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Transport Infrastructure Ireland

EIAR Biodiversity Update Report

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Contents

1. Introduction

The additional information presented in this update report, relates to the Chapter 15 of the EIAR for the MetroLink Project (hereafter, referred to as the proposed Project), prepared by Scott Cawley Ltd., and submitted by Jacobs IDOM on behalf of the Transport Infrastructure Ireland (TII) in September 2022 (An Bord Pleanála reference NA29N.314724).

The additional information provided relates to the following items:

- Baseline survey update
- European site updates
- Cumulative impact assessment update
- Air quality assessment update
- Derogation licencing
- Guidance updates
- Policy updates
- Legislative updates
- Royal Canal (Glasnevin Station) Otter Mitigation Plan

For the avoidance of doubt, there has been no change in the design of the proposed Project, the study area or zone of influence (ZoI) considered and assessed in the EIAR. This report should be read in conjunction with the submitted Chapter 15 Biodiversity of the EIAR, including all supplementary appendices as noted therein.

2. Baseline Survey Updates

Additional ecological baseline surveys were undertaken over 2022 and 2023 to verify baseline conditions, given the time that had elapsed since the surveys undertaken for, and published in, the EIAR.

2.1 Survey Methodologies

The survey methodologies for the 2022/23 surveys follow those previously described in Sections 15.2.5.1 to 15.2.5.2.8 (as appropriate) of Chapter 15 Biodiversity of the EIAR. The dates of the 2022/23 surveys are provided in Table 1.

Table 1: Ecological Surveys for the proposed Project and survey dates between 2022 and 2023

Survey	Survey Date(s)
Habitat surveys Including Rare and Protected species, and non-native Invasive species	May, June and July 2022
Mammal surveys (excl. bats) – otter and badger	May, June and July 2022
Bat surveys: Building emergence surveys Walked transect activity surveys Identification of potential bat tree roosts	 June and July 2022 June and July 2022 May, June and July 2022
Breeding bird surveys	May and June 2022

Survey	Survey Date(s)
Wintering bird surveys	October, November and, December 2022 January, February and March 2023
Amphibian habitat suitability	May, June and July 2022
Reptile habitat suitability	May, June and July 2022

2.1.1 Habitat Survey

Habitat surveys, including rare and protected species and non-native invasive plant species, were carried out along the proposed Project on 16, 20 and 27 May, and 3, 7, 16 and 21 June 2022. The 2022 habitat surveys were undertaken following the same methodology described for the habitat surveys in Section 15.2.5.2.1 of the EIAR and represent an accurate, up-to-date and robust baseline for the assessment of likely significant effects.

2.1.2 Mammal Survey (excl. bats)

Mammal surveys were carried out on 16, 20 and 27 May, and 3, 7, 16 and 21 June 2022. The 2022 mammal surveys were undertaken following the same methodology described for the mammal surveys in Section 15.2.5.2.2 of the EIAR and represent an accurate, up-to-date and robust baseline for the assessment of likely significant effects.

2.1.3 Bats

The following sections describe the methodologies employed to carry out the 2022 bat surveys undertaken, based on guidance outlined in Collins, 2016 and represent an accurate, up-to-date and robust baseline for the assessment of likely significant effects. The bat surveys were carried out under the following licenses, issued by the NPWS:

- DER/BAT 2022-02 (Amended 10/05/22) – Derogation licence to disturb bat roosts throughout the State.

Building Emergence Surveys

Buildings/structures located within or immediately adjacent to the proposed Project that were identified as having potential to support roosting bats (i.e. buildings with an obvious, or high, likelihood to support roosting bats due to their size, shelter, protection, conditions and surrounding habitat) were surveyed during the EIAR surveys undertaken in 2018, 2019 and 2020 (see Table 15.5 of the EIAR for list of buildings/structures surveyed).

Repeat post-dusk emergence surveys were undertaken at nine of the 42 buildings/structures between the 20 June and 25 July 2022 (see Figure 1 for locations). The list of buildings and dates of post-dusk emergence surveys are shown in Table 2 with surveys conducted between one and a half hours to two hours after sunset. Bat activity around buildings was monitored using the hand-held bat detector *Elekon BatLogger M* to determine if bats were exiting/entering buildings. All bat calls were analysed using *Elekon BatExplorer* software and manually classified with reference to *British Bat Calls: A Guide to Species Identification* (Russ, 2012).

These nine buildings were selected for resurvey in 2022 as they were located in areas, that were considered sensitive to potential impacts from the proposed Project, based on: the level of bat activity recorded during the 2018-2022 surveys, the presence of higher quality bat habitat, and the connectivity of this habitat to other potential bat habitat beyond the ZoI of the proposed Project.

A single soprano pipistrelle roost, containing one bat, was the only roost recorded during the original EIAR surveys at a structure at St Anne's, north-east of Charter School Hill Road, in Ballymun (approximately 20m east of the proposed Project). As a confirmed transitional/occasional bat roost supporting a single common bat species, it was not subject to resurvey in 2022. Although not directly impacted by the proposed Project, there is potential for indirect impacts during construction. The mitigation strategy in Section 15.5.1.5 accounts for this and, therefore, the absence of a repeat 2022 emergence survey is not considered a limitation to the assessment.

Table 2: Buildings Surveyed for the presence/absence of bats in 2022

Building/Structure Code	Building/Structure Name	Emergence Survey Date(s)
BS07	Residential House – Seaview House	20/06/2022 and 13/07/2022
BS15	Residential house – Nevinstown West	27/06/2022 and 12/07/2022
BS23	Santry Demesne – Derelict 2 story house	21/06/2022 and 18/07/2022
BS24	Santry Demesne – derelict 2 story house at entrance to Santry Lodge	25/07/2022 and 30/06/2022
BS28	Brian Boru	11/07/2022
BS33	Prospect House	07/07/2022
BS34	Des Kelly Interiors	27/06/2022
BS39	22 Luke Street	05/07/2022
BS42	Hines Buildings Charlemont; 19-25 Dartmouth Rd; 19a Dartmouth Rd	27/06/2022

Walked Transect Activity Surveys

Walked bat activity transect surveys were undertaken between 1 June and 14 July 2022, covering the same 16 survey sites as the 2018, 2019 and 2020 surveys, as shown on Figure 15.2 of the EIAR.

Surveys commenced 30 minutes after sunset and were conducted on nights with potential for high levels of bat flight activity (i.e. warm, dry, calm conditions) and each transect was walked once during the survey period. Bat activity was recorded using *Elekon BatExplorer M* bat detectors. All bat calls were analysed using *Elekon BatExplorer* software and manually classified with reference to *British Bat Calls: A Guide to Species Identification* (Russ, 2012).

Identification of potential bat tree roosts

Trees within and immediately adjacent to the proposed road development boundary were inspected for their potential to support, or evidence of, roosting bats between May and July 2022. Features which could potentially be used by roosting bats (potential roost features or PRFs) typically arise from disease, decay or other physical damage to a tree. PRF features have been categorised and described as per Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology

Professionals[1]. Where safely accessible from ground level, PRFs were inspected using a torch and handheld endoscope device.

2.1.4 Breeding Bird Survey

Breeding bird surveys were carried out on 19 and 25 May and 1, 7, 15, 27 June 2022 using a methodology adapted from the Breeding Bird Survey (Gilbert et al., 1998). Although early season surveys were not carried out in 2022, similar to those previously carried out in 2018 and 2019, given the completion of surveys across multiple years (including May and June 2020), and their purpose to verify rather than establish baseline data, the timing of the surveys in 2022 have not imposed any limitations on the survey outcomes or this assessment.

All suitable breeding bird habitat located within approximately 150m of the proposed Project were slowly walked in a manner allowing the surveyor to come within 50m of all habitat features (see Figure 15.1 of the EIAR for survey corridor). Birds were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes. The conservation status of the bird species was recorded as per:

- Birds of Conservation Concern in Ireland (BoCCI) lists which classify bird species into three categories: Red List – birds of high conservation concern; Amber List – birds of medium conservation concern; and Green List – birds not considered threatened (Gilbert et al., 2021)
- Bird species listed on Annex I of the EU Birds Directive (2009/147/EC), and
- SCI species of SPAs within the ZoI of the proposed Project

2.1.5 Wintering Bird Survey

All potential suitable inland feeding and/or roosting sites for wintering birds located within approximately 300m of the proposed Project were identified as part of a desk study exercise in advance of the WBS surveys, which involved a review of recent aerial photography and known inland feeding sites for the SCI species light-bellied Brent goose *Branta bernicla hrota* (Scott Cawley Ltd., 2017).[2] Verification surveys of the previously identified potentially suitable inland feeding and/or roosting sites for winter birds located within approximately 300m of the proposed Project as shown on Figure 15.1 of the EIAR were undertaken across dates between 2022 and 2023 (see Figure 2 of this report). The winter bird field surveys were conducted by Scott Cawley Ltd., ecologists. Each site was surveyed during six visits across the wintering bird season, i.e. 18, 19, 20, 21, 25, 27 October 2022; 22, 23, 29, 30 November 2022; 14, 15, 20, 21 December2022; 17, 18, 19, 23 January 2023; 15,16, 21, 22, February 2023; and 21, 22, 27, 28 March 2023. The 2022/23 wintering bird surveys were undertaken following the same methodology described in Section 15.2.5.2.6 of the EIAR and represent an accurate, up-to-date and robust baseline for the assessment of likely significant effects.

2.1.6 Amphibian Habitat Suitability Survey

Amphibian habitat suitability surveys were carried out on 16, 20 and 27 May, and 3, 7, 16 and 21 June 2022 and undertaken following the same methodology described for the EIAR surveys in Section 15.2.5.2.7 of the EIAR and represent an accurate, up-to-date and robust baseline for the assessment of likely significant effects.

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[1] Andrews, H. (2018) *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals*. Pelagic Publishing

[2] Scott Cawley Ltd. (2017). *Natura Impact Statement – Information for Stage 2 Appropriate Assessment Proposed Residential Development, St. Paul's College, Sybil Hill, Raheny, Dublin 5*.

2.1.7 Reptile Habitat Suitability Survey

Reptile habitat suitability surveys were carried out on 16, 20 and 27 May, and 3, 7, 16 and 21 June 2022 and undertaken following the same methodology described for the EIAR surveys in Section 15.2.5.2.8 of the EIAR and represent an accurate, up-to-date and robust baseline for the assessment of likely significant effects.

2.2 Survey Results

2.2.1 Habitats and Non-Native Invasive Plant Species

The 2022 habitat verification survey of the proposed Project corridor recorded only minor changes in the identified habitats. Changes that were recorded related primarily to areas where there was active construction ongoing or where management and or planting regimes were altered by private landowners or the Local Authority.

There were a small number of changes in the classification of habitats mapped during the original surveys. These largely relate to areas that have become buildings and artificial surfaces (BL3) through construction, have transitioned from amenity grassland (GA2) to dry meadows and grassy verges (GS2), or where small areas of scrub (WS1) have developed. Some artificial surfaces and amenity grasslands, where horticultural planting had occurred, were classified as flower beds and borders (BC4). Some areas of spoil and bare ground (ED2) and recolonising bare ground (ED3) had transitioned to amenity grassland (GA2) or dry meadows and grassy verges (GS2) through management changes. Buildings and artificial surfaces (BL3) that were demolished were classified as spoil and bare ground (ED2), recolonising bare ground (ED3) or amenity grassland (GA2). A small number of hedgerows (WL1) were reclassified as treelines (WL2) or had spread into scrub (WS1) and in Balheary Park some treelines (WL2) have developed to narrow areas of mixed broadleaved woodland (WD1). The habitat changes are presented on Figure 3.

Most change can be attributed to management changes or construction and demolition, which would be expected given the urban/suburban nature of much of the study area. No new habitat types were recorded and no significant changes in the habitat distribution or composition were noted. Habitats where discrete changes were mapped are all valued at either local importance (lower value) or, for some small areas, of local importance (higher value).

No rare or protected terrestrial plant species were recorded within or in close proximity to the proposed Project during the 2022 survey.

There were no additional non-native invasive plant species recorded within or in close proximity to the proposed Project during the 2022 survey. Giant hogweed *Heracleum mantegazzanium*, previously recorded in Balheary Park in 2018, was not recorded there in the 2022 survey. The locations, distribution and extent of non-native invasive plant species recorded in 2022 are shown on Figure 3.

2.2.2 Mammals (excl. bats)

There were no additional otter breeding sites, resting sites or signs recorded within or in close proximity to the proposed Project during the 2022 survey. The locations, distribution and extent of otter breeding/resting sites and activity remains as presented in Section 15.3.7.1 and on Figure 15.8 of the EIAR.

A separate baseline otter survey of the Royal Canal was undertaken to inform Phase 4 of the proposed Royal Canal Greenway Cycle and Pedestrian Route (Phibsborough to Ashtown) in January 2022.[3] The survey extended along the Royal Canal from the M50 or 12th lock at Castleknock to the River Liffey confluence at Spencer Dock, which encompasses the section of canal crossed by the proposed Project between the 5th and 6th locks. The Royal Canal between the 5th and 6th locks was categorised in that report as being subject to high and very high disturbance and no evidence of otter activity was recorded in that area. The Triturus survey findings are consistent with the survey results carried out for the proposed Project between 2018 and 2022, in that there is a local otter population on the Royal Canal but there are no otter breeding or resting places within, or in the vicinity of, the proposed Project boundary.

There were no additional badger breeding or resting sites recorded within or in close proximity to the proposed Project during the 2022 survey. The locations, distribution and extent of badger breeding/resting sites and activity remains as presented in Section 15.3.7.3 and on Figure 15.8 of the EIAR.

Irish hare were recorded on 3rd June 2022 at parkland west of the R108 in Ballymun and within the boundary of the proposed Project in improved grassland fields located at Dardistown, south of Dublin Airport; a finding that is consistent with historical species records from this area. Otherwise, the locations, distribution and extent of Irish hare results remains as presented in Section 15.3.7.4 and on Figure 15.8 of the EIAR.

2.2.3 Bats

Building Emergence Surveys

The results of the 2022 building emergence surveys are consistent with the 2018-2020 results, with no evidence of roosting bats in any of the nine buildings surveyed in 2022. There are no bat roosts within the proposed Project boundary and the soprano pipistrelle roost at at a private dwelling named “St Anne’s”, north-east of the Charter School Hill Road in Ballymun is the only confirmed roost in close proximity to the proposed Project. A summary of the 2022 survey results is provided in Table 3.

Table 3: Summary of the 2022 post- dusk bat emergence survey results

Building/Structure Code	Building/Structure Name	Roost Present	Species Commuting/Foraging in Vicinity
BS07	Residential House – Seaview House	No	*Nyctalus leisleri* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus* *Myotis* sp *Plecotus auratus*
BS15	Residential house – Nevinstown West	No	*Nyctalus leisleri* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus*

[3] Triturus (2022). Royal Canal Greenway Cycle and Pedestrian Route Phase 4 Phibsborough to Ashtown) Otter Survey. Report prepared by Triturus Environmental Ltd. for Roughan & O’Donovan. March 2022.

Building/Structure Code	Building/Structure Name	Roost Present	Species Commuting/Foraging in Vicinity
BS23	Santry Demesne – Derelict 2 story house	No	*Nyctalus leisleri* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus*
BS24	Santry Demesne – derelict 2 story house at entrance to Santry Lodge	No	*Nyctalus leisleri* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus*
BS28	Brian Boru	No	*Nyctalus leisleri*
BS33	Prospect House	No	*Nyctalus leisleri*
BS34	Des Kelly Interiors	No	*Pipistrellus pipistrellus*
BS39	22 Luke Street	No	*Nyctalus leisleri*
BS42	Hines Buildings Charlemont; 19-25 Dartmouth Rd; 19a Dartmouth Rd	No	*Nyctalus leisleri* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus*

Walked Transect Activity Surveys

The results of the 2022 bat activity surveys are consistent with the 2018-2020 surveys, with similar distributions of bat species across the proposed Project. A summary of the survey results is provided in Table 4 with the full results shown on Figure 1.

