importance. These construction effects however would include effects that may arise during the site clearance, re-profiling of the site and the building phases of the Proposed Development which include works within the Avoca River Estuary and the Arklow Town Marsh pNHA. It should be noted that Altemar has been involved in the project from initial concept design and has provides significant input into the design of the project to limit potential effects on biodiversity and within the Arklow Marsh pNHA. Potential impacts are assessed below for each of the ecological components:

Designated Conservation sites

In the absence of mitigation, the overall development of the site is likely to have direct negative impacts upon the existing habitats, fauna and flora. Direct negative effects within the main housing element will be manifested in terms of the removal of the site's internal habitats. The removal of these habitats will result in a loss of species of low biodiversity importance. These construction effects however would include effects that may arise during the site clearance, re-profiling of the site and the building phases of the Proposed Development. Works within the Avoca River (small element of bridge landing) and the Arklow Town Marsh pNHA (boardwalk). The design and proposed construction methodology of the boardwalk has taken into account the sensitivities of the pNHA including the hydrological regime, biodiversity and to minimise medium to long term impacts. Construction phase mitigation measures are required on site particularly as significant reprofiling of the housing element of the site is proposed which can lead to dust and silt laden and contaminated runoff. Runoff during site works re-profiling and the construction of project elements could effect on the Arklow Town Marsh and the Avoca River.

In relation to Natura 2000 sites (SAC & SPA), given the minimum distance (4.1 km) and the flocculation and estuarine circulation patterns that occur within the estuary any pollutants, silt laden run off or dust that enters the surface water network will be dispersed or diluted to negligible levels prior to reaching any European sites. Measures are outlined to comply with Water Pollution Acts. These are standard construction measures and are not deemed necessary for the protection of Natura 2000 sites. In the absence of these measures silt would settle within the tributary of the Avoca River and in the event of a pollution incident dilution, flocculation and mixing would occur within the river catchment and estuarine element of the Avoca River prior to reaching the nearest Natura 2000 sites.

The AA Screening concludes *''Surface water which enters Arklow Town Marsh via the Avoca River tributary, will enter the adjacent Avoca Estuary and ultimately the marine environment. Flocculation and estuarine circulation patterns will occur within the Avoca Estuary. It should be noted that a 25m Riparian Buffer will be implemented from the adjacent watercourse along the eastern boundary of the subject site. In the absence of mitigation, pollutants, silt laden run off or dust which enter the surface water network will be dispersed or diluted within the estuary and the marine environment, to negligible levels, prior to reaching any European sites. Foul wastewater will be directed to the Arklow Wastewater Treatment Plant (WWTP). The treated effluent from the new Arklow WwTP will discharge to the Irish Sea. There will, therefore, be an indirect pathway from the proposed development site to European sites within the Irish Sea (Specifically: Buckroney Brittas Dunes and Fen SAC, Kilpatrick Sandhills SAC, Magherabeg Dunes SAC).*

Having taken into consideration foul and surface water drainage from the proposed development, the distance between the proposed development to designated conservation sites, lack of direct hydrological pathway or biodiversity corridor link to conservation sites, and the dilution effect with other effluent and surface runoff, it is concluded that the proposed development would not give rise to any significant effects to designated sites. The construction and operation of the proposed development will not impact on the conservation objectives of qualifying interests of European sites.''

Given the fact that construction works are proposed within Arklow Town Marsh pNHA, there is a risk of pollutants, silt laden run off and dust, entering the pNHA in the absence of mitigation measures.

In addition, there is a risk of physical disturbance from construction machinery and materials to the marsh biodiversity along the route of the boardwalk during the construction phase of the development. During construction of the boardwalk, temporary timber bog mats will be laid over the marshland to accommodate construction traffic. This approach minimises long term impacts on the marshland vegetation and specifically, the reedbeds which are naturally resilient habitats that are tolerant to moderate physical disturbance. The use of end-driven steel pile foundations will ensure no soil arisings are generated, eliminating the need for off-site disposal and minimizing ecological disturbance of the pNHA. The steelwork deck will be installed in prefabricated sections and lifted in position onto the support steels which will ensure construction remains as limited as possible within the marsh.

In the absence of mitigation, lighting during the boardwalk construction phase of the development has the potential to impact upon the existing ecology such as birds and bats located within the pNHA and in particular, species proximate to the proposed boardwalk location. Lighting will only be used during construction working hours and not directed towards bat foraging areas. In addition, the project ecologist will be consulted in relation to lighting during construction within the marsh.

Effects: Low Adverse / International / Negative Effect / Not significant / short term. Mitigation is required in relation to the pNHA but not for Natura 2000 sites.

Biodiversity

The impact of the proposed development during construction phase will be a loss of existing habitats and species within the housing development site. It would be expected that the flora and fauna associated with these habitats would also be displaced. However, the eastern boundary hedgerow will be retained. There is the potential for contaminated surface water runoff and pollution to enter the surface water drainage network within the Arklow Town Marsh prior to being discharged to the Avoca River. However, due to the significant distance, mixing and dilution by other rivers this is not expected to have any significant impacts of designated sites downstream. In the absence of mitigation there is potential for localised impacts on aquatic biodiversity.

Terrestrial mammalian species

No protected terrestrial mammals were noted within the proposed housing development site. Evidence of badger (*Meles meles*) transiting through the site was noted. An active badger sett was recorded 250m to the west of the site. Loss of habitat and habitat fragmentation may affect some common mammalian species. Otter is noted on the Avoca River, but no holts were noted in the vicinity of the proposed works. Sika deer are noted on site including within the marsh. Lighting and noise in the vicinity of the Avoca River during construction has the potential to disturb otter movements.

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 survey for terrestrial mammals of conservation importance and control of lighting and noise on site, particularly proximate to the Avoca River.