Table 4: Summary of 2022 walked transect activity surveys results

Transect	Area	Species Recorded
Transect 1	Lissenhall area north of scheme	*Myotis sp.* *Pipistrellus pygmaeus* *Nyctalus leisleri* *Pipistrellus pipistrellus*
Transect 2	Swords Pavilion area	*None*
Transect 3	Airside Shopping Centre area	*Pipistrellus pipistrellus*
Transect 4	DAA lands north of Dublin Airport	*Pipistrellus pipistrellus* *Nyctalus leisleri* *Pipistrellus pygmaeus*
Transect 5	Fields south of Dublin Airport	*Nyctalus leisleri* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus*
Transect 6	Ballymun (near IKEA) fields	*Nyctalus leisleri* *Pipistrellus pipistrellus*
Transect 7	Our Lady of Victories church	*None*

Transect	Area	Species Recorded
Transect 8	Albert Park	*Pipistrellus pipistrellus* *Pipistrellus pygmaeus*
Transect 9	CLG Na Fianna	*Myotis sp.* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus*
Transect 10	Royal Canal and Glasnevin Cemetery	*Myotis sp.* *Nyctalus leisleri* *Pipistrellus pipistrellus* *Pipistrellus pygmaeus*
Transect 11	O'Connell Street area	*None*
Transect 12	St Stephen's Green	*None*
Transect 13	Grand Canal and Dartmouth Square	*None*
Transect 17	Phibsborough	*Nyctalus leisleri* *Pipistrellus pipistrellus*

Leisler's bat was recorded widely across the study area of the proposed Project during the 2022 walked transect surveys, in particular at vegetative boundaries at lands north and south of the Broadmeadow River and Ward River, Lissenhall, Santry Demesne, at fields east of IKEA in Ballymun and at Glasnevin Cemetery and Royal Canal.

The common pipistrelle bat was recorded widely across the study area of the proposed Project during each of the 2022 walked transect surveys, in particular at lands north and south of the Broadmeadow River and Ward River, Lissenhall, fields east of IKEA in Ballymun, Albert Park and at the Royal Canal.

Nathusius' pipistrelle bat was not recorded during the 2022 walked transects or building emergence surveys during the 2022 bat surveys.

The soprano pipistrelle bat was recorded widely across the study area of the proposed Project during the 2022 walked transect surveys, in particular at lands north and south of the Broadmeadow River and Ward River, at Lissenhall, lands at Dardistown, Albert Park, at the boundaries of playing pitches at CLG Na Fianna and Home Farm F.C. and Royal Canal and Glasnevin Cemetery.

The brown long-eared bat was recorded at one location during the 2022 walked transects: at a residential house at Seatown West (Seaview House), south of Balheary Park.

Unidentified *Myotis* bat species were recorded north and south of the Broadmeadow River, at Lissenhall, at the boundaries of playing pitches at CLG Na Fianna and Home Farm F.C. and at Glasnevin Cemetery along the Royal Canal. They were also recorded at a residential house at Seatown west (Seaview House), south of Balheary Park.

Identification of potential bat tree roosts

The trees identified as having potential to support roosting bats (i.e. PRFs) are listed in Table 5 below and shown on Figure 1. Each tree, or grouping of homogenous trees, was classified with regard to their potential to support roosting bats after Collins (2016). Trees with negligible suitability for roosting bats are not described or mapped as they are assessed as not having potential to support roosting bats.

Table 5: Potential Roost Features along or Immediately Adjacent to the Alignment of the proposed Project

Ref. No.	Description	Retain/Fell
PRF6	Mature ash	Retain
PRF7	Linear feature of mature ash with knotholes and ivy	Fell
PRF8	Linear feature of mature ash with knotholes and ivy	Fell
PRF9	Linear feature of mature ash with knotholes and ivy	Fell
PRF10	Linear feature of mature ash with knotholes and ivy	Fell
PRF11	A mature tree with knotholes covered by dense ivy	Fell
PRF12	A dead tree with broken limbs, striped bark and cankers	Fell
PRF13	Unidentified tree with knotholes and broken limbs	Retain
PRF14	Unidentified tree with cankers viewed from afar	Retain
PRF15	Mature sycamore with splints and knotholes	Retain
PRF17	Sycamore with splint/knotholes	Fell
PRF18	Unidentified tree with knotholes	Retain
PRF19	Sycamore tree with knotholes	Retain
PRF20	A treeline of four mature ash tree with broken limbs and dense ivy cover	Fell
PRF21	Mature beech tree with broken limbs, knot-holes and dense ivy cover	Fell
PRF22	Mature group of beech and lime trees with scattered limbs, cavities, broken limbs and dense ivy cover	Fell
PRF23	Mature wych elm with dead wood	Retain
PRF24	A relatively tall dead tree stump with broken limbs, cracks and dense ivy cover	Fell
PRF25	Group of mature beech, ash, sycamore and horse-chestnut teres with knot-holes and damaged limbs	Retain
PRF26	Mature sycamore with knotholes	Fell
PRF27	Mature alder with knotholes	Fell
PRF28	Mature horse-chestnut with flaking bark and knot-holes	Fell
PRF29	Mature lime with knotholes	Retain
PRF30	Eucalyptus trees eucalyptus sp.	Retain
PRF31	Mature holm oak with holes	Fell
PRF33	Mature alder tree with dense ivy	Retain
PRF34	Mature sycamore with shallow, double-leader near its base	Fell
PRF35	Unidentified tree covered in ivy	Retain
PRF36	Mature ash and hawthorn trees with broken limbs and dense ivy cover	Retain

Ref. No.	Description	Retain/Fell
PRF37	Mature ash with ivy over knotholes	Fell
PRF38	Two mature ash covered in ivy	Fell
PRF39	Ash with dense ivy cover	Fell
PRF40	Linear feature of four ash with various features including knotholes, crevices, broken limbs, ivy and shears	Retain
PRF41	Linear feature of four ash with various features including knotholes, crevices, broken limbs, ivy and shears	Retain
PRF42	Linear feature of four ash with various features including knotholes, crevices, broken limbs, ivy and shears	Retain
PRF43	Linear feature of four ash with various features including knotholes, crevices, broken limbs, ivy and shears	Retain
PRF44	Two dead ash with dense ivy cover	Fell
PRF45	Two dead ash with dense ivy cover	Fell
PRF46	Ash with broken limbs	Fell
PRF47	Ash with cankers	Fell
PRF48	Linear group of two ash and two beech with numerous knotholes and splints	Fell
PRF49	Linear group of two ash and two beech with numerous knotholes and splints	Fell
PRF50	Linear group of two ash and two beech with numerous knotholes and splints	Fell
PRF51	Linear feature of limes with knotholes	Retain
PRF52	Linear feature of limes with knotholes	Retain
PRF53	Linear feature of limes with knotholes	Retain
PRF54	Linear feature of limes with knotholes	Retain
PRF55	Lime with knotholes and tearouts	Fell
PRF56	Sycamore with knotholes	Fell
PRF57	Mature lime	Retain
PRF60	Mature ash with knotholes	Retain
PRF73	Mature ash tree with knot-holes and cavities	Retain
PRF74	Mature ash	Retain
PRF76	Adjacent sycamore and London plane with knotholes	Retain
PRF77	Adjacent sycamore and London plane with knotholes	Retain
PRF78	Sycamore with shallow knotholes	Retain
PRF79	Mature sycamore tree with dense ivy cover	Fell
PRF80	Norway maple with knothole	Retain

Ref. No.	Description	Retain/Fell
PRF81	Norway maple with broken limb	Retain
PRF82	Willow leaved pear with knotholes	Fell
PRF83	Cherry cultivar with broken limbs and knotholes	Fell
PRF84	Rowan tree	Fell
PRF85	Mature London plane with knotholes, cankers and flaking bark	Fell
PRF87	Group of London planes with multiple knotholes, crevices	Retain
PRF88	Group of London planes with multiple knotholes, crevices	Retain
PRF91	Mature maple with multiple knotholes	Retain
PRF92	Mature holm oak with knotholes	Retain
PRF93	Weeping ash with knotholes	Fell
PRF94	Mature holm oak with knotholes	Retain
PRF96	Mature holm oak with knotholes	Retain
PRF97	Mature holm oak with knotholes	Retain
PRF98	Mature turkey oak with knotholes	Retain
PRF99	Mature London plane with knotholes, cankers and enlarged branch	Fell
PRF100	Mature birch with multiple knotholes	Fell
PRF101	Wych elm with knotholes	Fell
PRF102	Mature horse-chestnut and sycamore trees with knot-holes	Fell
PRF103	Mature horse chestnut	Fell
PRF104	Mature London plane with cankers, knotholes	Retain
PRF105	Old birch	Fell
PRF106	Mature horse chestnut with cankers and knotholes	Fell
PRF107	Mature horse chestnut with broken limbs and cankers	Fell
PRF108	Mature horse-chestnut and acer species trees, scattered among unsuitable trees, with large cankers, tear-outs and double-leaders	Fell
PRF109	Mature holm oak with knotholes	Fell
PRF110	Mature Japanese pagoda tree with knotholes	Retain
PRF116	Mature London plane with knotholes, cankers and ivy	Retain
PRF117	Mature horse chestnut with knotholes, cankers and flaky bark	Retain
PRF118	Mature sycamore with knotholes, cankers and flaky bark	Retain
PRF119	Mature sycamore	Retain
PRF120	Mature, unidentified tree with dense ivy	Retain
PRF121	Mature birch with flaking bark	Retain

Ref. No.	Description	Retain/Fell
PRF122	Mature sycamore with knotholes and dense ivy	Retain
PRF123	Mature horse chestnut with cankers	Retain
PRF124	Mature holm oak with knotholes	Retain
PRF125	Mature birch with cankers and flaking bark	Retain
PRF126	Mature sycamore with dense ivy and cankers	Retain
PRF127	Mature London plane with dense ivy	Retain

2.2.4 Breeding Birds

The 2022 breeding bird surveys recorded a total of 56 species across the study area, including six species listed as SCIs for SPAs, one Birds Directive Annex I species, six Red listed species of conservation concern [4], 15 Amber listed species of conservation concern and 35 Green listed bird species species of conservation concern.

Six breeding bird species were recorded in 2022 that were not previously recorded in the study area of the proposed Project between 2018 and 2020: feral pigeon *Columba livia domestica*, great black-backed gull *Larus marinus*, kestrel *Falco tinnunculus*, lesser redpoll *Acanthis cabaret*, raven *Corvus corax* and sparrowhawk *Accipiter nisus*. None are Annex I bird species. Kestrel is an amber listed species of conservation concern and all others are green listed for their conservation status

Kestrel was recorded on two occasions: once flying over fields north of Airside Retail Park, and once flying over the northern area of Dublin Airport. Redpoll was recorded in fields at Dardistown on one occasion. Sparrowhawk was recorded on two occasions: once in fields at Dardistown, and once over fields north of Airside Retail Park. Raven was seen on one occasion at Dardistown near the Frylite commercial operation. Great black-backed gull was recorded on green areas at Ballymun and over agricultural fields north of Dublin Airport.

Species that were recorded during the 2018 to 2022 breeding bird surveys but not during the 2022 breeding surveys were: tree sparrow *Passer montanus*, treecreeper *Certhia familiaris*, tufted duck *Aythya fuligula* and snipe *Gallinago gallinago*.

The findings of the 2022 breeding bird surveys are consistent with the previous 2018 and 2020 breeding bird survey results, with similar abundance and distribution of bird species across the study area.

Table 6 below provides a summary of the findings of the 2022 breeding bird surveys with respect to those species which are of conservation concern and are considered to be KERs:

- SCIs, for a breeding population, of SPAs
- Species listed under Annex I of the Birds Directive (2009/147/EC), and
- Red and Amber BoCCI species listed for their breeding populations

[4] Birds of Conservation Concern in Ireland (BoCCI) after Gilbert *et al.* (2021)

Table 6: KER breeding bird species recorded during the 2022 breeding bird surveys

Common Name/*Latin Name*/BTO Code	Distribution in the Study Area	Conservation Importance		
		BoCCI (B – Breeding/W – Wintering)	Annex I (✓ - Yes)	SCI species (✓ - Yes)
Cormorant *Phalacrocorax carbo* (CA)	Observed once flying over buildings north of Blessington Basin on the first visit	Amber (B/W)	-	✓
Goldcrest R*egulus regulus* (GC)	Observed in Swords on four visits, Grand Canal on one visit, Dardistown on three visits and Scoil Chaitríona on one visit.	Amber (B)	-	-
Greenfinch C*arduelis chloris* (GR)	Observed in Dardistown during all visits, in Swords and Ballymun on two visits.	Amber (B)	-	-
Grey wagtail *Motacilla cinerea* (GL)	Observed in fields south of Broadmeadow River on one visit and in Stephen's Green during one visit.	Red (B)	-	-
Herring gull *Larus argentatus* (HG)	Relatively widespread; observed across entire study area.	Amber (B/W)	-	✓
House martin *Delichon urbicum* (HM)	Observed in agricultural fields north of Dublin Airport on three visits, at Dublin Airport on one visit and in Glasnevin cemetery on one visit.	Amber (B)	-	-
House sparrow *Passer domesticus* (HS)	Relatively widespread; observed in Swords and near the Royal Canal during three visits, Ballymun and Dublin Airport on one visit.	Amber (B)	-	-
Kestrel *Falco tinnunculus* (K)	Observed over fields north of Airside Retail Park on one visit and over northern area of Dublin Airport on one visit.	Red	-	-
Kingfisher *Alcedo atthis* (KF)	Observed flying upstream on Broadmeadow river at Balheary Park.	Amber (B)	✓	✓
Lesser black-backed gull *Larus fuscus* (LB)	Observed near Royal Canal on two visits.	Amber (B/W)	-	✓
Linnet *Carduelis cannabina* (LI)	Observed in agricultural fields in Swords and in Dardistown during three visits.	Amber (B)	-	-
Mallard *Anas platyrhynchos* (MA)	Observed near Broadmeadow River on two visits, near Grand Canal on one visit and Royal Canal on one visit.	Amber (B/W)	-	✓

Common Name/*Latin Name*/BTO Code	Distribution in the Study Area	Conservation Importance		
		BoCCI (B – Breeding/W – Wintering)	Annex I (✓ - Yes)	SCI species (✓ - Yes)
Meadow pipit *Anthus pratensis* (MP)	Observed in agricultural fields in Swords during two visits and in Ballymun on one visit.	Red (B)	-	-
Mute swan *Cygnus olor* (MS)	Observed on the Royal Canal during one visit.	Amber (B/W)	-	-
Skylark *Alauda arvensis* (S.)	Observed in agricultural fields north of Dublin Airport on two visits.	Amber (B)	-	-
Starling *Sturnus vulgaris* (SG)	Widespread; observed across the entire study area during all visits	Amber (B)	-	-
Swallow *Hirundo rustica* (SL)	Observed in Swords on five visits, Dardistown on three visits and at the Royal Canal on one visit.	Amber (B)	-	-
Swift *Apus apus* (SI)	Observed near Royal Canal on two visits, near Grand Canal on one visit, and in Swords and Dardistown on one visit.	Red (B)	-	-
Willow warbler *Phylloscopus trochilus* (WW)	Observed in Dardistown on two visits and in Swords on two visits.	Amber (B)	-	-
Yellowhammer *Emberiza etanusla* (Y.)	Observed in Swords (Lissenhall)on one visit, agricultural fields north of Dublin Airport on one visit and in Dardistown on one visit.	Red (B)	-	-

The 2022 breeding bird survey results do not affect the valuation of biodiversity receptors or identification of breeding bird KERs set out in Section 15.3.9.1 of the EIAR.

The full results of the 2022 breeding bird surveys are shown on Figure 4 and provided in Appendix I, highlighting those new species recorded in 2022 compared with the previous surveys.

2.2.5 Wintering Birds

The 2022/23 wintering bird surveys recorded a total of 32 species across the study area, including; 20 species listed as SCIs for SPAs, 4 Birds Directive Annex I species, 10 Red listed species of conservation concern [5], 12 Amber listed species of conservation concern and 8 Green listed bird species of conservation concern. This represents 6 fewer species than originally recorded across the 2018-2021 wintering bird surveys.

An additional four species were recorded during the 2022/23 surveys that were not previously recorded across the 2018-2021 surveys: bar-tailed godwit *Limosa lapponica*, redshank *Tringa etanus*, fieldfare *Turdus pilaris*, grey plover *Pluvialis squatarola*. Fieldfare is Green listed while bar-tailed godwit, grey plover and redshank are Red-listed SCI species. Bar-tailed godwit is also an Annex I species. Malahide

[5] Birds of Conservation Concern in Ireland (BoCCI) after Gilbert *et al.,* (2021)

Estuary SPA is the nearest European site for which bar-tailed godwit and redshank are listed as SCI species. South Dublin Bay and River Tolka Estuary SPA is the nearest European site for which grey plover is listed as an SCI species. The SCI species are discussed in more detail in the AA Update Report.

A single redshank was recorded on one occasion in Broadmeadow Estuary directly west of the M1 Motorway bridge and in a field at Barrysparks, south-east of the R132. Two bar-tailed godwits were observed on one occasion in Darndale park. Fieldfare was recorded in Dardistown during one visit. A single grey plover was recorded on one occasion in agricultural fields at Lissenhall, Swords.

Species that were recorded during the 2018-2021 wintering bird surveys but not during the 2022/23 surveys were: chaffinch *Fringilla coelebs*, goldfinch *Carduelis carduelis*, greenfinch *Carduelis chloris*, jay *Garrulus glandarius*, kestrel *Falco tinnunculus*, Mandarin duck *Aix galericulata*, meadow pipit *Anthus pratensis*, skylark *Alauda arvensis*, song thrush *Turdus philomelos*, starling *Sturnus vulgaris*, stonechat *Saxicola rubicola*, whooper swan *Cygnus cygnus* and yellowhammer *Emberiza citronella*.

The findings of the 2022/23 wintering bird surveys are consistent with the previous 2018-2021 wintering bird surveys results, with similar abundance and distribution of bird species across the study area.

Table 7 below provides a summary of the findings of the wintering bird surveys with respect to those species which are of highest conservation concern, and are considered to be KERs:

- SCIs, for a wintering population, of nearby SPAs
- Species listed under Annex I of the Birds Directive (2009/147/EC), and
- Red and Amber BoCCI species listed for their wintering populations

The full results of the 2022 wintering bird surveys are shown on Figure 2 and provided in Appendix II, highlighting those new species recorded in 2022.23 compared with the previous surveys.

Table 7: KER wintering birds recorded during the 2022/23 wintering bird surveys

Common Name/*Latin Name*/BTO Code	Distribution in the Study Area (Peak Count Recorded and Location)	Peak Count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
Bar-tailed godwit *Limosa lapponica* (BA)	Observed in Darndale park (site code: 147) on one visit	2 birds, Darndale Park, fifth visit	Red (W)	✓	✓
Black-headed gull *Chroicocephalus ridibundus* (BH)	Widespread; observed across the entire study area during all six visits	85 birds, Darndale Park, third visit	Amber (B/W)	-	✓
Black-tailed godwit *Limosa limosa* (BW)	Observed at site in Barrysparks, south-east of the R132 (site code: 115), in Darndale Park (site code: 147) and in	94 birds, site in Barrysparks south-east of the R132 (site code: 115), fourth visit	Red (W)	-	✓

Common Name/*Latin Name*/BTO Code	Distribution in the Study Area (Peak Count Recorded and Location)	Peak Count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
	Coolock Lane Park, during four visits				
Coot *Fulica atra* (CO)	Observed in Blessington Street Park during all six visits	4 birds, Blessington Street Park (site code: 89), first visit	Amber (B/W)	-	-
Common gull *Larus canus* (CM)	Observed at Newbury Park (site code: 144) and Glin Park (site code: 146) during one visit	12 birds, Glin Park (site code: 146), second visit	Amber (B)	-	✓
Cormorant *Phalacrocora x carbo* (CA)	Observed flying over Balheary Park during one visit and in Griffith Park on one visit	1 bird, northwest end of Griffith Park, fourth visit	Amber (B/W)	-	✓
Curlew *Numenius arquata* (CU)	Observed at site in Barrysparks, south-east of the R132 (site code: 115), in eastern fields in Dardistown (site code: 126) during the second visit; playing pitch at Scoil Chaitríona (site code: 160) during the fourth visit; Oscar Traynor Football Field during fourth visit; and, at Coolock Lane Park during second visit	22 birds, playing pitch south of Scoil Chaitríona (site code: 160), fourth visit	Red (B/W)	-	✓
Golden plover *Pluvialis apricaria* (GP)	Observed in south-eastern fields in Dardistown (site code: 132) on four visits and in agricultural field north of Dublin Airport on one visit	35 birds, south-eastern field in Dardistown (site code: 132), fourth visit	Red (B/W)	✓	✓
Grey heron *Ardea cinereal* (H.)	Observed in a playing pitch in Home Farm (site code: 72), Blessington Street Park (site code: 89), at Coolock Lane Park and the Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112)	1 bird, playing pitch in Home Farm (site code: 72), Blessington Street Park (site code: 89), at Coolock Lane Park and the Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112), across four visits	Green (B/W)	-	✓

Common Name/*Latin Name*/BTO Code	Distribution in the Study Area (Peak Count Recorded and Location)	Peak Count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
Grey plover *Pluvialis squatarola*	Observed in agricultural fields at Lissenhall, Swords on one visit.	1 bird, agricultural field Lissenhall, Swords	Red (W)		✓
Herring gull *Larus argentatus* (HG)	Widespread; observed across the entire study area during six visits	92 birds, field in Darndale, east of Belcamp Park, third visit	Amber (B/W)	-	✓
Kingfisher *Alcedo atthis* (KF)	Observed flying towards the Broadmeadow River north of Balheary Park during the second visit	1 bird, Broadmeadow River	Amber (B)	✓	✓
Lesser black-backed gull *Larus fuscus* (LB)	Observed during first visit in agricultural land west of Ennis Lane	1 bird, agricultural field west of Ennis Lane, first visit	Amber (B)	-	✓
Light-bellied Brent goose *Branta bernicla* (BG)	Observed in: Darndale Park (site code: 147) on the second and fifth visits; at Coolock Lane Park on the fifth visit; and amenity grassland north of Moatview Drive (site code: 148)	758 birds, Darndale Park (site code: 147), second visit	Amber (W)	-	✓
Little grebe *Tachybaptus ruficollis* (LG)	Observed on the Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112) during three visits and at a pond within Darndale Park during two visits (site code: 147	4 birds, Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 115), third visit	Green (B/W)	-	✓
Mallard *Anas platyrhynchos* (MA)	Observed: the Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112) during six visits; at a pond within Darndale Park during six visits (site code: 147); at Kilronan Equestrian Centre on one visits; and, at Blessington Street Park	20 birds, at Blessington Street Park (site code: 89) during third visit	Amber (B/W)	-	✓

Common Name/*Latin Name*/BTO Code	Distribution in the Study Area (Peak Count Recorded and Location)	Peak Count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
	during six visits (site code: 89)				
Mute swan *Cygnus olor* (MS)	Observed in Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112), during six visits, a pond within Darndale Park during three visits (site code: 147) and Blessington Street Park (site code: 89) during two visits	6 birds, in Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112)	Amber (B/W)	-	-
Oystercatcher *Haematopus ostralegus* (OC)	Observed: Glin Park (site code: 146) during one visit; Darndale Park (site code: 147) during 3 visits; at Coolock Lane Park during two visits, Balheary Park on two visits	17 birds, Darndale Park (site code: 147), first visit	Red (B/W)	-	✓
Redshank *Tringa totanus* (RK)	Observed in Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 115) during the fifth visit and at site in Barrysparks, south-east of the R132 during the fourth visit	1 bird, Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 115, fifth visit, Barrysparks, south-east of the R132 during the fourth visit	Red (B/W)	✓	-
Redwing *Turdus iliacus* (RE)	Observed in fields north of Swords (site codes: 36 and 78) during second and third visit respectively and in Barrysparks (site code: 115) Dardistown	15 birds, field north of Swords (site code: 78) during third visit	Red (W)	-	-
Snipe *Gallinago gallinago* (SN)	Observed: field in Swords south of Pinnockhill (site code: 54) during four visits; fields north of the airport (site code: 70) during the first visit; and fields in Dardistown (site codes: 126, 131,	12 birds, agricultural fields north of Dublin Airport (site code: 70), first visit	Red (B/W)	-	-

Common Name/*Latin Name*/BTO Code	Distribution in the Study Area (Peak Count Recorded and Location)	Peak Count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
	67 and 132) during the three visits; and in Ballymun (site code: 123) during fourth visit				
Sparrowhawk *Accipiter nisus* (SH)	Observed: flying over agricultural fields north of Swords during the second visit	1 bird, agricultural fields north of Swords, second visit	Green (B)	-	-
Teal *Anas crecca* (T.)	Observed on the Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112) during five visits	28 birds, Broadmeadow Estuary directly west of the M1 Motorway bridge (site code: 112), fourth visit	Amber (B/W)	-	✓
Tufted duck *Aythya fuligula* (TU)	Observed in Blessington Street Park (site code: 89) during all six visits	29 birds, Blessington Street Park (site code: 89), second visit	Amber (W)	-	✓

The 2022/23 wintering bird survey results do not affect the valuation of biodiversity receptors or identification of wintering bird KERs set out in Section 15.3.9.2 of the EIAR.

2.2.6 Amphibians

There were no additional areas of amphibian habitat or amphibian species recorded within or in close proximity to the proposed Project during the 2022 survey. The locations, distribution and extent of amphibian habitat and results remains as presented in Section 15.3.10 and on Figure 15.11 of the EIAR.

2.2.7 Reptiles

There were no additional areas of reptile habitat or reptile species recorded within or in close proximity to the proposed Project during the 2022 survey. The locations, distribution and extent of amphibian habitat and results remains as presented in Section 15.3.10 and on Figure 15.11 of the EIAR.

2.3 Predicted Impact Update

Section 15.4 of the EIAR presents the assessment of impacts at both construction and operational phase on biodiversity within the ZoI of the proposed Project. The results from the additional 2022/23 surveys, as described in Section 2.2 of this report, are generally consistent with those presented in the Biodiversity chapter of the EIAR and comprise only minor changes in bird (both breeding and wintering bird species) and bat numbers or distribution.

The changes to terrestrial habitats recorded in 2022 do alter the areas of habitat loss calculated and presented in Table 15.17 of the EIAR. However, the habitat changes are relatively minor in nature across the habitats present. Although the extent of hedgerow and treeline loss has increased significantly, this is on account of the linear lengths quoted in the EIAR being too low as a result of a

calculation error at that time, and not as a result of an actual increase in losses of those habitat types associated with the proposed Project. Changes to habitat loss extents are accounted for in Section 2.6 below, as are any amendments to the residual impact assessment conclusions.

An updated version of Table 15.17 of the EIAR to capture those terrestrial habitat changes is presented below in Table 8. The extent of aquatic habitat loss remains as per Table 15.17 of the EIAR.

Table 8: Terrestrial habitat types within the boundary of the proposed project that will be impacted on as a result of direct permanent habitat loss

Habitat Type	EIAR Extent	Updated Extent
Local Importance (Higher Value)		
Drainage ditches (FW4)	c. 3.22km	c. 2.32km
Species-rich dry calcareous and neutral grassland (GS1)	c. 3.2ha	c. 2.52ha
Wet grassland (GS4)	c. 0.95ha	c. 0.95ha
(Mixed) broadleaved woodland (WD1)	c. 4.4ha	c. 4.36ha
(Mixed) conifer woodland (WD3)	c. 0.43ha	c. 0.43ha
Scattered trees and parkland (WD5)	c. 0.95ha	c. 0.93ha
Hedgerows (WL1)	c. 385m	c. 6.55km
Treelines (WL2)	c. 77m	c. 3.17km
Immature woodland (WS2)	c. 1.19ha	c. 1.18ha
Local Importance (Lower Value)		
Improved agricultural grassland (GA1)	c. 17.2ha	c. 12.3ha
Amenity grassland (GA2)	c. 12.32ha	c. 16.62ha
Species-poor dry calcareous and neutral grassland (GS1)	c. 2.72ha	c. 2.72ha
Dry meadows and grassy verges (GS2)	c. 8.25ha	c. 12.36ha
Scrub (WS1)	c. 6.08ha	c. 6.45ha
Ornamental/non-native shrub (WS3)	c. 0.45ha	c. 0.39ha
Spoil and bare ground (ED2)	c. 0.13ha	c. 0.11ha
Recolonising bare ground (ED3)	c. 1.98ha	c. 1.55ha
Arable crops (BC1)	c. 51.3ha	c. 54.01ha
Flower beds and borders (BC4)	c. 0.02ha	c. 0.19ha
Earth banks (BL2)	c. 0.62ha	c. 0.35ha
Residential	c. 1.65ha	c. 1.58ha

The results of the additional 2022/23 surveys, including the updates to habitat loss area calculations, do not alter the overall impact assessment conclusions presented in Section 15.4 of the EIAR.

2.4 Mitigation Measures Update

A comprehensive suite of biodiversity mitigation measures are prescribed for the Metrolink project in Section 15.5 of the EIAR. Considering the biodiversity baseline changes set out in Section 2.2 above, and the implications for the impact assessment discussed in Section 2.3, no modifications or additions to the biodiversity mitigation strategy are required.

2.5 Residual Impacts Update

With the implementation of the mitigation measures proposed in Section 15.5 of the Biodiversity Chapter, and notwithstanding the findings of the additional 2022/23 survey data which are not considered material and will not alter the overall impact assessment, it remains that the proposed Project will result in likely significant effects on the following receptors at a local geographic scale:

- Depositing/lowland rivers (FW2) c 1,186m2
- Drainage ditches (FW4) c. 2.32km
- Species-rich dry calcareous and neutral grassland (GS1) c. 2.52ha
- Wet grassland (GS4) c. 0.95ha
- (Mixed) broadleaved woodland (WD1) c. 4.36ha
- (Mixed) conifer woodland (WD3) c. 0.43ha
- Scattered trees and parkland (WD5) c. 0.93ha
- Hedgerows (WL1) c. 6.55km (c.123m in DCC and c.6,425m in FCC)
- Treelines (WL2) c. 3.17km (c.517m in DCC and c.2,656m in FCC)
- Immature woodland (WS2), and c. 1.18ha
- Yellowhammer

There is no change to the EIAR assessment of no likely significant negative residual effect on any other identified KERs, at any geographic scale, as a result of the 2022/23 baseline survey updates.

2.6 Compensatory Measures Update

The planting proposed in the landscape design will compensate for habitat loss by providing new areas of these habitat types, as follows:

- Woodland – 6.2ha
  This is a greater area of woodland habitat than will be lost as a result of the proposed Project (i.e. the loss of 5.97ha of woodland habitats classified as local importance (higher value): WD1, WD3 and WS2). Therefore, the proposed Project will not result in a likely significant negative residual effect on (mixed) broadleaved woodland (WD1), (mixed) conifer woodland (WD3) or immature woodland (WS1) at any geographic scale.
- Grassland – 50ha
  This is a greater area of grassland habitat than will be lost as a result of the proposed Project (i.e. the loss of 3.47ha of grassland habitats valued as local importance (higher value): GS1 and GS4). Therefore, the proposed Project will not result in a likely significant negative residual effect on species-rich dry calcareous neutral grassland (GS1) or wet grassland (GS4) at any geographic scale.
- Hedgerows – 3.07km
  This is less than the length of hedgerow habitat than will be lost as a result of the proposed Project (i.e. the loss of c.123m in DCC and c.6,425m in FCC). Hedgerow loss in DCC is confined to a single hedgerow feature adjacent to the Royal Canal at Glasnevin. The loss of hedgerow in DCC will not result in a likely significant negative residual effect at any geographic scale.

Hedgerow loss in FCC occurs in three main zones: the area between Santry and Dublin Airport, Fosterstown and the R132 around Swords, and at Lissenhall. TII have reached agreement with FCC to include additional conditions in the Railway Order including the replacement of all trees or hedgerows being removed to facilitate the proposed Project. Therefore, hedgerow loss in FCC will not result in a likely significant negative residual effect at any geographic scale.

- Trees – 3,500 trees in FCC and 500 mature trees in DCC
  The landscape plan includes the planting of 4,000 individual trees which will be organised in small copses, lines of trees and within woodland habitats. The planting of these new trees will compensate for the loss of 3.17km of treeline habitat as a result of the proposed Project. Therefore, the proposed Project will not result in a likely significant negative residual effect on treelines (WL2) at any geographic scale
- River/riparian habitat – new 780m long channel on the River Mayne. This is greater than the area of habitat that will be permanently lost to facilitate the permanent discharge outfalls i.e. 20m2 for eight discharge points (i.e. 160m2) in total. It will not compensate for the loss of habitat as a result of permanent culverts, diversions and channel straightening however, these works will be completed in line with best practice guidance including backfilling the areas with appropriate substrate. While there may be a localised decrease in overall habitat quality in these locations due to the proposed Project, for all watercourses, the scale of habitat changes are relatively small in comparison to the overall catchments. Therefore, the proposed Project will not result in a likely significant negative residual effect on depositing/lowland rivers habitat (FW2) at any geographic scale.
- Scattered trees and parkland (WD5) is a habitat type comprised of planted trees and an understorey of grassland habitat. Although the landscape plan has not specifically mapped this habitat type, the planting of large areas of grassland habitats, and trees in copses and lines (as described above) will compensate for the loss of this habitat type. Therefore, the proposed Project will not result in a likely significant negative residual effect on scattered trees and parkland (WD5) at any geographic scale.