Flora

The plants noted onsite are listed above in their various habitats. No plant species of conservational concern were noted onsite. No Third Schedule invasive species (Article 49 & 50 of the Habitats Directive 2011) were noted on site. Rhododendron sp. and cherry laurel *(Laurocerasus officinalis)*

were noted onsite. It is highly recommended to remove and dispose of these species to prevent further spreading. Site clearance will removal of flora species on site that are not of conservation importance.
Potential Impacts in the absence of mitigation: Low adverse / site / Negative Impact / Not Significant / Short term.

Bat Fauna

As outlined in Appendix 5.4, *Foraging activity was relatively low across the site and no bats were observed to be roosting or emerging onsite during the 2025 surveys however, in the 2024 surveys, three bat roosts were noted within the property ownership line. These are demonstrated in figure 18. There were several trees of roosting potential along the boundary, as well as the treelines in the centre of the site, as can be seen in Figure 18. The proposed development will alter the local environment as new structures are to be erected and the existing buildings to be removed. In the absence of mitigation measures, these changes would impact any potential bat roosting habitats that may develop in the future and impact the existing ones. The removal of vegetation on site will reduce bat foraging habitat. Lighting during construction and operation has the potential to impact on foraging of bats on site in the absence of mitigation. Mitigation measures will be required to limit light spill to protect bat foraging areas including within the marsh.*' It should be noted that within the marsh habitat there is very limited roosting potential for bats. As an enhancement measure it is proposed to install 12 bat boxes within the superstructure of the boardwalk above the highest flood levels and 6 bat boxes within the parks on site.

Potential Impacts in the absence of mitigation: Low adverse / Local / Negative Impact / Not significant / long term. Mitigation is needed in the form of pre-construction site surveys.

Bird Fauna

Due to the potential presence of breeding birds on site the construction will result in a loss of foraging and nesting habitat for breeding habitat for breeding birds. Hedgerows along the eastern site boundary are to be retained. Reed warbler and sedge warbler are both green listed and breeding within the marsh habitat along the proposed route of the boardwalk. It should be noted that within the marsh habitat there is very limited nesting potential for birds except for the riparian corridor and along the old stone road within the marsh. As an enhancement measure it is proposed to install 10 bird boxes within the superstructure of the boardwalk above the highest flood levels and 40 bird boxes within the housing development on site.
Potential Impacts in the absence of mitigation: Low adverse / Local / Negative Impact / Not significant / medium term. Mitigation is needed in the form of control of site clearance outside bird nesting season, the laying of bog matting to ensure no impact on nesting birds, and the provision of compensatory nesting habitat.

Aquatic Ecology

A small tributary of the Avoca River is located along the eastern boundary of the proposed development site. In addition there are two channels proximate to the stone road within the pNHA which transport surface water to the Avoca River. Standard mitigation measures will be implemented to ensure runoff during site clearance, re-profiling, the construction and operation of project elements could impact on the Avoca River and surface water network, with water quality within these watercourses with potential downstream impacts aquatic ecology within this watercourse network.

The Avoca River Estuary is located to the south of the site where the proposed boardwalk will cross over however, the majority of the boardwalk across the Avoca River will be installed on top of the previously granted flood defence scheme structure. In total, 12 no. additional piles be installed into the Avoca River to support a section of the boardwalk along the southern bank of the river, however this will be done in conjunction with the construction of the Arklow Flood Defence Scheme, which will utilize the construction access routes and riverbed preparation provided by the granted scheme.[1]
The contamination of watercourses and surfaces water networks could potentially impact negatively on the biodiversity within the watercourses and within the shallow marine environment.
Impacts in the absence of mitigation: negative; slight, short term, not significant. Mitigation is required.

[1] 310368 | An Bord Pleanála

Potential Operational Impacts

Once constructed all onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will comply with SUDS. Rainwater from the boardwalk will flow directly off the decking into the marsh area. The biodiversity value of the site would be expected to improve as the landscaping matures.

Designated Conservation sites within 15km

During operation, surface water run off from the development will enter Arklow Town Marsh via the Avoca River tributary, which will outfall to the adjacent Avoca Estuary and ultimately the marine environment. Flocculation and estuarine circulation patterns will occur within the Avoca Estuary. It should be noted that a 5m Riparian Buffer will be implemented from the adjacent watercourse along the eastern boundary of the subject site. In the absence of mitigation, pollutants, silt laden run off or dust which enter the surface water network will be dispersed or diluted within the estuary and the marine environment, to negligible levels, prior to reaching any European sites.

Foul wastewater will be directed to the Arklow Wastewater Treatment Plant (WWTP) which officially opened in May 2025. Foul wastewater drainage will ultimately be treated along this public network. The treated effluent from the new Arklow WwTP will discharge to the Irish Sea. There will, therefore, be an indirect pathway from the proposed development site to European sites within the Irish Sea (Specifically: Buckroney Brittas Dunes and Fen SAC, Kilpatrick Sandhills SAC, Magherabeg Dunes SAC).

Arklow Town Marsh pNHA is a sensitive receptor located within the site boundary. A boardwalk is proposed to traverse from north to south through the pNHA that will connect the site to Arklow Town located across the Avoca River. Lighting is proposed in the boardwalk.

Petrochemical runoff from the site could potentially negatively directly or indirectly impact the aquatic ecology within the marsh. However, runoff from the housing development will have to comply with standard County Council drainage requirements and will require petrochemical interception which will be attenuated and discharged at greenfield rates to the surface water network.

In relation to lighting proposed within the pNHA, handrail lighting will be installed along the boardwalk which has the potential to impact on bat foraging in the marsh in the absence of mitigation. Consultation took place between Altemar and the lighting specialists to minimise the potential of light spill into the surrounding marsh.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, long term, not significant, international and likely effect on designated sites during operation.

Habitats, Botany and Avian Ecology

During the operational phase of the development there will be an increase in disturbance including noise and light that could potentially impact on birds on site. As the landscaping elements improve with maturity it would be expected that the biodiversity value of the site to birds and flora would also increase. This would result in an increase in biodiversity in the long term. Light spill on site will increase from the current baseline which would have a negative effect on biodiversity. Landscape, light spill and habitat management will be important to overall impact of the operational phase.