There is no new drainage ditch habitat included within the landscape plan to compensate for the loss of 2.32km of drainage ditch habitat. Wetland habitats proposed as part of the proposed Project may compensate for the loss of drainage ditch habitat to a degree, however, it is not considered to be a like-for-like compensation. Therefore, it is considered that there is potential for a significant residual negative effect on drainage ditches (FW4), at a local geographic scale.

The conclusion in Section 15.8 if the EIAR in relation to the predicted likely significant residual negative effect, at a local geographic scale, on yellowhammer as a result of the permanent loss of breeding habitat associated with the proposed Project remains unchanged as a result of the 2022/23 biodiversity baseline updates.

2.7 Summary Update

The overall likely significant residual effects on biodiversity, considering the mitigation and compensatory measures proposed, remains as published in Section 15.9 of the EIAR, The proposed Project is likely to have a significant residual negative effect, at the local geographic scale, on drainage ditches (FW4) as there are no drainage ditches proposed for creation as part of the proposed Project, and on yellowhammer due to the permanent loss of breeding habitat.

3. Designated Sites Updates

3.1 European sites

Additional ecological baseline surveys were undertaken over 2022 and 2023 to verify baseline conditions, given the time that had elapsed since the surveys undertaken for and published in the NIS and EIAR (see Section 2 of the AA Update Report for survey details). As set out in the AA Update Report, it remains the case that the proposed Project will not adversely affect the integrity of any European sites from the results of the baseline surveys, and there is no requirement for additional mitigation beyond that already proposed in the NIS or EIAR, and, therefore, the proposed Project will not result in any likely significant effects on any European sites.

On 12 October 2022, the National Parks and Wildlife Service published updates to the conservation objectives documents for a number of European sites, as confirmed and detailed in Section 3.3 of the AA Update Report. In all cases, the updates involve minor change in wording which does not alter the assessment or conclusions presented in the EIAR in relation to these European sites.

The National Parks and Wildlife Service designated area spatial data has been updated on nine occasions for SAC sites and on three occasions for SPA sites since the EIAR was published on 30 September 2022. As confirmed in Section 3.2, 3.4 and 3.5 of the AA Update Report, only four of the spatial data updates included European sites within the ZoI of the proposed Project. Two of these involved changes that do not alter the assessment or conclusions presented in the EIAR. The remaining two involved the designation of two completely new candidate SPA (cSPA) sites and, therefore these two sites were not considered or assessed in the EIAR submitted to An Bord Pleanála in September 2022:

- North-West Irish Sea cSPA [004236] in July 2023
- Seas off Wexford cSPA [004237] in January 2024

Table 15.9 in Section 15.3.3.1 of the EIAR lists the European sites within the vicinity and potential zone of influence of the proposed Project.

Section 15.4.2.1.1 of the EIAR lists those European sites the proposed Project was assessed as having the potential to adversely affect the integrity of and, therefore, result in likely significant effects on. This list has been updated below to capture those additional European sites scoped in in Section 3.4 and 3.5 of the AA Update Report (additional European sites captured since the EIAR submitted to An Bord Pleanála in September 2022 are indicated in bold):

- Baldoyle Bay SAC [000199]
- Malahide Estuary SAC [000205]
- North Dublin Bay SAC [000206]
- South Dublin Bay SAC [000210]
- Wicklow Mountains SAC [002122]
- Baldoyle Bay SPA [004026]
- Dalkey Islands SPA [004172]
- Howth Head Coast SPA [004113]
- Ireland's Eye SPA [0040117]
- Lambay Island SPA [004069]
- Malahide Estuary SPA [004025]
- North Bull Island SPA [004006]
- Rockabill to SPA [004014]
- Rogerstown Estuary SPA [004015]

- Skerries Islands SPA [004122]
- South Dublin Bay and River Tolka Estuary SPA [004024]
- The Murrough SPA [004186]
- **North-West Irish Sea cSPA [004236]**
- **Seas off Wexford cSPA [004237]**
- **Saltee Islands SPA [004002]**
- **Wicklow Head SPA [004127]**

The other European sites considered in the AA Update Report screen out for Appropriate Assessment and, therefore, are not at risk of any likely significant effects: The River Nanny Estuary and Shore SPA, The Boyne Estuary SPA, Dundalk Bay SPA, Cahore Marshes SPA, The Raven SPA, Wexford Harbour and Slobs SPA, Lady's Island Lake SPA, Tacumshin Lake SPA, Ballyteigue Burrow SPA, Keeragh Islands SPA [004118] and Bannow Bay SPA.

It remains the case that, with the mitigation measures set out in Section 15.5.1.1.1 of the EIAR, the proposed Project will not adversely affect the integrity of any European sites, including the North-West Irish Sea cSPA, Seas off Wexford cSPA, Saltee Islands SPA and Wicklow Head SPA, and, therefore, will not result in any likely significant effects on any European sites.

3.2 Nationally Designated Sites

The scoping in of Wicklow Head SPA also scopes in Wicklow Head pNHA into the EIAR assessment. As with the corresponding SPA site, the only potential by which the proposed Project could affect the pNHA site is by birds from Wicklow Head pNHA utilising habitats within the ZoI of the proposed Project that could potentially be subject to water quality impacts during construction or operation. However, considering the mitigation measures set out in Sections 15.5.1.1 and 15.5.2.1 of the EIAR, the proposed Project poses no risk of any likely significant effects to Wicklow Head pNHA.

The scoping in of the North-West Irish Sea cSPA also scopes in additional pNHA sites into the EIAR assessment. The new North-West Irish Sea cSPA covers a large marine area that is contiguous with many other existing pNHA sites proposed for designation for their bird populations, three of which were not previously considered in the EIAR: Laytown Dunes/Nanny Estuary pNHA, Boyne Coast and Estuary pNHA and Dundalk Bay pNHA. As with the corresponding SPA sites (River Nanny Estuary and Shore SPA, the Boyne Estuary SPA and Dundalk Bay SPA), these pNHA sites are beyond the regular commuting or foraging range of any associated wintering or breeding birds and are, therefore, at no risk of any likely significant effects from the proposed Project.

The scoping in of the Seas off Wexford cSPA also scopes in additional pNHA sites into the EIAR assessment. The new Seas off Wexford cSPA covers a large marine area that is contiguous with and supporting a number of other existing pNHA sites proposed for designation for their bird populations (overlapping SPA sites are included in parenthesis): Cahore Polders and Dunes pNHA (Cahore Marshes SPA), Wexford Slobs and Harbour pNHA (The Raven SPA and Wexford Harbour and Slobs SPA), Lady's Island Lake pNHA (Lady's Island Lake SPA), Tacumshin Lake pNHA (Tacumshin Lake SPA), Saltee Islands pNHA (Saltee Islands SPA), Ballyteigue Burrow pNHA (Ballyteigue Burrow SPA), and Bannow Bay pNHA (Bannow Bay SPA).

In the case of Cahore Polders and Dunes pNHA, Wexford Slobs and Harbour pNHA, Lady's Island Lake pNHA, Tacumshin Lake pNHA, Ballyteigue Burrow pNHA and Bannow Bay pNHA, the corresponding SPA sites screen out for Appropriate Assessment and, therefore, these pNHA sites are not at risk of any likely significant effects from the proposed Project.

The scoping in of the Saltee Islands SPA also scopes in the Saltee Islands pNHA into the EIAR assessment. As with the corresponding SPA site, the only potential by which the proposed Project could

affect the pNHA site is by birds from the Saltee Islands pNHA utilising habitats within the ZoI of the proposed Project that could potentially be subject to water quality impacts during construction or operation. However, considering the mitigation measures set out in Sections 15.5.1.1 and 15.5.2.1 of the EIAR, the proposed Project poses no risk of any likely significant effects to the Saltee Islands pNHA.

4. Cumulative Impact Assessment Update

The cumulative impact assessment presented in Chapter 30 of the EIAR has been updated to capture new or modified projects since the MetroLink application was lodged in September 2022 – see the Cumulative Impacts Addendum Report.

With the implementation of the specified mitigation measures, the additional new or modified projects do not change the assessment of residual likely significant effects of the proposed Project on biodiversity as set out in Section 15.9 of the EIAR.

5. Air Quality Assessment Update

In December 2022, after the EIAR and NIS had been submitted, Transport Infrastructure Ireland (TII) published new guidance documents and standards for EIAR with respect to Air Quality:

- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (TII 2022a);
- PE-ENV-01107: Air Quality Assessment Standard for Proposed National Roads (TII 2022b).

These documents updated the methodology for assessing ecological receptors and provided a strategy for the inclusion of NH_3 within modelling of sensitive ecological receptors. In addition, the provision of a 1 km x 1 km grid square background from APIS allowed for a site-specific background to be added.

Finally, some model refinements were also completed. This included adding the elevations for bridges at locations along the M50 and M1 to ensure dispersion of vehicle emissions from an elevated position was captured within the model.

The result of the modelling updates, which more accurately model impacts on sensitive ecological receptors, are presented in the *Chapter 16 Air Quality, Ecology Related Addenda to EIAR* report.

The proposed Project, as it is electrically operated and remote from any designated sites for nature conservation, does not pose any risk of air quality effects on any designated sites directly. However, induced traffic on the local and national road network, associated with the construction and operation of the proposed Project, does pose a risk of air quality effects from nitrogen oxides (NO_x), ammonia (NH_3) and nitrogen deposition, where it is predicted to increase traffic volumes in the vicinity of designated sites.

Critical levels and loads quoted below in relation to the protection of vegetation and habitat types are from https://www.apis.ac.uk/ and are as follows:

- NO_x - 30µg/m^3 for the protection of vegetation
- NH_3 - 3µg/m^3 for the protection of higher plants and 1 µg/m^3 for the protection of lichens and bryophytes
- nitrogen deposition – habitat dependant and ranges from 3 kg N/ha/year (lower critical load) to 30 kg N/ha/year (upper critical load)

An assessment of the air quality implications for the European sites is presented in the AA Update Report which concluded the proposed Project will not adversely affect the integrity of any European

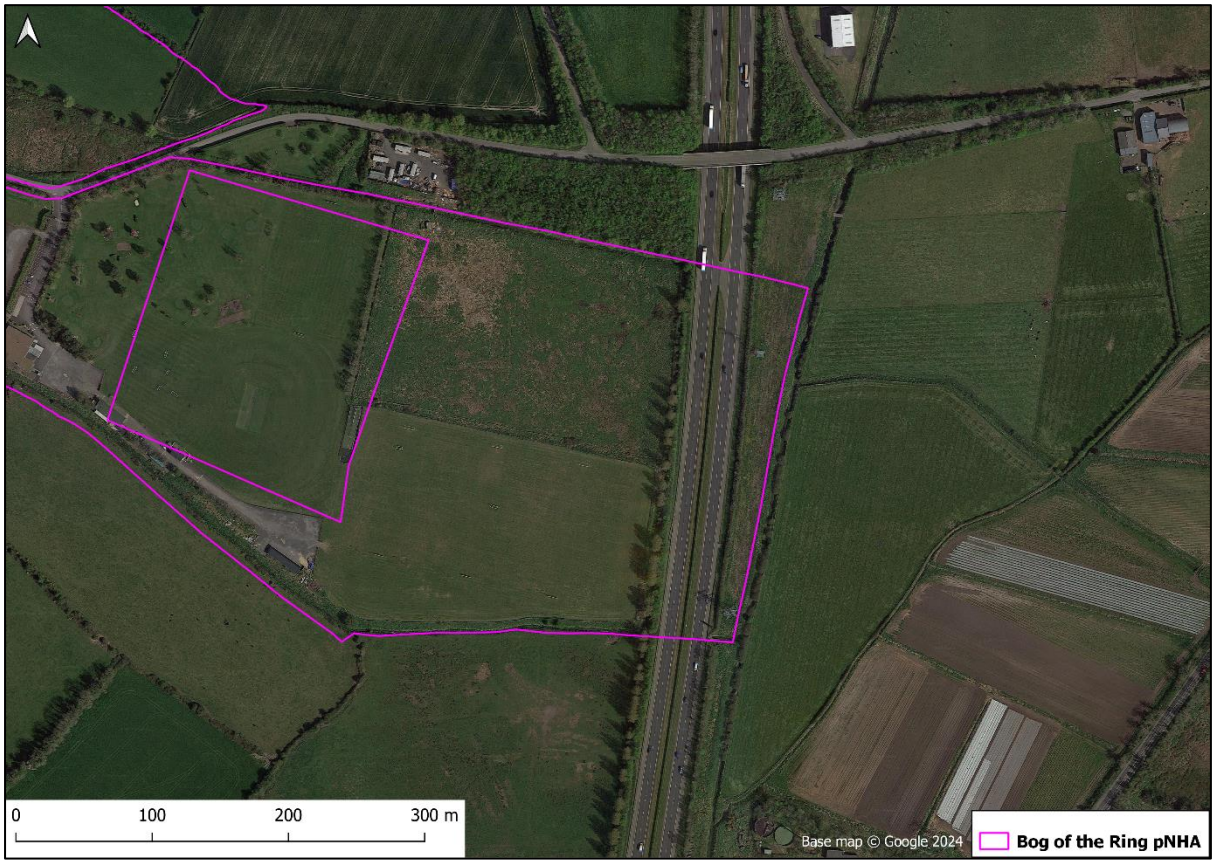
sites as a result of air quality impacts. As a result, the proposed Project will also not have any likely significant effects on any European sites as a result of air quality impacts.

There are ten pNHA sites at risk of air quality effects associated with induced traffic during construction or operation due to their proximity to the affected road network: Bog of the Ring pNHA, Knock Lake pNHA, Rogerstown Estuary pNHA, Malahide Estuary pNHA, Feltrim Hill pNHA, Santry Demesne pNHA, the Royal Canal pNHA, Liffey Valley pNHA, North Dublin Bay pNHA and the Grand Canal pNHA.

5.1 Bog of the Ring pNHA

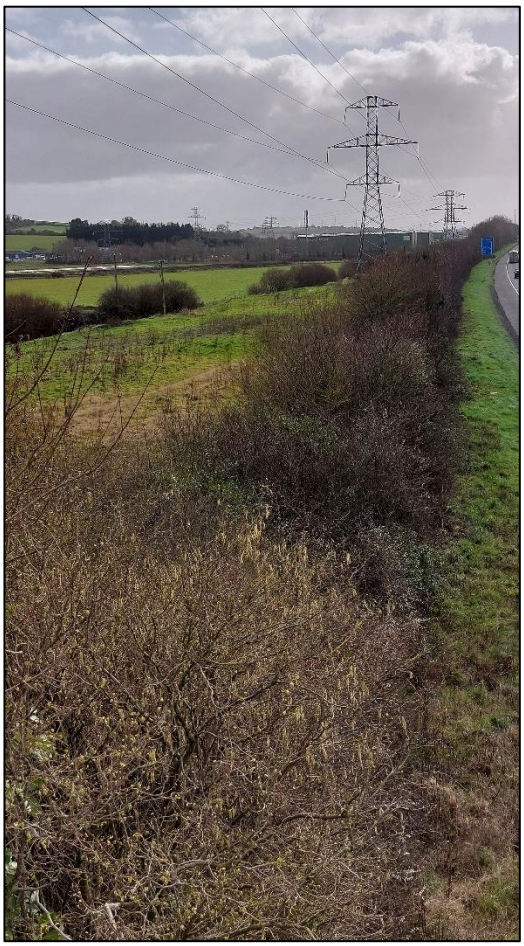
Bog of the Ring pNHA is proposed for designation for marsh habitat and, at its eastern end, is bisected by the M1 (Plate 1).

Plate 1: Bog of the Ring pNHA in Relation to the M1



To the east of the M1 and beyond the roadside verge and hedgerow planting, Bog of the Ring pNHA comprises a narrow improved/wet grassland field on raised ground with electricity pylons (Plate 2). To the west of the M1 and beyond the roadside verge and associated linear woodland planting, Bog of the Ring comprises playing pitches on raised and drained ground to the south and a marsh area to the north. The marsh area is separated from a copse of planted broadleaved woodland, which lies outside of the pNHA, by a drainage ditch that is culverted underneath the M1 to the east.

Plate 2: View south, of lands east of the M1 at Bog of the Ring pNHA



The marsh area adjacent to the M1 was surveyed on the the 28th February 2024 (Plate 3). The level ground is largely vegetated and visiably wet. In places, the vegetation forms a floating carpet and this was most apparent towards the north-eastern corner of the study area. The drainage ditch separating the marsh from the woodland planting at the northern part of the site had recently been dredged. Species recorded from marsh area included: Iris pseudacorus yellow iris, Juncus effusus soft rush, Angelica sylvestris wild angelica, Poa trivialis rough meadow-grass, Filipendula ulmaria meadowsweet, emergent Equisetum arvense field horsetail, Phalaris arundinacea reed canary-grass, and winter brown fragments of Lythrum salicaria purple-loosestrife. Where occasional shallow pools were noted, Agrostis stolonifera creeping bent, Sparganium spp. bur-reed and Lemna spp. duckweed were recorded.

Plate 3: View south, marsh area at Bog of the Ring pNHA in the foreground with the M1 and playing pitches in the background

Bog of the Ring pNHA is unaffected by the proposed Project during construction and operational Scenario A.

Under operational Scenario B, and cumulatively with existing traffic and background levels, the NO_x critical level of 30µg/m^3 for the protection of vegetation is exceeded at Bog of the Ring pNHA to the east (40.71µg/m^3) and west (40.07µg/m^3) of the M1. However, the NO_x concentrations drop back below the critical level within 10m of the road edge. As this 10m zone comprised the roadside verge and planting the impact of the proposed Project will not give rise to any perceptible biodiversity effects on marsh habitat in Bog of the Ring pNHA.

Under operational Scenario B, and cumulatively with existing traffic and background levels, the nitrogen deposition rates are elevated to the east (31.27kg N/ha/year) and west (31.39 kg N/ha/year) of the M1. As that part of Bog of the Ring pNHA to the east of the M1 is not marsh habitat, elevated nitrogen deposition loads will not give rise to any likely significant effects on Bog of the Ring pNHA. Nitrogen deposition critical loads are not published specifically for non-Annex I marsh habitats such as at Bog of the Ring. However, given the slight contribution from the proposed Project at the road edge (0.66kg N/ha/year), the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

Under operational Scenario B, and cumulatively with existing traffic and background levels, the predicted NH_3 concentrations exceed the critical level of 3µg/m^3 for the protection of higher plants for 60m to the east of the M1 (6.18µg/m^3) and for 40m to the west (6.2µg/m^3). As that part of Bog of the Ring pNHA to the east of the M1 is not marsh habitat, exceedances of the NH_3 critical levels will not give rise to any likely significant effects on Bog of the Ring pNHA. Although predicted NH_3 concentrations are above the 3µg/m^3 critical level for the protection of higher plants in the marsh area to the west of the M1, the contribution from the proposed Project is only slight (0.11µg/m^3) at the road edge and only affecting c.0.43ha (or c.13.6%) of that marsh area, or c.0.8% of the overall pNHA area. Therefore, the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects on marsh habitat in Bog of the Ring pNHA.

The proposed Project will not have any likely significant residual effects on Bog of the Ring pNHA as a result of air quality impacts.

5.2 Knock Lake pNHA

Knock Lake is a shallow artificial lake that is situated between the M1 and R132 roads south of Balbriggan, Co. Dublin. Knock Lake pNHA is unaffected by the proposed Project during construction. During operation, under both Scenario A and Scenario B, induced traffic associated with the proposed Project gives rise to slight increases in NO_x and NH_3 concentrations and to nitrogen deposition rates at the pNHA site.

Under operational Scenario A and Scenario B, and cumulatively with existing traffic and background levels, the NO_x critical level of 30µg/m^3 for the protection of vegetation is not exceeded at Knock Lake pNHA.

Under operational Scenario A and Scenario B, and cumulatively with existing traffic and background levels, the nitrogen deposition rates are 6.58kg N/ha/year and 7.82 kg N/ha/year, respectively. Nitrogen deposition critical loads are not published specifically for artificial lake habitats such as Knock Lake and, given the imperceptible contribution from the proposed Project (0.0016kg N/ha/year under Scenario A and 0.028kg N/ha/year under Scenario B), the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

Under operational Scenario A and Scenario B, and cumulatively with existing traffic and background levels, the predicted NH_3 concentrations (1.9µg/m^3 and 2.14µg/m^3, respectively) are below the critical level of 3µg/m^3 for the protection of higher plants. Although predicted NH_3 concentrations are above the 1µg/m^3 critical level for the protection of bryophytes and lichens, the contribution from the proposed Project is imperceptible (0.00002 µg/m^3 and 0.005µg/m^3, respectively for Scenario A and B) and the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

The proposed Project will not have any likely significant residual effects on Knock Lake pNHA as a result of air quality impacts.

5.3 Rogerstown Estuary pNHA

Rogerstown Estuary is proposed for designation for a range of estuarine and coastal habitats and the populations of wintering birds they support, and is generally contiguous with the corresponding European site designations (Rogerstown Estuary SAC and Rogerstown Estuary SPA) in the vicinity of the proposed Project. As assessed in the AA Update Report in relation to those European sites, air quality poses no risk to the habitats for which the site is designated or bird species in Rogerstown Estuary. Therefore, the proposed Project will not have any likely significant effects on Rogerstown Estuary pNHA as a result of air quality impacts.

5.4 Malahide Estuary pNHA

Malahide Estuary is proposed for designation for a range of estuarine and coastal habitats and the populations of wintering birds they support, and is generally contiguous with the corresponding European site designations (Malahide Estuary SAC and Malahide Estuary SPA) in the vicinity of the proposed Project. As assessed in the AA Update Report in relation to those European sites, air quality poses no risk to habitats for which the site is designated or bird species in Malahide Estuary. Therefore, the proposed Project will not have any likely significant effects on Malahide Estuary pNHA as a result of air quality impacts.

5.5 Feltrim Hill pNHA

Feltrim Hill pNHA is proposed for designation as a geological site which was previously known to contain two rare plant species: *Scilla verna* spring squill and *Geranium columbinum* long-stalked crane's-bill.

During construction and operation, under all modelled scenarios, induced traffic associated with the proposed Project gives rise to a slight reduction in NO_x concentrations and slight increases in NH_3 concentrations and to nitrogen deposition rates at the pNHA site.

Under construction and operation, under all modelled scenarios and cumulatively with existing traffic and background levels, the NO_x critical level of 30µg/m^3 for the protection of vegetation is not exceeded at Feltrim Hill pNHA.

Under construction and operation, under all modelled scenarios and cumulatively with existing traffic and background levels, the nitrogen deposition rates range from 6.98 to 7.28kg N/ha/year. Nitrogen deposition critical loads are not published specifically for active quarry sites and, given the imperceptible contribution from the proposed Project (ranges from 0.003 to 0.14kg N/ha/year), the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

Under construction and operation, under all modelled scenarios and cumulatively with existing traffic and background levels, the predicted NH_3 concentrations (1.95 to 2µg/m^3) are below the critical level of 3µg/m^3 for the protection of higher plants. The rare plant species noted above at Feltrim Hill pNHA, are higher plants and, therefore, the critical level of 3µg/m^3 in the relevant and applicable one in relation to assessing the effect of NH_3 concentrations. As the predicted NH_3 concentrations at Feltrim Hill pNHA are below 3µg/m^3, there is no risk to either rare plant species, if they persist at the site.

The proposed Project will not have any likely significant residual effects on Feltrim Hill pNHA as a result of air quality impacts.

5.6 Santry Demesne pNHA

Santry Demesne pNHA is proposed for designation for demesne woodland habitats and the rare plant species *Hypericum hirsutum* Hairy St. John's wort (listed on the Flora (Protection) Order, 2022)).

Santry Demesne pNHA is not affected by the proposed Project during the northern peak construction scenario or operational Scenario B and, under operational Scenario A the proposed Project has a positive effect on NO_x and NH_3 concentrations and to nitrogen deposition loads in the pNHA site.

Under the southern peak construction scenario, and cumulatively with existing traffic and background levels, the NO_x critical level of 30µg/m^3 for the protection of vegetation is not exceeded at Santry Demesne pNHA.

Under the southern peak construction scenario, and cumulatively with existing traffic and background levels, the nitrogen deposition rate increases at Santry Avenue from 16.53 to 16.69kg N/ha/year. However, as this is a short-term impact for the duration of construction, the slight contribution from the proposed Project (0.16kg N/ha/year), and that air quality improved during operation with the proposed Project, the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

Under the southern peak construction scenario, and cumulatively with existing traffic and background levels, the predicted NH_3 concentration at Santry Avenue (2.1µg/m^3) are below the critical level of 3µg/m^3 for the protection of higher plants. The rare plant species noted above at Santry Demesne pNHA, is a higher plant and, therefore, the critical level of 3µg/m^3 in the relevant and applicable one in relation to assessing the effect of NH_3 concentrations. Although predicted NH_3 concentrations are above the 1µg/m^3 critical level for the protection of bryophytes and lichens, the contribution from the proposed Project is imperceptible (0.02 µg/m^3) and the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

The proposed Project will not have any likely significant residual effects on Santry Demesne pNHA as a result of air quality impacts.

5.7 Royal Canal pNHA

The Royal Canal pNHA is proposed for designation for the canal and associated fringing wetland, woodland, grassland, scrub and hedgerow habitats, along with the aquatic plant species *Tolypella intricata* (a stonewort) and *Groenlandia densa* opposite-leaved pondweed (the latter being listed on the Flora (Protection) Order, 2022)).

The proposed Project has a positive affect on NO_x and NH_3 concentrations and to nitrogen deposition in the Royal Canal pNHA during operational Scenario B.

During construction and operational Scenario B, induced traffic associated with the proposed Project gives rise to slight increases in NO_x and NH_3 concentrations and to nitrogen deposition rates at the pNHA site.

Under the construction scenarios, the NO_x critical level of 30µg/m^3 for the protection of vegetation is exceeded at multiple locations along the Royal Canal across Dublin City (up to 58.22µg/m^3). The predicted NH_3 concentrations (2.8 – 3.46µg/m^3) also exceed the critical level of 3µg/m^3 for the protection of higher plants across the city, and nitrogen deposition rates are elevated (13.57 - 26.65kg N/ha/year). However, in the context of a densely populated urban environment with high background traffic and air pollution levels and relatively limited diversity of associated vegetation, and considering the imperceptible contributions from the proposed Project (NO_x of -0.13 to 0.51µg/m^3, NH_3 of -0.04 to 0.05µg/m^3 and nitrogen deposition of 0.0 - 0.37 kg N/ha/year), the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

Under operational scenario A, and cumulatively with existing traffic and background levels, the NO_x critical level of 30µg/m^3 for the protection of vegetation is not exceeded at the Royal Canal pNHA and NO_x concentrations reduce slightly (-0.38 to -0.81µg/m^3). The predicted NH_3 concentrations (3.41 - 3.47µg/m^3) also exceed the critical level of 3µg/m^3 for the protection of higher plants across the city, and nitrogen deposition rates are elevated (15.08 - 15.34kg N/ha/year). However, in the context of a densely populated urban environment with high background traffic and air pollution levels and relatively limited diversity of associated vegetation, and considering the imperceptible contributions from the proposed Project in the context of a pNHA site of c. 692ha in size (NH_3 of -0.01 to 0.04µg/m^3 and nitrogen deposition of -0.08 - 0.19 kg N/ha/year), the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

The proposed Project will not have any likely significant residual effects on the Royal Canal pNHA as a result of air quality impacts.

5.8 Liffey Valley pNHA

Liffey Valley pNHA is proposed for designation for the River Liffey and associated broadleaved woodland and wetland habitats which support three rare plant species: *Scrophularia umbrosa* green figwort, *Lamiastrum galeobdolon* yellow archangel and *Hypericum hirsutum* Hairy St. John's wort (the latter being listed on the Flora (Protection) Order, 2022).

Liffey Valley pNHA is not affected by the proposed Project during the northern peak construction scenario and the proposed Project has a neutral to positive affect on NO_x and NH_3 concentrations and to nitrogen deposition during operational Scenario B.

During southern peak construction and operational Scenario A, induced traffic associated with the proposed Project gives rise to slight increases in NO_x and NH_3 concentrations and to nitrogen deposition rates at the pNHA site.

Under southern peak construction and operational Scenario A, and cumulatively with existing traffic and background levels, the NO_x critical level of 30µg/m^3 for the protection of vegetation is not exceeded at Liffey Valley pNHA.

Under southern peak construction and operational Scenario A, under all modelled scenarios and cumulatively with existing traffic and background levels, the nitrogen deposition rates range from 7.27 to 8.46kg N/ha/year. These values are below the lower critical load of 10kg N/ha/year for broadleaved woodland habitat, and given the imperceptible contribution from the proposed Project (ranges from 0.01 to 0.08kg N/ha/year), the impact of the proposed Project is not predicted to give rise to any biodiversity effects.

Under southern peak construction and operational Scenario A, and cumulatively with existing traffic and background levels, the predicted NH_3 concentrations (1.94 to 2.14µg/m^3) are below the critical level of 3µg/m^3 for the protection of higher plants. The rare plant species noted above at Liffey Valley pNHA, are higher plants and, therefore, the critical level of 3µg/m^3 in the relevant and applicable one in relation to assessing the effect of NH_3 concentrations. Although predicted NH_3 concentrations are above the 1µg/m^3 critical level for the protection of bryophytes and lichens, the contribution from the proposed Project is imperceptible (0.01 to 0.04 µg/m^3) and the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

The proposed Project will not have any likely significant residual effects on Liffey Valley pNHA as a result of air quality impacts.

5.9 North Dublin Bay pNHA

As set out in Tables 3-4 and 3-5 of Appendix VII to the AA Update Report, the proposed Project will reduce traffic volumes during operation, and consequently levels of NO_x, NH_3 and nitrogen deposition loading, in the immediate vicinity of North Dublin Bay pNHA along the M50 at Eastpoint. Therefore, there is no risk to habitat areas within, or adjacent to, North Dublin Bay pNHA from emissions concentrations associated with the proposed Project that would affect habitats or associated species populations.

5.10 Grand Canal pNHA

The Grand Canal pNHA is proposed for designation for the canal and associated fringing wetland, woodland, grassland, scrub and hedgerow habitats, along with the aquatic plant species *Groenlandia densa* opposite-leaved pondweed (listed on the Flora (Protection) Order, 2022)).

The Grand Canal pNHA is not affected by the proposed Project during the northern peak construction scenario and the proposed Project has a neutral to positive affect on NO_x and NH_3 concentrations and to nitrogen deposition during operational Scenarios A and B.

During southern peak construction, induced traffic associated with the proposed Project gives rise to slight increases in NO_x and NH_3 concentrations and to nitrogen deposition rates at the pNHA site.

The NO_x critical level of 30µg/m^3 for the protection of vegetation is exceeded at multiple locations along the Grand Canal across Dublin City ranging between 34.97 and 52.48µg/m^3. The predicted NH_3 concentrations (2.8 - 5.37µg/m^3) also exceed the critical level of 3µg/m^3 for the protection of higher plants across the city, and nitrogen deposition rates are elevated (15.88 - 26.81kg N/ha/year). However, in the context of a densely populated urban environment with high background traffic and air pollution

levels and relatively limited diversity of associated vegetation, and considering the imperceptible contributions from the proposed Project in the context of a pNHA site of c. 1716ha in size (NO_x of 0.01 to 0.35µg/m^3, NH_3 of 0.01 to 0.02µg/m^3 and nitrogen deposition of 0.02 to 0.04 kg N/ha/year), the impact of the proposed Project is not predicted to give rise to any perceptible biodiversity effects.

The proposed Project will not have any likely significant residual effects on the Grand Canal pNHA as a result of air quality impacts.

6. Derogation Licencing

Otter and the seven bat species recorded within the study area for the proposed Project (Leisler's bat, common pipistrelle, Nathusius' pipistrelle, soprano pipistrelle, brown long-eared bat, Daubenton's bat and whiskered bat) are listed on Annex IV of the EU Habitats Directive and are afforded strict protection under Article 12 of the Habitats Directive and Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011.

The assessments undertaken and presented in Chapter 15 Biodiversity of the EIAR in relation to otter and bat species do not, based on the baseline information available, identify the need for a derogation licence under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations, 2011.

7. Guidance Updates

Two biodiversity guidelines relating to bat survey and mitigation have been published since September 2022.

Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition) (Collins (ed.), 2023) was published by the UKs Bat Conservation Trust in September 2023, more than 12 months after the bat surveys informing the MetroLink EIAR were completed. Therefore, changes to the survey methodologies set out in the BCT guidance document are not reflected in how the bat survey data was collected for the proposed Project. Nevertheless, the bat survey programme and methodologies applied between 2018 and 2022 were undertaken with reference to *Environmental Guidelines Series for Planning and Construction of National Roads* (NRA, 2005- 2009) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)* (Collins (ed.), 2016) and the survey methodologies were robust and provide sufficient information to inform the impact assessment and mitigation strategy presented in the EIAR.