Aquatic Ecology

Petrochemical runoff from the site could potentially negatively directly or indirectly impact the aquatic ecology. Runoff from the development and roads will have to comply with County Council drainage requirements and will require petrochemical interception and which will be attenuated and discharged at greenfield rates to the surface water network. The drainage connections and the installations in relation to petrochemical interception should be inspected by the project ecologist.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, long term, not significant, local and likely effect on aquatic ecology during operation. *Standard mitigation is required in relation to petrochemical interception.*

Protected Terrestrial Mammals

No active badger setts were noted on site. Evidence that badgers are transiting through the site was noted (trails, latrines, snuffle holes). An active badger sett was confirmed via camera traps 250m to the west of the site, outside the site boundary. Lighting and increased human presence/disturbance may impact badgers on site and reduce their foraging areas.

Impacts in the absence of mitigation: negative; slight, site, long term, not significant. *Mitigation is required in relation to lighting proximate to the Avoca River.*

Amphibians and Reptiles
An individual frog (*Rana temporaria*) was noted along the west boundary of the easternmost field of the site. Due to the wet nature of the site, particularly at its southern end, having a variety of drainage ditches and its proximity to the Avoca River, the Arklow Town marsh and the two small watercourses, the site would be of value to frog populations. Standard water pollution mitigation is in place in the design of the drainage strategy.

Impacts in the absence of mitigation: negative; slight; long term, not significant. *Mitigation is required. A pre-construction survey for amphibians will be carried out.*

Avian Ecology
There is potential for avian biodiversity to be impacted by the artificial lighting on site. The proposed lighting strategy has been discussed and modified to reduce the potential impact on biodiversity. This has included only lighting areas where required and not lighting public open spaces unless necessary. In addition, the landscape strategy has included significant planting of native trees in open space areas to encourage birds on site. Enhancement measures are proposed.
Impacts in the absence of mitigation: negative; minor adverse, site, long term, not significant. Mitigation is required.

Bat fauna
There is potential for bat foraging to be impacted by the artificial lighting on site. The proposed lighting strategy has been discussed and modified to reduce the potential impact of the development on bats. This has included only lighting areas where required and not lighting public open spaces unless necessary. In addition, warm lighting (2200K) will be used along the boardwalk route. The landscape strategy has included significant planting of trees in open space areas to encourage bat foraging on site.

Impacts in the absence of mitigation: slight negative, site, long term, not significant. *Mitigation is required including consultation with the project ecologist in relation to lighting and the development of an initial prototype to minimise light spill from the boardwalk. This would include the optimal angle of the lighting within the rail and mesh design to limit side spill.*

Drainage on site - Riparian Corridor & Marsh

The site is located within and adjacent to several sensitive receptors. Given the scale of the proposed development and the positioning of the primary construction zone on sloped terrain adjacent to the Arklow Town Marsh pNHA and the Avoca River Estuary, it is critical measures are implemented to surface water during construction. These measures must ensure that surface runoff generated during construction activities is effectively contained on-site and that suspended solids are adequately intercepted to prevent discharge into adjacent sensitive areas. A silt interception system will be prepared in consultation with the project ecologist. The purpose of this is to ensure that silt is removed from runoff prior to entering the stream and marsh throughout the construction process. The following measures will be carried out to ensure that the site runoff is suitably contained during construction:

a) The riparian buffer of 25m will be established, landscaped and marked out by silt fences prior to site clearance works on the remainder of the site.

b) Inland Fisheries Ireland will be consulted prior to commencement and any works within the riparian corridor. Works will commence with the placing of silt fences in the riparian corridor within Phase 1 of the project prior to works commencing on site. It is important that the bases of these are buried deeply in the soil as this area has the potential to be flooded and they could cause downstream impacts if not installed correctly.

c) Following the completion of this element of the project this area of the site will be closed off to machinery access.

d) Due to the presence of Marsh habitat, no additional machinery works will be carried out within the riparian corridor unless under ecological supervision.

Drainage on site outside the riparian corridor and marsh

a) Where necessary, as highlighted by the ecologist, drainage channels will be prepared on site, in the vicinity of future access roads. Within these channels silt fences/barriers will be placed and will consist of woven/terram style material of suitable density to remove the majority of silt from runoff. These will be maintained throughout the construction phase to ensure efficiency, prior to the installation of the permanent drainage network.

b) Silt fences will be placed along the edge of the riparian corridor (outside of future construction areas) to capture runoff from the site. These will also prevent machinery from entering the riparian corridor.

c) Mitigation measures including silt fences will be in place (in consultation with the project ecologist and IFI) to capture silt from runoff and prevent it from entering the stream during the culvert works.

d) Appropriate storage and settlement facilities will be provided on site when required. This would include the provision of silt and petrochemical interception.

e) Fuel, oils and Chemicals will be stored on an impervious base with a bund. Under LEED there will be a strategy put in place to prevent pollution of the watercourse and marsh habitat. In most cases this will involve collecting the run-off and routing it to treatment by filtration, settlement or specialist techniques.

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 Avoca River, Arklow Town Marsh, downstream biodiversity, and local biodiversity within / proximate to the subject site are outlined in Table 2. It should be noted that the measures in relation to the protection of the Avoca River and Arklow Town Marsh will be robust.

Table 2. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
Arklow Town Marsh pNHA **Avoca River Estuary** **Avoca River tributary**	• Habitat degradation • Dust deposition • Pollution • Silt ingress from site runoff • Downstream impacts • Negative impacts on aquatic fauna	**Construction Phase Mitigation** • A project ecologist will be appointed to oversee all works. • A preconstruction inspection for mammals will be carried out. • The Arklow Town Marsh and Avoca River 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 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. • During the construction works silt traps will be put in place in the vicinity of all runoff channels of the stream 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. • During the works silt traps will be put in place • Daily turbidity, oxygen and photographic monitoring of the watercourse (upstream, within & downstream of works) will take place during works and the results supervised by the project ecologist. This would be particularly important following high rainfall events and works within the riparian zone. It is recommended that sufficient baseline readings are made prior to construction commencing to understand the existing turbidity on site particularly in the pond area as this appeared turbid during the site visit. **Boardwalk & Bridge Works** • Instream works are proposed within the Avoca River Estuary and works are proposed within the marsh habitat. • No discharges will be to the watercourse or marsh during works • Silt traps established throughout site including a double silt fence between the site and the watercourse/marsh. • In stream works will be carried out in full consultation with and to the advice of Inland Fisheries Ireland and the project ecologist. • Any in-stream works are to be carried out “in the dry” with temporary diversions in place in the months of July-September or as Directed by IFI.

Table 2. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		• The methodology of the construction of the boardwalk across the Avoca River and inpaticular the installation of piles will be approved with IFI prior to any riparian works commencing in the Riparian Zone. **Site Works** • 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 or marsh during the works. • Trenched double silt fencing shall be put in place along boundary of the proposed development site with 20m buffer from the Arklow Town Marsh. This fencing must be in place as one of the first stages on site and prior to the full site clearance. The silt fencing will act as a temporary sediment control device to protect the marsh and associted watercourses from sediment and potential site water runoff but also act as a tree protection zone for the riparian buffer. The fencing will be inspected twice daily, based on site and weather conditions, for any signs of contamination or excessive silt deposits. • 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. • 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. • 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 from sloping site, that could enter Arklow Town Marsh and Avoca River Estuary. Ecological supervision will be required during demolition, excavation and enabling 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, instream works and reprofiling stages. Landscaping of the grassed areas of the site proximate to the Arklow Town Marsh should take place immediately following re-profiling, to act as a buffer to protect the marsh and assocaited watercourses. • Daily turbidity monitoring of the onsite watercourses and the marsh should take place during works in consultation with the project ecologist. This would be particularly important following high rainfall events. It is recommended that sufficient baseline readings are made prior to construction commencing to understand the existing turbidity on site particularly in the pond area as this appeared turbid during the site visit. • Mitigation measures on site include dust control, stockpiling away from watercourses, marsh habitat and drains • Pollution control and mitigation on site

Table 2. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		• Stockpiling of loose materials will be kept away from marsh, watercourses and drains. A risk based approach will be taken. **Air & Dust** Dust may enter the Avoca River and marsh habitat via air or surface water with potential downstream impacts. Mitigation measures will be carried out reduce dust emissions to a level that avoids the possibility of adverse effects on the Stream. The main activities that may give rise to dust emissions during construction include the following: • Excavation of material; • Materials handling and storage; • Movement of vehicles (particularly HGV's) and mobile plant. • Contaminated surface runoff Mitigation measures to be in place: • Maintain the existing 25m buffer with the watercourse with a double layer of silt fences • Consultation will be carried with an ecologist throughout the construction phase; • Trucks leaving the site with excavated material will be covered so as to avoid dust emissions along the haulage routes. • Speed limits on site (15kmh) to reduce dust generation and mobilisation. • The marsh and stream is to be protected from dust on site. Site Management • Regular inspections of the site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged. • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. Monitoring • Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces within 100 m of site boundary, integrity of the silt control measures, with cleaning and / or repair to be provided if necessary.

Table 2. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		Preparing and Maintaining the Site • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean using wet methods. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping. • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. • Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions. • Maintain a vegetated strip and vehicle exclusion zone between the works and Avova River in consultation with the project ecologist. Operations • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. • Equipment will be readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. • No water will be removed from the watercourse for dust control activites. Waste • Avoid bonfires and burning of waste materials. • Measures Specific to Earthworks • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • Only remove the cover in small areas during work and not all at once. • During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust. • The Contractor will be required to consult with an ecologist prior to the beginning of works to identify any additional measures that may be appropriate and/or required.

Table 2. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		Storage/Use of Materials, Plant & Equipment • Materials, plant and equipment shall be stored in the proposed site compound location; • Plant and equipment will not be parked within 50m of the Avoca River 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 Arklow Town Marsh and Avoca River. • 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 Avoca River or marsh; • Drip trays will be turned upside down if not in use to prevent the collection of rainwater; • Waters collected in drip trays must 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. **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 Mitigation During Operation • Mitigation measures will be in place to comply with Water Pollution Acts.
Birds (National Protection)	• Removal nesting habitat.	• "Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. • 50 Nest boxes placed on site to compensate for resource loss.

Table 2. Mitigation Measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
	• Removal foraging habitat. • Destruction and/or disturbance to nests (injury/death). • Predation .	• 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 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 particularly the marsh. • A pre-construction survey for reed warbler and sedge warbler will be carried out along the proposed boardwalk route if carried out within bird nesting season.
Bats (International Protection)	• Removal roosting/foraging habitat. • Lighting Impacts	• Pre Construction tree and building inspection for bats • Compliance with conditions of the bat derogation licence if required for felling of trees or demolishing of building with bat roost if found during pre-construction inspections. • Lighting at all stages should be done sensitively on site with no direct lighting of treelines. • Consultation with the project ecologist will be carried out in relation to lighting and the development of an initial prototype to minimise light spill from the boardwalk. This would include the optimal angle of the lighting within the rail and mesh design to limit side spill. • Post Construction assessment/compliance with proposed lighting strategy . • Post construction monitoring and surveys for bats in the marsh and along the Avoca River Estuary will be carried out. • 18 bat boxes will be placed on site as an enhancement measure. Of these, 12 will be placed along the boardwalk.
Amphibians	• Death/injury	• A pre-construction survey will be carried out for frogs on site.
Mammals	• Death/injury • Destruction of resting/breeding places • Disturbance	• A pre-construction survey will be conducted to ensure that there are no badger setts in any areas of scrub on site. Badgers may also construct new setts in the period between this survey and development proceeding. • All scrub clearance will be monitored to ensure that no badger setts are present in areas that could not be searched in this survey and in the pre-construction survey Pre Construction building inspection for mammals • For guidelines on how to minimise disturbance to otters, refer *Guidelines for the treatment of otters prior to the construction of national road schemes*. National Roads Authority, 2006. [Prepared by C. Smal, author of this report. • Any interference with or disturbance to otter holts on site would require licence from NPWS.
Aquatic Biodiversity	• Death/injury • Destruction of resting/breeding places • Disturbance	• All piling works within the Avoca River will take place outside spawning season