The *UK Bat Mitigation Guidelines* (Reason and Wray, 2023) were also published in September 2023. The *Bat Mitigation Guidelines for Ireland V2* (NPWS, 2022), used to inform the bat mitigation strategy for the proposed Project, remain the current best practice Irish guidelines. The bat mitigation strategy developed for the proposed Project was designed with reference to *Environmental Guidelines Series for Planning and Construction of National Roads* (NRA, 2005- 2009) and *Bat Mitigation Guidelines for Ireland V2* (NPWS, 2022), ensuring the protection of bats during construction and operation of the proposed Project.

8. Policy Updates

The following new or updated plans, relevant to biodiversity policy at a national and local authority level, have been published since September 2022:

a) Ireland's 4th National Biodiversity Action Plan 2023–2030

b) TII Biodiversity Plan 2023

c) TII Landscape Plan 2023

d) Dublin City Development Plan 2022-2028

e) Dublin City Biodiversity Action Plan 2021-2025

f) Fingal Development Plan 2023–2029

g) Fingal Biodiversity Action Plan 2023-2030

The proposed Project is compliant with all biodiversity protective policies and objectives set out in Ireland's 4th National Biodiversity Action Plan 2023–2030 and the Dublin City Biodiversity Action Plan 2021-2025. The proposed Project also complements the TII Biodiversity Plan 2023 and the TII Landscape Plan 2023.

The proposed Project is not in full compliance with the following plan level biodiversity protective policies and objectives which relate to providing a biodiversity net gain, protecting ecological corridors and the green infrastructure network (including habitats such as trees, hedgerows and woodland) – see also the *MetroLink Planning Report, Update February 2024*:

a) Dublin City Development Plan 2022-2028: Policy GI16, GI29 and GI41**,** and Objective GIO23

b) Fingal Development Plan 2023–2029: Policies GINHP2, GINHP10, GINHP20 and GINHP21, objectives GINHO2, GINHO4, GINHO21, GINHO30, GINHO41 and GINHO44, and development management standards DMSO125, DMSO140, DMSO154, DMSO155, DMSO156, DMSO159 and DMSO160

c) Fingal Biodiversity Action Plan 2023-2030: Appendix XIV: Planning Requirements – Corridors

TII have reached agreement with both Dublin City Council and Fingal County Council to include additional conditions in the Railway Order relating to the mitigation strategy and moving further towards compliance with plan level biodiversity protective policies and objectives. For example, conditions relating to the protection and retention of trees and hedgerows, landscaping design and, in the case of Fingal County Council, replacement of all trees or hedgerows being removed to facilitate the proposed Project.

9. Legislative Updates

Section 5 of the Wildlife (Amendment) Act, 2023, commenced on 17th November 2023, inserted Part VA Biodiversity into the Wildlife (Amendment) Act, 2000 which sets out how certain public bodies are to consider biodiversity, and in particular the objectives and targets in a National Biodiversity Action Plan, in performing their functions. See Section 8 above regarding compliance with the National Biodiversity Action Plan.

10. Royal Canal (Glasnevin Station) Otter Mitigation Plan

The Department of Housing Local Government and Heritage, as item 5 of their submission SID-DF-2022-015, recommended: 'That a Cross Guns Otter Bypass Plan, to be drawn up in co-operation with the National Parks and Wildlife *Service (NPWS) and Waterways Ireland, shall be submitted to the planning authority for its written agreement before the commencement of any works in connection with the proposed scheme in the vicinity of the 5th and 6th Locks and Cross Guns Bridge, Phibsborough;*

this plan to provide for the preservation of movement of otters along the Royal Canal as far as possible past the works on Glasnevin Station for the duration of these works.'

In developing the otter bypass plan, there are two relevant phases associated with construction works along the Royal Canal to build the proposed Glasnevin Station (see Figure 6.7 of EIAR Appendix A5.5 - Glasnevin Station Construction Period):

1. Two three-month periods when the canal basin will be drained to facilitate construction of a temporary working platform
2. The c.24 month period, in between those two three-month periods, when the canal will be operational and functioning as a fully navigable waterway

During the two three-month periods when the canal basin will be drained, the gates at the 5th lock will be left open and otter fencing will be installed along the bottom of the dry canal basin from the western end of the 5th lock to the western extent of the works. The otter fencing will be offset from the southern canal basin wall by the same width as the otter ledges (i.e. a minimum of 500mm) and at its eastern end will be designed so as to funnel otter into the protected otter passage corridor. Otter fencing will installed as per Guidelines for the Treatment of Otters prior to the Construction of the National Road Schemes (NRA, 2008) and TII's mammal resistant fencing specification but: (1) will comprise a solid barrier rather than wire mesh so as to provide additional visual screening from construction works in the basin, and (2) does not need to be buried, as this may not be desirable nor feasible in the canal basin, and is not necessary in this case, as the purpose of the fencing is not to contain otter but to provide a screened and protected corridor to facilitate otter movements along the canal basin during construction.

Otter ledges will be installed along the southern edge of the canal at the 6th lock to provide otter access up and over each of the lock gates to access the corridor created between the southern canal basin wall and the otter fencing, and the canal and towpaths beyond the works area to the east and west. Otter ledges will be at least 500mm in width and allow at least 600mm headroom.

The indicative location and extent of otter fencing, and the indicative location of otter ledges at the lock gates are shown on Drawing ML1-JAI-EIA-ROUT_XX-DR-Y-40100. Drawing ML1-JAI-EIA-ROUT_XX-DR-Y-310002 shows a cross section of the works area with the otter fencing and protected otter passage corridor.

Use of the mammal passage facilities will be monitored by the Project Ecologist (employed by the Employer) and/or the Ecological Clerk of Works (employed by the Contractor), for each of the 3-month periods when the canal will be drained and the mitigation measures will be in-situ, using infrared camera traps. The otter fencing and ledges will be regularly inspected by an ecologist over each of the 3-month periods to ensure its effectiveness and if necessary, adjustments will be made to maintain functioning.

During the in-between c.24 month period, when the canal will be operational, a narrow ledge at least 500mm wide will be maintained between the top of the northern canal basin wall and the fencing separating the canal from the construction site to the north (see panel 3 of Figure 6.7 of EIAR Appendix A5.5). This ledge will not be accessible by the public and will provide otter with bankside access subject to lower human disturbance levels that the southern towpath.

Appendix I

Breeding bird species recorded during the 2022 breeding bird surveys

Species recorded in 2022 that were not recorded during previous surveys are highlighted in grey

Common Name	Latin name	Conservation Status[6]	2018, 2019 and 2020	2022
Blackbird	*Turdus merula*	Green	Yes	Yes
Blackcap	*Sylvia atricapilla*	Green	Yes	Yes
Blue tit	*Cyanistes caeruleus*	Green	Yes	Yes
Bullfinch	*Pyrrhula pyrrhula*	Green	Yes	Yes
Buzzard	*Buteo buteo*	Green	Yes	Yes
Chaffinch	*Fringilla coelebs*	Green	Yes	Yes
Chiffchaff	*Phylloscopus collybita*	Green	Yes	Yes
Coal tit	*Periparus ater*	Green	Yes	Yes
Collared dove	*Streptopelia decaocto*	Green	Yes	Yes
Common whitethroat	*Sylvia communis*	Green	Yes	Yes
Coot	*Fulica atra*	Amber	Yes	No
Cormorant	*Phalacrocorax carbo*	Amber	Yes	Yes
Dunnock	*Prunella modularis*	Green	Yes	Yes
Feral pigeon	*Columba livia* f. *domestica*	Green	No	Yes
Goldcrest	*Regulus regulus*	Amber	Yes	Yes
Goldfinch	*Carduelis carduelis*	Green	Yes	Yes
Great black-backed gull	*Larus marinus*	Green	No	Yes
Great tit	*Parus major*	Green	Yes	Yes
Greenfinch	*Carduelis chloris*	Amber	Yes	Yes
Grey heron	*Ardea cinerea*	Green	Yes	Yes
Grey wagtail	*Motacilla cinerea*	Red	Yes	Yes
Herring gull	*Larus argentatus*	Amber	Yes	Yes
Hooded crow	*Corvus cornix*	Green	Yes	Yes
House martin	*Delichon urbicum*	Amber	Yes	Yes
House sparrow	*Passer domesticus*	Amber	Yes	Yes
Jackdaw	*Corvus monedula*	Green	Yes	Yes
Kestrel	*Falco tinnunculus*	Red	No	Yes
Kingfisher	*Alcedo atthis*	Amber	Yes	Yes
Lesser black-backed gull	*Larus fuscus*	Amber	Yes	Yes
Lesser redpoll	*Acanthis flammea cabaret*	Green	No	Yes
Linnet	*Carduelis cannabina*	Amber	Yes	Yes
Long-tailed tit	*Aegithalos caudatus*	Green	Yes	Yes

[6] Gilbert, G., Stanbury, A. & Lewis, L. (2021) Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds 43: 1-22*.

Common Name	Latin name	Conservation Status[6]	2018, 2019 and 2020	2022
Magpie	*Pica pica*	Green	Yes	Yes
Mallard	*Anas platyrhynchos*	Amber	Yes	Yes
Meadow pipit	*Anthus pratensis*	Red	Yes	Yes
Mistle thrush	*Turdus viscivorus*	Green	Yes	Yes
Moorhen	*Gallinula chloropus*	Green	Yes	Yes
Mute swan	*Cygnus olor*	Amber	Yes	Yes
Pheasant	*Phasianus colchicus*	N/A	Yes	Yes
Pied wagtail	*Motacilla alba*	Green	Yes	Yes
Raven	*Corvus corax*	Green	No	Yes
Reed bunting	*Emberiza schoeniclus*	Green	Yes	Yes
Robin	*Erithacus rubecula*	Green	Yes	Yes
Rook	*Corvus frugilegus*	Green	Yes	Yes
Sand martin	*Riparia riparia*	Amber	Yes	No
Sedge warbler	*Acrocephalus schoenobaenus*	Green	Yes	Yes
Skylark	*Alauda arvensis*	Amber	Yes	Yes
Snipe	*Gallinago gallinago*	Red	Yes	No
Song thrush	*Turdus philomelos*	Green	Yes	Yes
Sparrowhawk	*Accipiter nisus*	Green	No	Yes
Starling	*Sturnus vulgaris*	Amber	Yes	Yes
Stonechat	*Saxicola rubicola*	Green	Yes	Yes
Swallow	*Hirundo rustica*	Amber	Yes	Yes
Swift	*Apus apus*	Red	Yes	Yes
Tree sparrow	*Passer montanus*	Amber	Yes	No
Treecreeper	*Certhia familiaris*	Green	Yes	No
Tufted duck	*Aythya fuligula*	Amber	Yes	No
Willow warbler	*Phylloscopus trochilus*	Amber	Yes	Yes
Wood pigeon	*Columba palumbus*	Green	Yes	Yes
Wren	*Troglodytes troglodytes*	Green	Yes	Yes
Yellowhammer	*Emberiza citrinella*	Red	Yes	Yes

Appendix II

Wintering bird species recorded during the 2022-2023 wintering bird surveys

Species recorded over the winter of 2022/23 that were not recorded during previous surveys are highlighted in grey

Common Name	Latin name	Conservation Status[7]	2018-2019, 2019-2020, 2020-2021	2022-2023
Bar-tailed godwit	*Limosa lapponica*	Red	No	Yes
Black-headed gull	*Chroicocephalus ridibundus*	Amber	Yes	Yes
Black-tailed godwit	*Limosa limosa*	Red	Yes	Yes
Buzzard	*Buteo buteo*	Green	Yes	Yes
Chaffinch	*Fringilla coelebs*	Green	Yes	No
Common gull	*Larus canus*	Amber	Yes	Yes
Coot	*Fulica atra*	Amber	Yes	Yes
Cormorant	*Phalacrocorax carbo*	Amber	Yes	Yes
Curlew	*Numenius arquata*	Red	Yes	Yes
Fieldfare	*Turdus pilaris*	Green	No	Yes
Golden plover	*Pluvialis apricaria*	Red	Yes	Yes
Goldfinch	*Carduelis carduelis*	Green	Yes	No
Great black-backed gull	*Larus marinus*	Green	Yes	Yes
Greenfinch	*Carduelis chloris*	Amber	Yes	No
Grey heron	*Ardea cinerea*	Green	Yes	Yes
Grey plover	*Pluvialis squatarola*	Red	No	Yes
Herring gull	*Larus argentatus*	Amber	Yes	Yes
Jay	*Garrulus glandarius*	Green	Yes	No
Kestrel	*Falco tinnunculus*	Red	Yes	No
Kingfisher	*Alcedo atthis*	Amber	Yes	Yes
Lesser black-backed gull	*Larus fuscus*	Amber	Yes	Yes
Light-bellied Brent goose	*Branta bernicla hrota*	Amber	Yes	Yes
Little egret	*Egretta garzetta*	Green	Yes	Yes
Little grebe	*Tachybaptus ruficollis*	Green	Yes	Yes
Mallard	*Anas platyrhynchos*	Amber	Yes	Yes
Mandarin duck	*Aix galericulata*	N/A	Yes	No
Meadow pipit	*Anthus pratensis*	Red	Yes	No
Moorhen	*Gallinula chloropus*	Green	Yes	Yes
Mute swan	*Cygnus olor*	Amber	Yes	Yes
Oystercatcher	*Haematopus ostralegus*	Red	Yes	Yes

[7] Gilbert, G., Stanbury, A. & Lewis, L. (2021) Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds 43: 1-22*.

Common Name	Latin name	Conservation Status[7]	2018-2019, 2019-2020, 2020-2021	2022-2023
Redshank	*Tringa totanus*	Red	No	Yes
Redwing	*Turdus iliacus*	Red	Yes	Yes
Skylark	*Alauda arvensis*	Amber	Yes	No
Snipe	*Gallinago gallinago*	Amber	Yes	Yes
Song thrush	*Turdus philomelos*	Green	Yes	No
Sparrowhawk	*Accipiter nisus*	Green	Yes	Yes
Starling	*Sturnus vulgaris*	Amber	Yes	No
Stonechat	*Saxicola torquata*	Green	Yes	No
Teal	*Anas crecca*	Amber	Yes	Yes
Tufted duck	*Aythya fuligula*	Amber	Yes	Yes
Whooper swan	*Cygnus cygnus*	Amber	Yes	No
Yellowhammer	*Emberiza citrinella*	Red	Yes	No

Drawings

Figure 1 Bat survey results 2022 (Walked Transect, Building and Tree Surveys)

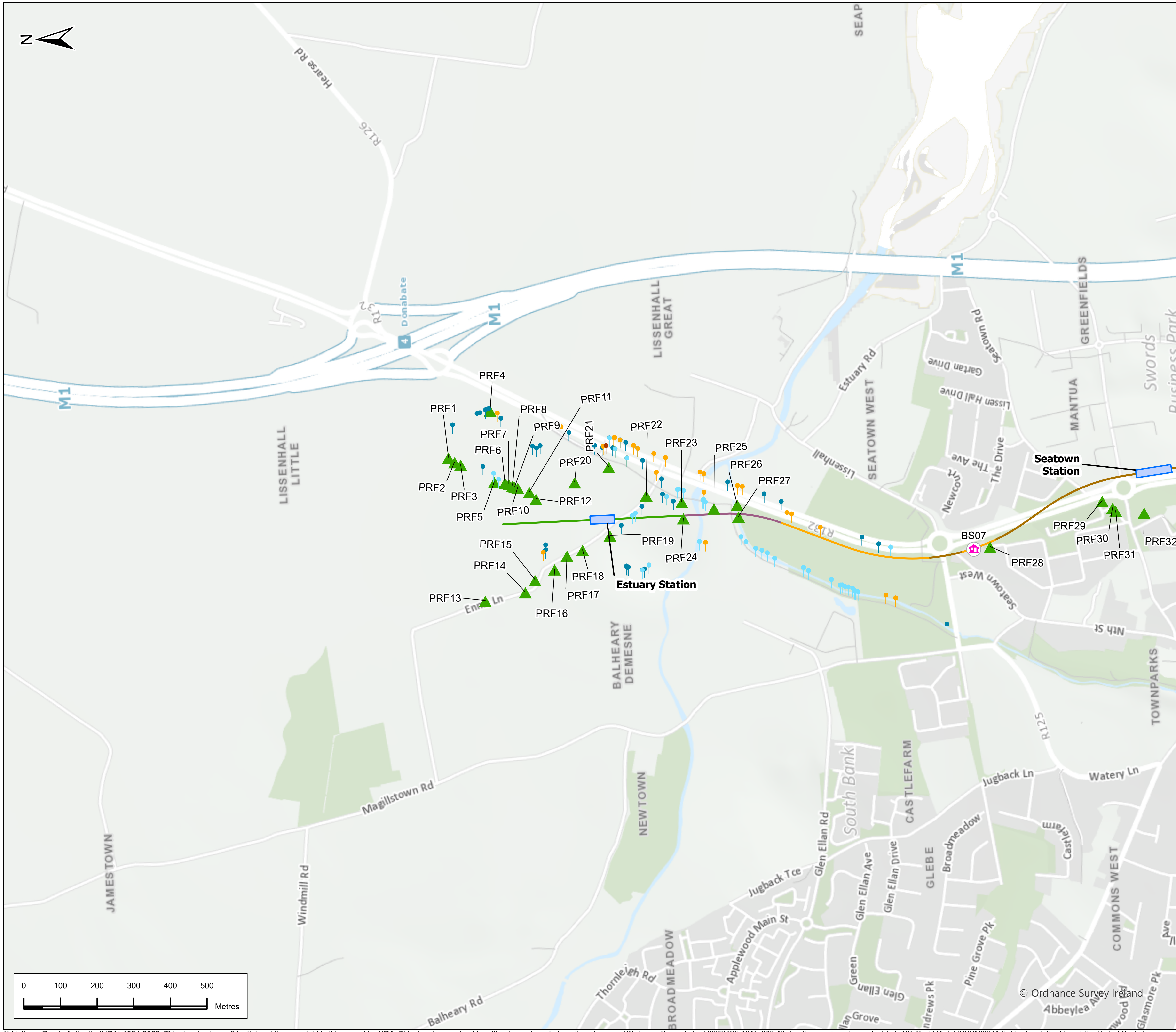
Figure 2 Wintering bird survey results 2022

Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

Figure 4 Breeding bird Survey Results 2022

ML1-JAI-EIA-ROUT_XX-DR-Y-40100 – Otter Mitigation Measures at Royal Canal

ML1-JAI-EIA-ROUT_XX-DR-Y-310002– Otter Mitigation Measures at Royal Canal – Cross Section



Legend

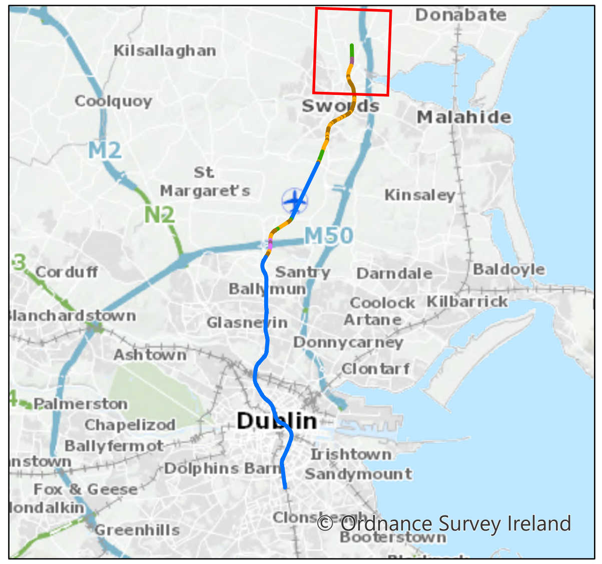
Alignment

- Cut & Cover
- Retained Cut
- Surface
- Viaduct
- Station Locations
- Potential Tree Roost
- Buildings surveyed for bats in 2022

Bat Detector Results 2022

- Common pipistrelle *Pipistrellus pipistrellus*
- Leisler's bat *Nyctalus leisleri*
- Myotis bat species *Myotis sp.*
- Soprano pipistrelle *Pipistrellus pygmaeus*

NOTE: Survey areas are provided in Figure 15.2



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P03	16/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 1 Bat survey results 2022 (Walked Transect, Building and Tree Surveys) Sheet 1 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
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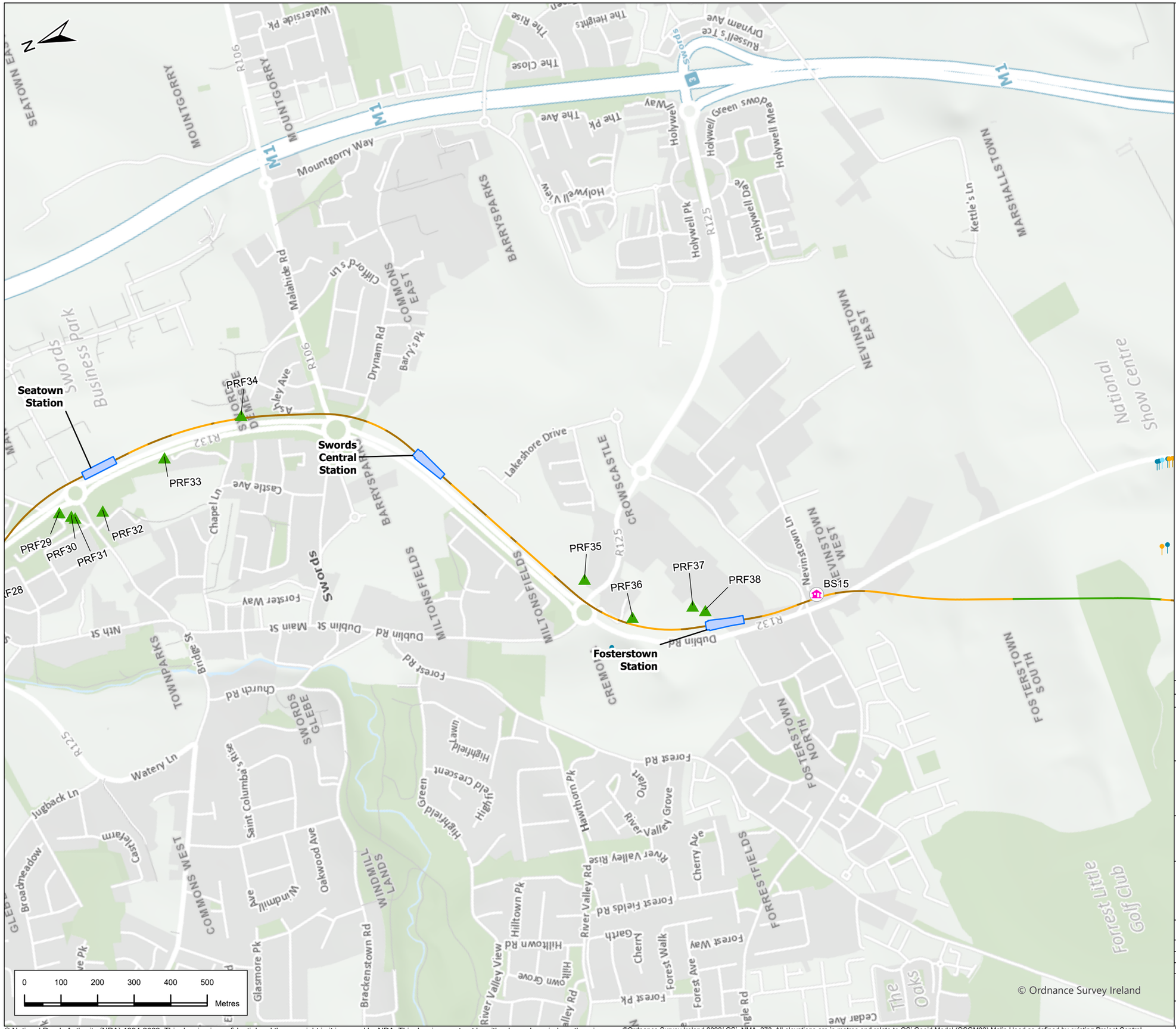
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-16113	Rev P03



Legend

Alignment

- Cut & Cover
- Retained Cut
- Surface
- Station Locations
- Potential Tree Roost
- Buildings surveyed for bats in 2022

Bat Detector Results 2022

- Common pipistrelle *Pipistrellus pipistrellus*
- Leisler's bat *Nyctalus leisleri*
- Myotis bat species *Myotis sp.*
- Soprano pipistrelle *Pipistrellus pygmaeus*

NOTE: Survey areas are provided in Figure 15.2

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P03	16/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: Transport Infrastructure Ireland (Bonneagar Iompair Éireann)

Project: METROLINK

Drawing Title: Figure 1 Bat survey results 2022 (Walked Transect, Building and Tree Surveys) Sheet 2 of 7

Drawing Status: FINAL

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Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-16114	Rev P03

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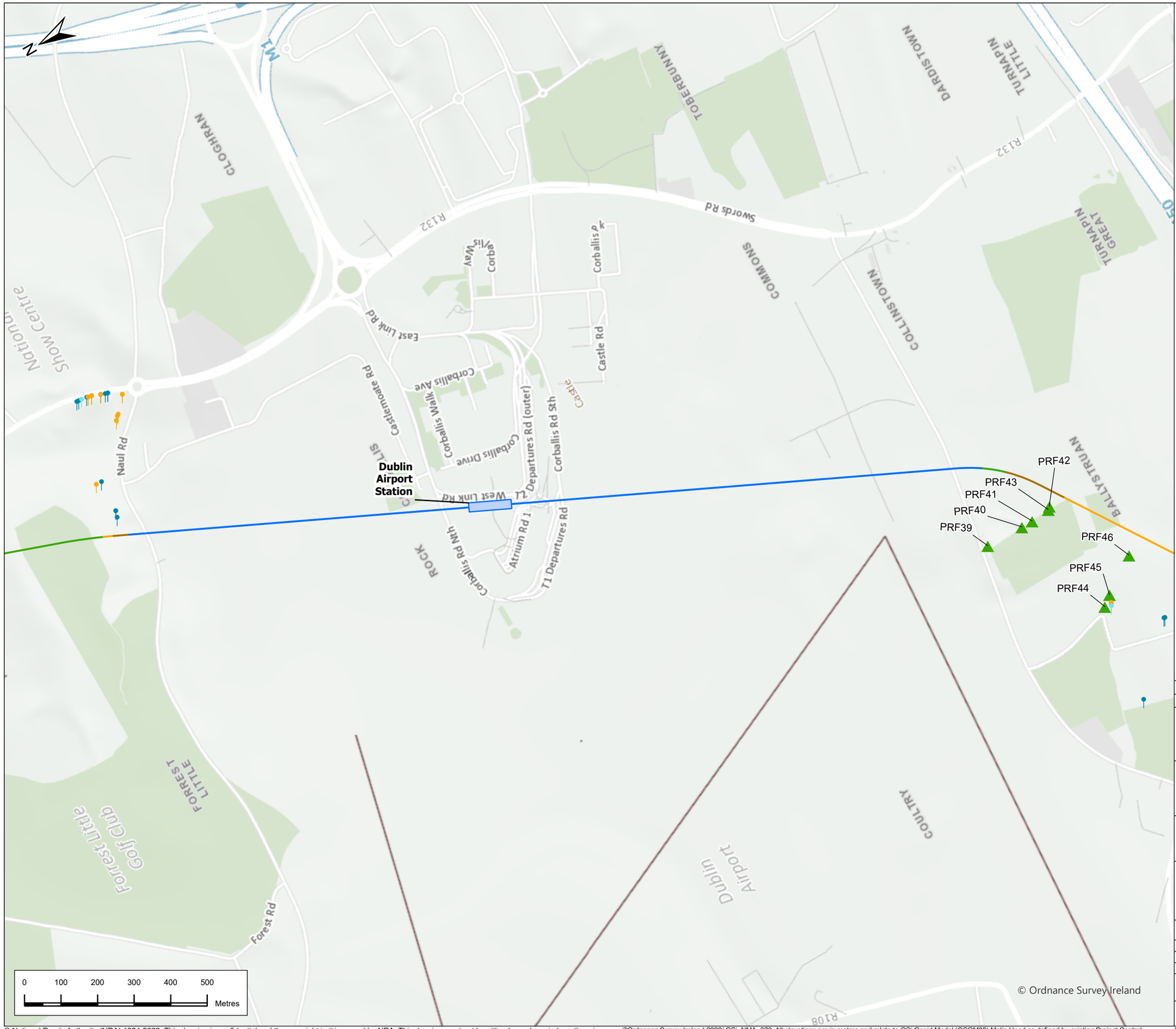

Legend

Alignment

- Cut & Cover
- Retained Cut
- Surface
- Tunnel
- Station Locations
- Potential Tree Roost
- Buildings surveyed for bats in 2022

Bat Detector Results 2022

- Common pipistrelle *Pipistrellus pipistrellus*
- Leisler's bat *Nyctalus leisleri*
- Myotis bat species *Myotis sp.*
- Soprano pipistrelle *Pipistrellus pygmaeus*

NOTE: Survey areas are provided in Figure 15.2

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P03	16/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 1 Bat survey results 2022 (Walked Transect, Building and Tree Surveys) Sheet 3 of 7

Drawing Status: FINAL

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Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-16115	Rev P03

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Legend

Alignment

- Cut & Cover
- Incline
- Retained Cut
- Surface
- Tunnel
- Viaduct
- Station Locations
- Potential Tree Roost
- Buildings surveyed for bats in 2022

Bat Detector Results 2022

- Common pipistrelle *Pipistrellus pipistrellus*
- Leisler's bat *Nyctalus leisleri*
- Myotis bat species *Myotis sp.*
- Soprano pipistrelle *Pipistrellus pygmaeus*

NOTE: Survey areas are provided in Figure 15.2

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P03	16/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 1 Bat survey results 2022
(Walked Transect, Building and Tree Surveys)
Sheet 4 of 7

Drawing Status	FINAL	
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Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-16116	Rev P03

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PRF68
PRF69
PRF70
PRF71
PRF66
PRF65
PRF67
PRF73
PRF74
PRF72
PRF75
PRF76
PRF77
PRF78
PRF79

Collins Avenue Station

Griffith Park Station

Glasnevin Station

0 100 200 300 400 500 Metres

Legend

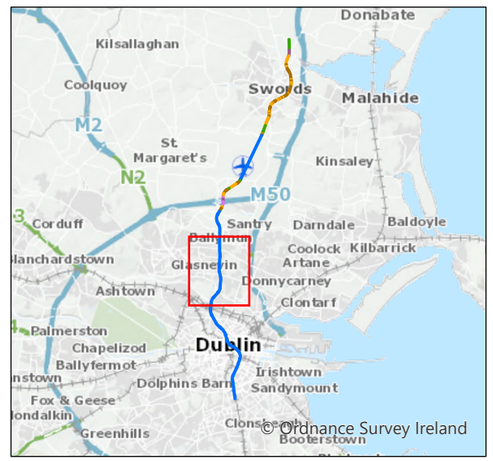
Alignment

- Tunnel
- Station Locations
- Potential Tree Roost
- Buildings surveyed for bats in 2022

Bat Detector Results 2022

- Common pipistrelle *Pipistrellus pipistrellus*
- Leisler's bat *Nyctalus leisleri*
- Myotis bat species *Myotis sp.*
- Soprano pipistrelle *Pipistrellus pygmaeus*

NOTE: Survey areas are provided in Figure 15.2



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P03	16/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 1 Bat survey results 2022
(Walked Transect, Building and Tree Surveys)
Sheet 5 of 7

Drawing Status: FINAL

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Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-16117	Rev P03