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

The proposed project will include the demolition of demolition of an existing dwelling, outbuilding and agricultural shed and the construction of a mixed-use residential development and the construction of a pedestrian boardwalk across the Arklow Town Marsh and Avoca River. Construction and operational mitigation measures are proposed and will be carried out. These would ensure that the Avoca River and Arklow Town Marsh would remain clean and uncontaminated. Early implementation of ecological supervision at initial mobilisation and enabling works is seen as an important element to the project, particularly in relation to the implementation of surface water runoff mitigation and pre construction surveys.

With the successful implementation of standard mitigation measures to limit surface water impacts on the watercourse and marshland habitat, biodiversity mitigation/supervision, moderate adverse, short term and significant impacts would be seen on site particularly with the removal of hedgerows and mature tree species. In the long term given the implementation of the landscaping and biodiversity enhancement measures, it would be considered that the proposed project would result in a minor adverse, long term, not significant impact. Residual impacts of the proposed project will be localised to the immediate vicinity of the proposed works.

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on terrestrial and aquatic biodiversity and designated conservation sites 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 Avoca River and Arklow Town Marsh will satisfactorily address the potential impacts on downstream biodiversity. 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.

5. 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	Certain Assets of Dawnhill and Windhill 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 Certain Assets of Dawnhill and Windhill 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. the Avoca River and Arklow Town Marsh, 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 Certain Assets of Dawnhill and Windhill 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 Certain Assets of Dawnhill and Windhill 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.

6. Logistics

a) Vehicular Access to Site

The main access routes to and from the site will be discussed with Wicklow County Council, with all drivers accessing the site being advised of these routes and instructed accordingly.

Security personnel will be present at the entrance/exit of the site to ensure all egressing traffic will do so safely. A wheel wash will be installed at the exit from the site to prevent any dirt being carried out into the public road. A road sweeper will be employed as required to keep the public road around the site clean.

b) Protection of Public Areas from Construction Activity

Perimeter hoarding will be provided around the site to provide a barrier against unauthorized access from the public areas. Controlled access points to the site, in the form of gates or doors, will be kept locked at any time that these areas are not monitored (e.g., outside working hours).

The hoarding will be well-maintained and will be painted. Any hoardings may contain graphics portraying project information.

c) Site Security

The site will be secured with a hoarding. This will be branded using the appointed Contractors' logos. Some marketing images or information boards may also be placed on the hoarding. Access to site will be controlled and monitored outside of site working hours.

All personnel working on site must have a valid Safe Pass card.

d) Deliveries & Storage Facilities

It is proposed that unloading bays are provided for deliveries to the site within the hoarding perimeter. They should be accessible by forklifts. Appropriately demarcated storage zones will be used to separate and segregate materials.

All deliveries to site will be scheduled to ensure their timely arrival and avoid need for storing large quantities of materials on site. Deliveries will be scheduled outside of background peak traffic hours (within the permitted site working hours) to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site.

e) Site Accommodation

On-site facilities will consist of:

- Materials storage area
- Site office & meeting room
- Staff welfare facilities including but not limited to toilets, drying room, canteen.

Electricity will be provided to the site via the national grid.

Water supply to the site will be provided by means of a temporary connection to the public watermain. Similarly, a temporary connection for foul water drainage will be made to the public network

f) Site Parking

There will be sufficient on-site parking for staff and visitors. Construction staff will also be encouraged to use public transport in accordance with the guidance provided by the Health Service Executive and local transportation services.

g) Site Working Hours

The proposed normal working hours, subject to Planning Permission, during the construction phase are as follows:-

Start	**Finish**	**Day(s)**
07 00	18 00	Monday to Friday
08 00	14 00	Saturday.

No works are proposed on Sundays or Bank Holidays or after the hours noted above, however, it may be necessary to work outside of these hours in exceptional circumstances such as Night Works or Weekend Works during certain construction activities such as Road Junction Works.

7. Environmental Issues

a) Noise

The Contractor shall implement measures to eliminate where possible and reduce noise levels where not.

All construction activities will be carried out in compliance with the recommendations of BS 5228, Noise Control on Construction and open sites part 1 and comply with BS 6187 Code of Practice for Demolition.

Potential sources of noise impact include construction activities on site which may involve the use of heavy machinery.

All works on site shall comply with BS 5228 2009 which gives detailed guidance on the control of noise and vibration from construction activities. In general, the contractor shall implement the following mitigation measures during the proposed infrastructure works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together.

More specifically the Contractor shall ensure that:

- In accordance with Best Practicable Means, plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Hoarding to be provided and where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Loading and unloading shall occur within designated loading areas as far from noise receptors as possible.
- Equipment will be fitted with appropriate silencers where possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out – no noisy activities will be carried out outside of the permitted construction hours.

A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site. This individual will be responsible for engagement with local residents, advance notice for noisy activities and the maintenance of a complaints register/record.

A noise and vibration monitoring specialist will be appointed to carry out independent monitoring of noise and vibration during critical periods at sensitive locations.

b) Air Quality & Dust Monitoring

Dust prevention measures shall be included for control of any site airborne particulate pollution. The Contractor shall monitor dust levels in the vicinity of the site in accordance with planning conditions. Records shall be kept of such monitoring for review by the Planning Authority.

The Contractor shall continuously monitor dust over the variation of weather and material disposal to ensure the limits are not breached throughout the project. Potential sources of dust impact are present due to construction activities on site.

c) Migrating Dust & Dirt Pollution

The Contractor will ensure that all construction vehicles that exit the site onto the public roads will not transport dust and dirt to pollute the external roadways. This will be achieved through a combination of the following measures:

- Ensuring construction vehicles have a clean surface to travel on within the site (i.e., haul road).
- Providing a “Full-Body Self Contained” wheel wash, constructed and located within the site confines.
- Ensuring an appropriate wheel or road washing facility is provided as and when required throughout the various stages of construction on site. If conditions require it then a manned power washer shall be put in place to assist the wheel wash system.

The use of appropriate water-based dust suppression systems will greatly reduce the amount of dust and windborne particulates as a result of the construction process. This system will be closely monitored by site management personnel particularly during extended dry periods and in accordance with site management methods.

d) Harmful Materials

Harmful material will be stored on site for use in connection with the construction works only. These materials will be stored in a controlled manner. Where on-site facilities are used there will be a bunded filling area using double bunded steel tank at a minimum.

Potentially Hazardous Wastes to be Produced

Contaminated Soil

If any contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled ‘Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous’ using the HazWasteOnline application (or similar approved classification method). The material will then need

to be classified as clean, inert, nonhazardous or hazardous in accordance with the EC Council Decision 2003/33/EC, which establishes the criteria for the acceptance of waste at landfills.

Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor. In addition, WEEE (containing Construction and Demolition Waste Management Plan 11 hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or fluorescent tubes and other mercury containing waste may be generated during construction activities. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

e) Avoca River & Arklow Town Marsh

- Discharge Licences – It will not be permitted to discharge into any newly constructed storm water systems or watercourse without adhering to the conditions of the discharge licence and agreeing the same with the Design Team, Site Manager and Local Authority Area Engineer.
- Over Ground Oil / Diesel Storage – Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from adjacent watercourses and marshland habitats and contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site however minor by containment/removal from site.
- Re-fuelling will be contained within a designated area adjacent to the storage area.
- Concrete Washout – The washing out of concrete trucks on site will not be permitted as they are a potential source of high alkalinity in watercourses. Consequently, it is a requirement that all concrete truck washout takes place back in the ready-mix depot.
- Disposal of Wastewater off Site – The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to insure its disposal in a traceable manner.
- Road Sweepers / Cleaning – The cleaning of public roads in and around the subject site will be undertaken to reduce environmental impacts and care will be taken to prevent any pollution of watercourses from this activity.
- Maintenance of existing gullies on existing roads used for site access.

f) Vibration

The Contractor shall carry out construction activities on site below the recommended vibration criteria set out in BS 7385-2 (1993).

Potential sources of vibrations include the demolition of existing structures on site and construction activities on site which may involve the use of heavy machinery.

The Contractor will be required to comply with the requirements of the planning permission for any vibration limits for the works. In the absence of any Local Authority requirements, the following table shall set the limitations.

The Administrator, Engineer, Client, and/or Contractor are to establish background vibration levels prior to the commencement of works.

A vibration monitoring system is to be put in place prior to any works taking place. This system is to raise an alarm if an agreed limit is exceeded, at which time the working methods are to be adjusted so as to reduce the vibration generated.

8. Traffic Management

a) Access to the Site

Vehicle access will be taken from Kilbride Road, which will be realigned and have the existing priority changed, so that the link into the Kilbride Education Campus and Phase 1 site becomes the priority route.

The majority of traffic to and from the site will travel via the R772 Dublin Road / Beech Road priority junction. For the initial phase of the development (113 units), this will be retained as a priority junction. To support further phases of development beyond this, the priority junction will be upgraded to a signalised junction.

b) Vehicle Movements During Construction

The major construction items include demolition, excavation, construction, and fit out. It is anticipated that the peak of HGV movements to and from the site will be during excavation works and construction of the building foundations. The peak LGV movements to and from the site will be during the building construction and fit out.

The routes to and from the site shall depend on where the excavated material will be taken to and from where construction material will be brought into the site. The above locations will be identified by the Contractor at a later stage and appropriate routes will be agreed with WCC as part of the Contractor's more detailed construction management plan.

Temporary Construction Access for Construction of Boardwalk

The boardwalk will be delivered as part of a phased LRD housing project, subject to planning approval. From discussion with Wicklow County Council the debris trap columns and flood relief scheme including the river walkway is expected to be delivered by Q4 2028 and then walkway could be in operation in 2029. Part of the Lioncor Landholding included an approved residential scheme for 86 No units, (WCC Planning Reg. Ref. 23756). It is expected that delivery of this housing scheme will commence in Q3/4 2025 and that temporary construction access to the marsh for the boardwalk construction will be provided will be provided form this site. It is proposed to utilise the existing roads (expected to be constructed at the time of the boardwalk construction) as entrance roads to the boardwalk site compound. The site access will be taken to a site compound immediately north of the marsh and flood lands. This area is indicatively shown in the Figure 16 below, but may change depending on the phasing of the housing development. The access routes will be constructed with temporary bog mats in the marsh to provide access for the required construction vehicles.

Figure 15. Temporary Site Access to Marsh (Source: DOB Consulting Engineers)

As detailed in the Greenway Boardwalk: Outline Construction Methodology Report prepared by DOB Consulting Engineers to accompany this planning application:

'***Temporary Access and working platforms***

Ground conditions of the upper soils across the marsh consist of soft silts and peaty soils. In addition the water table is liable to be seasonally variable and close to or at ground level. In order to have the least impact on the existing marshland and vegetation it is proposed that access across the marsh for construction traffic will utilise temporary timber bog mats.'

'The process typically involves site preparation prior to the laying of the mats. This includes, but is not limited to:

- *Identifying any live services/utilities (there are no underground services across the marshland)*
- *Use of geotextile sublayers where the marsh is extremely wet,*
- *Timber mats are then placed on top of the marsh/wetland areas and secured to each other;*
- *Mats are typically 5mx1mx100mm made from European hardwood. Mats are made using 5x200mm sleepers securely bolted together and countersunk. Each mat has 2 lifting eyes as standard. Mats weigh approx 500kg.*
- *Load bearing capacity is estimated at 30 Ton'*

'Existing Watercourses

As part of the proposed boardwalk and construction, it may be necessary to traverse existing field boundary drains or watercourses within the marsh which are illustrated in the below Figure. It is proposed that any existing watercourses will be piped with single or twin 600mm diameter UPVC pipe and timber bog mats will be installed over the watercourses/ ditch to facilitate temporary construction traffic crossing and to ensure the existing natural flow of the ditch remains undisturbed. At the completion of the construction stage, these pipes will be removed and the ditch returned back to the pre-development condition.'

'Piling and groundworks

The boardwalk is likely to be founded on piles. The piling solution has been designed to ensure that the lightweight rigs can be used and 150/200mm diameter bottom driven steel tube mini piles are proposed to be used… The weight of these rigs are typically between 2 and 2.5 Tonnes. As the capacity of the proposed temporary bog mat is in the order of 30T, the use of this light weight piling equipment will ensure that any potential impact from the piling activities will be minimised.

The use steel end driven piled foundations will ensure that excavation of soils within the marsh area will be kept to a minimum. As the piles are end drive steel pile there are no soil arisings form the piling operation which will require disposal. The piles are filled with concrete and a single 25mm steel reinforcing bar. In-situ concrete will be placed with mini concrete trucks and concrete pumps will be utilised.'

Boardwalk construction in Marsh

A steel framed lightweight boardwalk has been deigned to traverse the Marshland. Vertical supports will be at 6m and it is intended that the steelwork deck will be delivered in prefabricated sections and lifted in position onto the support steels. To minimise construction work in the marshland, it is proposed that precast concrete pile caps will be used onto which the steel framed boardwalk will be connected. A typical section of the boardwalk is indicated in figure 16 below. Please refer to the boardwalk drawings accompanying this application for full details of the boardwalk proposals.'

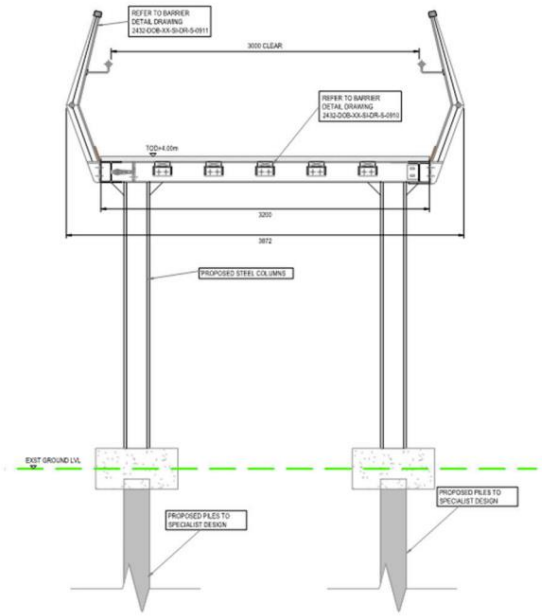

Figure 16. Typical Boardwalk section through Marsh (Source: DOB Consulting Engineers)

'***Boardwalk construction across Avoca River***

The cross section of the boardwalk to be constructed across the debris traps columns is shown in Figure 17 below. As part of the WCC/OPW flood defence scheme, construction access will be provided for the construction of the debris traps which are oval shaped concrete piers approximately 1600mm x 600mm. These are being supported on CFA piles to be installed in the river bed. It is our understanding that temporary gravel working platforms will be provided for the construction of these works and it is intended that the boardwalk deck will be installed at the same time on completion of the debris trap concrete piers. All works within the Avoca river will be constructed during low flow and temporary gravel berms and flow diversions can be put in place to ensure a safe working platform in the river bed to undertake the construction works.

Adjacent to the river walkway on the south bank of the Avoca River, a section of boardwalk will be constructed supported on this section will be constructed on CHS 200mm diameter end driven piles. Again, this section will be constructed off a temporary gravel platform constructed form the river bed at the edge of the river.

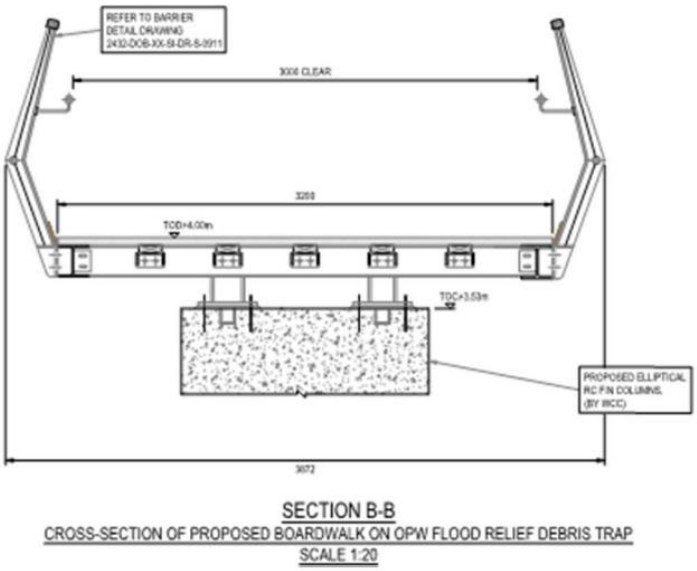

Figure 17. Typical Boardwalk section across WCC Debris Trap Columns

c) Minimise Construction Vehicle Movements

Construction vehicle movements will be minimized through:

- Consolidation of delivery loads to/from the site and manage large deliveries on site to occur outside of peak periods.
- Use of precast/prefabricated materials where possible.
- 'Cut' material generated by the construction works will be re-used on site where possible, through various accommodation works.
- Adequate storage space on site will be provided.
- A strategy will be developed to minimise construction material quantities as much as possible.
- Construction staff vehicle movements will also be minimised by promoting the use of public transport.

The following headings identify some of the measures to be encouraged.

Public Transport

Construction staff will be encouraged to use public transport as means to travel to and from the site where possible. Public transport will be utilised in accordance with the guidelines of the Health Service Executive. An information leaflet will be provided to all staff as part of their induction on site highlighting the location of the various public transport services in the vicinity of the construction site.

Public Roads

A Visual Condition Survey (VCS) will be carried out of all surrounding streets prior to any site works commencing. The Contractor will liaise with Wicklow County Council Roads & Traffic Department to agree any changes to load restrictions and construction access routes for the site. Measures will be put in place as required to facilitate construction traffic whilst simultaneously protecting the built environment.

All entrances and temporary roads will be continuously maintained for emergency vehicle access.

The following measures will be taken to ensure that the site, public roads and surroundings are kept clean and tidy:

- A regular program of site tidying will be established to ensure a safe and orderly site.
- Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
- Food waste will be strictly controlled on all parts of the site.
- Mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate.
- Wheel wash facilities will be provided for vehicles exiting the site.

d) Project Specific Management Plan

A detailed project specific traffic management plan will be developed by the Contractor and agreed with WCC prior to works commencing on site. This plan will be updated as required throughout the project.

Issues addressed in the Traffic Management Plan will include:

- Public safety
- Construction traffic routes
- Deliveries' schedule
- Special deliveries (wide and long loads)
- Traffic flows
- Signage and lighting
- Road opening requirements
- Road closures
- Lighting

9. Provisions for Construction

a) Hoarding, Set-up of Site, and Access / Egress Points

The site area will be enclosed with hoarding details of which are to be agreed with WCC. Hoarding panels will be maintained and kept clean for the duration of the project.

This will involve erecting the hoarding around the proposed site perimeter in line with the finished development description.

b) Removal of Services

Prior to any works a utility survey will be carried out to identify existing services. All services on site will be disconnected, diverted or removed as agreed with service providers.

c) Excavation

This development will involve excavation and removal of material from site for foundations and regrading of the site profile.

The Contractor must prepare a Construction Waste Management Plan in accordance with the "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (Department of Environment, Heritage and Local Government, 2006) and ensure that all material is disposed of at an appropriately licensed land fill site. The Contractor must also outline detailed proposals within the Construction Management Plan to accommodate construction traffic.

d) Site Services Installations

Drainage, power, water will be installed to serve the proposed development.

10. Waste Management

a) Waste Management and Mitigation Measures

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

- On-site segregation of all waste materials into appropriate categories, including:
    - top-soil, sub-soil, bedrock;
    - concrete, bricks, tiles, ceramics, plasterboard;
    - asphalt, tar, and tar products;
    - metals;
    - dry recyclables (e.g. cardboard, plastic, timber).
- All waste material will be stored in skips or other suitable receptacles in a designated waste storage area on the site.
- Wherever possible, left-over material (e.g. timber cut-offs) and any suitable demolition materials shall be reused on or off site.
- Uncontaminated excavated material (top-soil, sub-soil) will be reused on site in preference to the importation of clean fill, as soil to be reused or removed from site must be tested to confirm its contamination status and subsequent management requirements.
- All waste leaving the site will be transported by a suitably licensed/permitted contractor and taken to a licensed/permitted facility.
- All waste leaving the site will be recorded and copies of relevant documentation retained.

b) Predicted Impacts of the Proposed Development

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

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

With a high level of due diligence carried out on site and with the implementation of the proposed mitigation measures, the proposed development's demolition and construction phases are not expected to have a significant environmental impact with respect to waste management. Any such environmental impact shall be limited to the period during which construction works take place on site.

c) Record Keeping

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

The Waste Manager or delegate will record the following;

- Waste taken for reuse off-site;
- Waste taken for recycling; and
- Waste taken for disposal.

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

The system will allow the comparison of these figures with targets established for the recovery, reuse and recycling of construction waste and to highlight the successes or failures against these targets.

d) Training Provisions

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

Waste Manager Training and Responsibilities

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

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

Site Crew Training

Training of the site crew is the responsibility of the Waste Manager and, as such, a site induction waste management brief will be organised. A basic awareness course will be held for all site crew to detail the segregation methods of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

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

e) Consultation with Relevant Bodies

Local Authority

Once the main contractor has been appointed and prior to removal of any waste materials off-site, details of the proposed destination of each waste stream will be provided to the local authority for their approval.

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

Recycling/Salvage Companies

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

Inland Fisheries Ireland

Inland Fisheries Ireland will be consulted throughout the proposed project from prior to commencement to completion of all works on site.

f) Liaison

WCC's relevant departments will be contacted and liaised with prior to the commencement. Where necessary Road Opening Licence applications will be submitted for approval from WCC. The construction company acknowledge that many parties will have an interest in this project throughout the duration of the contract. The construction phase will have a direct impact on the local environment, particularly concerning the following:

- Local residents and land owners
- Tenants and Residents Associations
- Planning Authority
- Other Statutory Authorities
- Building Control
- Environmental Health
- Utilities Providers

The project manager will be responsible for project strategic liaison whilst the construction manager will be responsible for day-to-day liaison and logistics for all the construction related activities.

Both will be permanently based on site with the construction manager as the first point of contact for all concerns, issues and complaints. A display Board will be erected outside the site, which as a minimum will identify key personnel contact addresses and telephone numbers.

Liaison meetings, progress photos, organised site visits are all methods by which the construction company are able to communicate how they intend to carry out the works and keep people informed.

g) Complaints

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 relevant 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.

11. 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.

12. Invasive Species

No invasive species that could impact on the movement of soil on or off site were noted.

13. Monitoring of Avoca River and Arklow Town Marsh

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 the Avoca River and Arklow Town Marsh 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 Wicklow 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.

14. Conclusions

This CEMP has been submitted to show Certain Assets of Dawnhill and Windhill 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.