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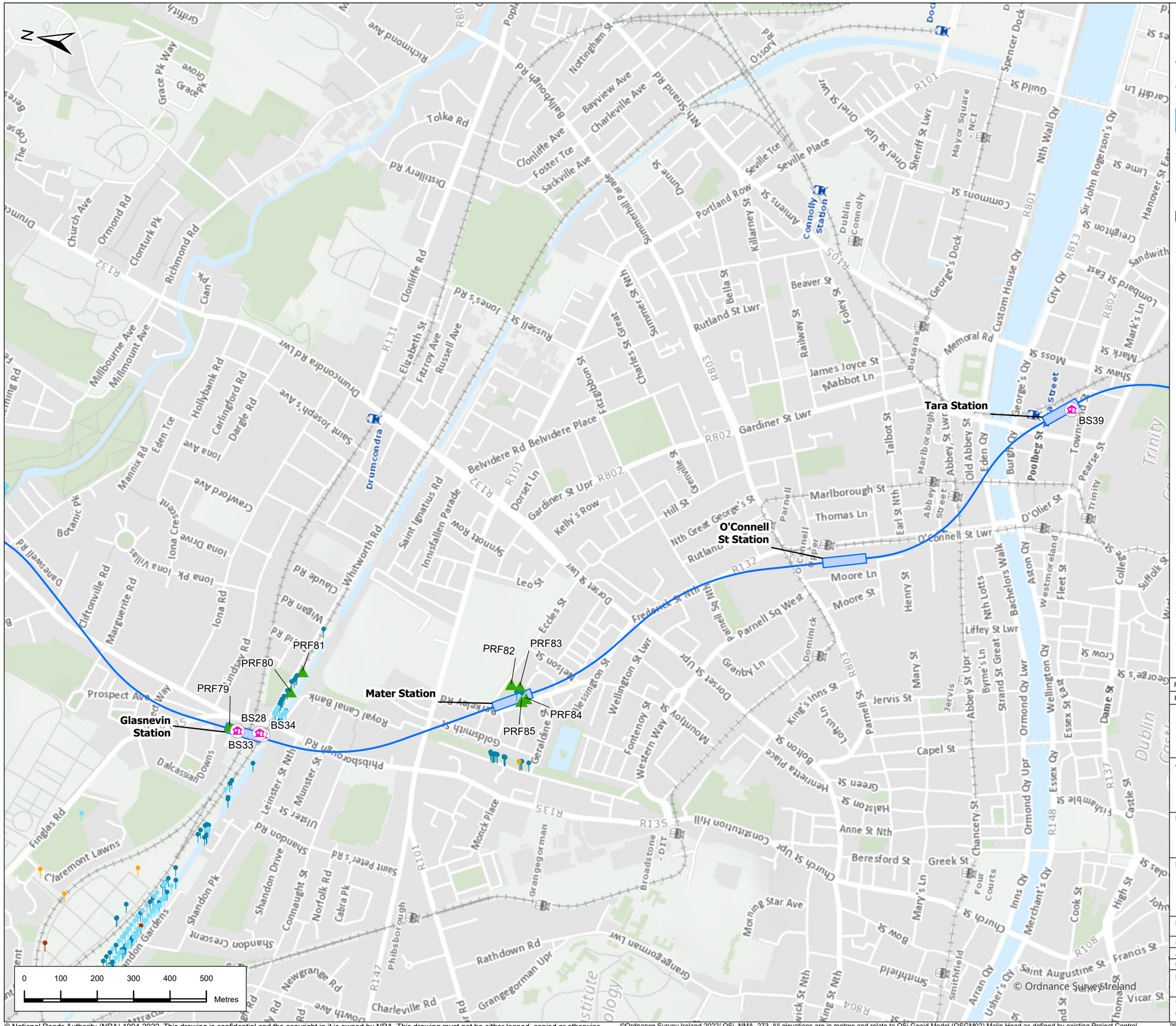

Legend

Alignment

- Tunnel
- Station Locations
- Potential Tree Roost
- Buildings surveyed for bats in 2022

Bat Detector Results 2022

- Common pipistrelle *Pipistrellus pipistrelle*
- Leisler's bat *Nyctalus leisleri*
- Myotis bat species *Myotis sp.*
- Soprano pipistrelle *Pipistrellus pygmaeus*

NOTE: Survey areas are provided in Figure 15.2

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P03	16/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 1 Bat survey results 2022 (Walked Transect, Building and Tree Surveys) Sheet 6 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
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Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-16118	Rev P03

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Path: \\gblon0us01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.7 Bat survey results.aprx

Legend

Alignment

- Tunnel
- Station Locations
- Potential Tree Roost
- Buildings surveyed for bats in 2022

Bat Detector Results 2022

- Common pipistrelle *Pipistrellus pipistrellus*
- Leisler's bat *Nyctalus leisleri*
- Myotis bat species *Myotis sp.*
- Soprano pipistrelle *Pipistrellus pygmaeus*

NOTE: Survey areas are provided in Figure 15.2

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P03	16/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 1 Bat survey results 2022
(Walked Transect, Building and Tree Surveys)
Sheet 7 of 7

Drawing Status	FINAL	
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Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-16119	Rev P03

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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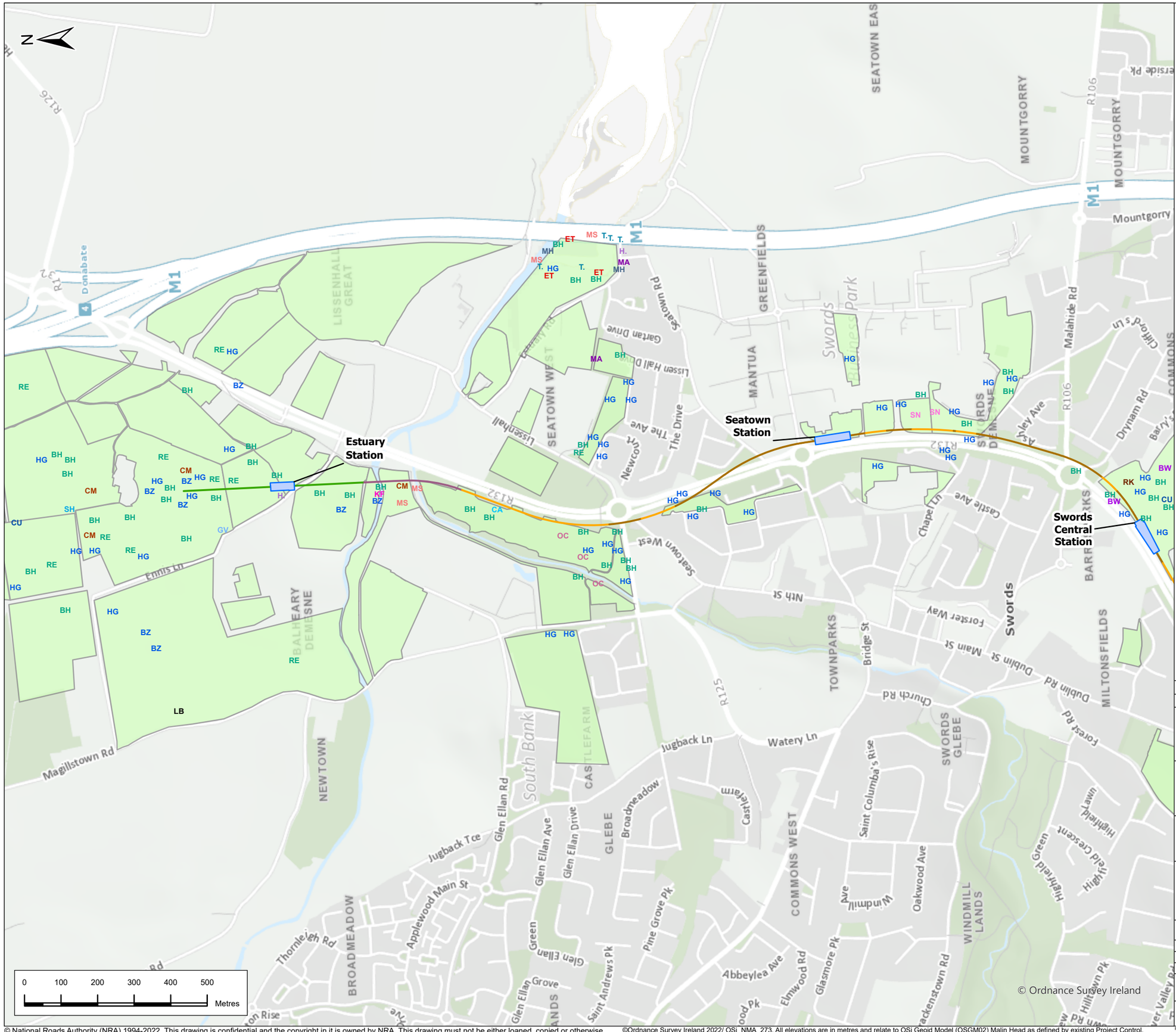


Legend

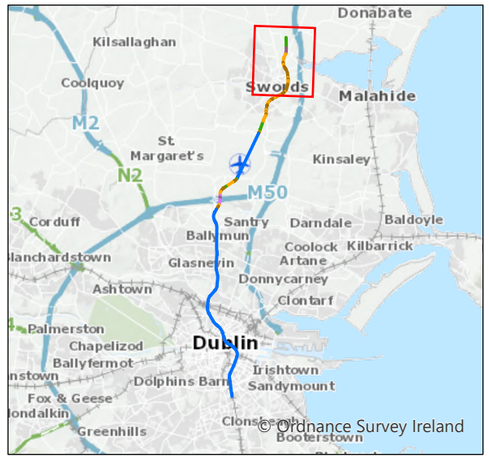
Alignment

- Cut & Cover
- Retained Cut
- Surface
- Viaduct
- Station Locations
- Wintering Birds Survey Area

Wintering Birds

Label, Common Name

- BA,Bar-Tailed Godwit
- BH,Black-Headed Gull
- BW,Black-Tailed Godwit
- BZ,Buzzard
- CA,Cormorant
- CM,Common Gull
- CO,Coot
- CU,Curlew
- ET,Little Egret
- FF,Fieldfare
- GB,Great Black-Backed Gull
- GP,Golden Plover
- GV,Grey Plover
- H.,Grey Heron
- HG,Herring Gull
- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LG,Little Grebe
- MA,Mallard
- MH,Moorhen
- MS,Mute Swan
- OC,Oystercatcher
- PB,Light-Bellied Brent Goose
- RE,Redwing
- RK,Redshank
- SH,Sparrowhawk
- SN,Snipe
- T.,Teal
- TU,Tufted Duck



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	26/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 2 Wintering bird survey results 2022
Sheet 1 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40081	Rev P02

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.10 Wintering bird survey results.aprx

Legend

Alignment

- Cut & Cover
- Retained Cut
- Surface
- Tunnel
- Station Locations
- Wintering Birds Survey Area

Wintering Birds

Label, Common Name

- BA,Bar-Tailed Godwit
- BH,Black-Headed Gull
- BW,Black-Tailed Godwit
- BZ,Buzzard
- CA,Cormorant
- CM,Common Gull
- CO,Coot
- CU,Curlew
- ET,Little Egret
- FF,Fieldfare
- GB,Great Black-Backed Gull
- GP,Golden Plover
- GV,Grey Plover
- H.,Grey Heron
- HG,Herring Gull
- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LG,Little Grebe
- MA,Mallard
- MH,Moorhen
- MS,Mute Swan
- OC,Oystercatcher
- PB,Light-Bellied Brent Goose
- RE,Redwing
- RK,Redshank
- SH,Sparrowhawk
- SN,Snipe
- T.,Teal
- TU,Tufted Duck

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	26/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 2 Wintering bird survey results 2022
Sheet 2 of 7

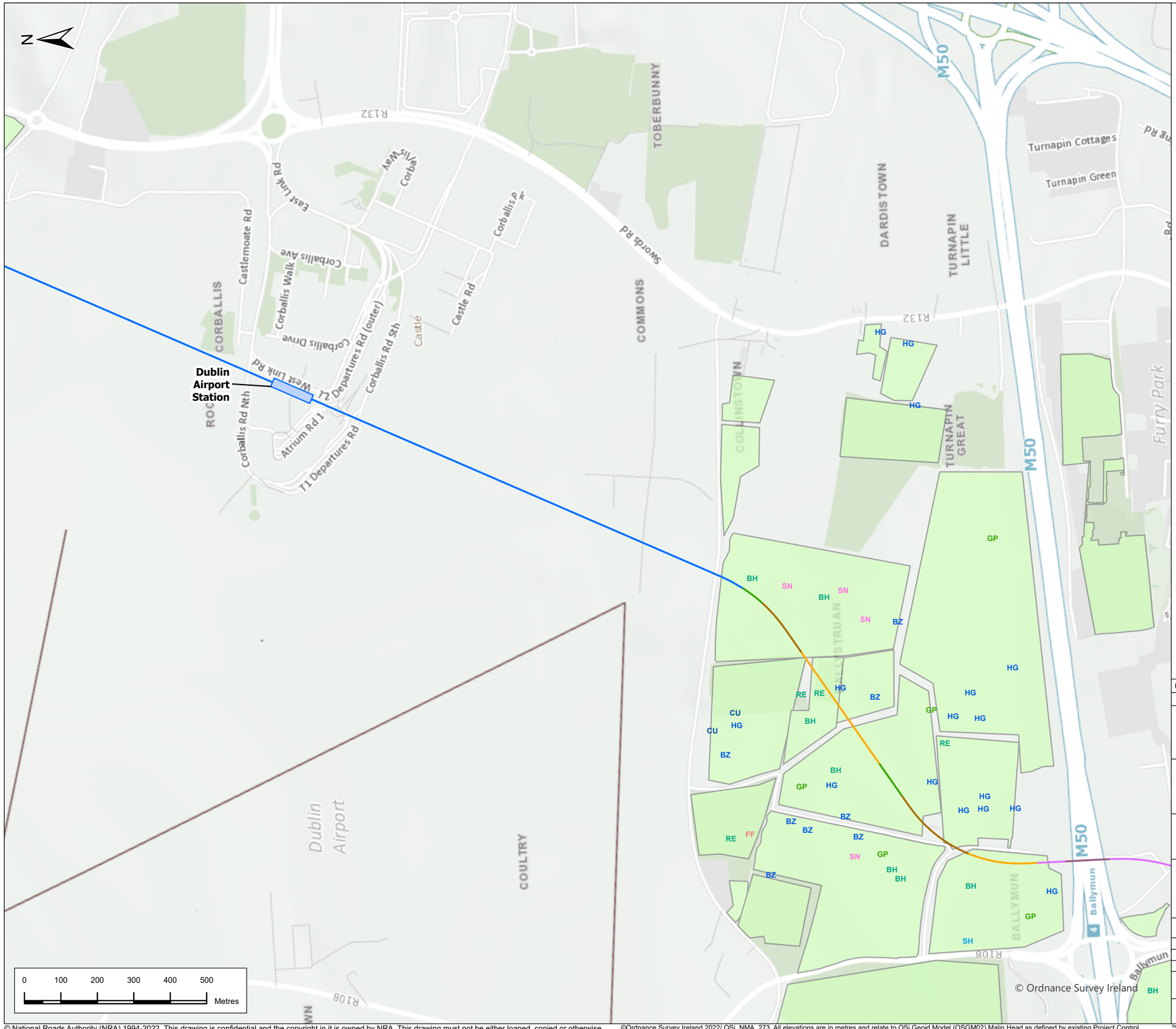
Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40082	Rev P02

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 100 200 300 400 500 Metres

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.10 Wintering bird survey results.aprx



Legend

Alignment

- Cut & Cover
- Incline
- Retained Cut
- Surface
- Tunnel
- Viaduct
- Station Locations
- Wintering Birds Survey Area

Wintering Birds

Label, Common Name

- BA,Bar-Tailed Godwit
- BH,Black-Headed Gull
- BW,Black-Tailed Godwit
- BZ,Buzzard
- CA,Cormorant
- CM,Common Gull
- CO,Coot
- CU,Curlew
- ET,Little Egret
- FF,Fieldfare
- GB,Great Black-Backed Gull
- GP,Golden Plover
- GV,Grey Plover
- H.,Grey Heron
- HG,Herring Gull
- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LG,Little Grebe
- MA,Mallard
- MH,Moorhen
- MS,Mute Swan
- OC,Oystercatcher
- PB,Light-Bellied Brent Goose
- RE,Redwing
- RK,Redshank
- SH,Sparrowhawk
- SN,Snipe
- T.,Teal
- TU,Tufted Duck

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	26/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 2 Wintering bird survey results 2022
Sheet 3 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40083	Rev P02

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.10 Wintering bird survey results.aprx

Legend

Alignment

- Cut & Cover
- Incline
- Retained Cut
- Tunnel
- Viaduct
- Station Locations
- Wintering Birds Survey Area

Wintering Birds

Label, Common Name

- BA,Bar-Tailed Godwit
- BH,Black-Headed Gull
- BW,Black-Tailed Godwit
- BZ,Buzzard
- CA,Cormorant
- CM,Common Gull
- CO,Coot
- CU,Curlew
- ET,Little Egret
- FF,Fieldfare
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- GV,Grey Plover
- H.,Grey Heron
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- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LG,Little Grebe
- MA,Mallard
- MH,Moorhen
- MS,Mute Swan
- OC,Oystercatcher
- PB,Light-Bellied Brent Goose
- RE,Redwing
- RK,Redshank
- SH,Sparrowhawk
- SN,Snipe
- T.,Teal
- TU,Tufted Duck

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	26/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 2 Wintering bird survey results 2022
Sheet 4 of 7

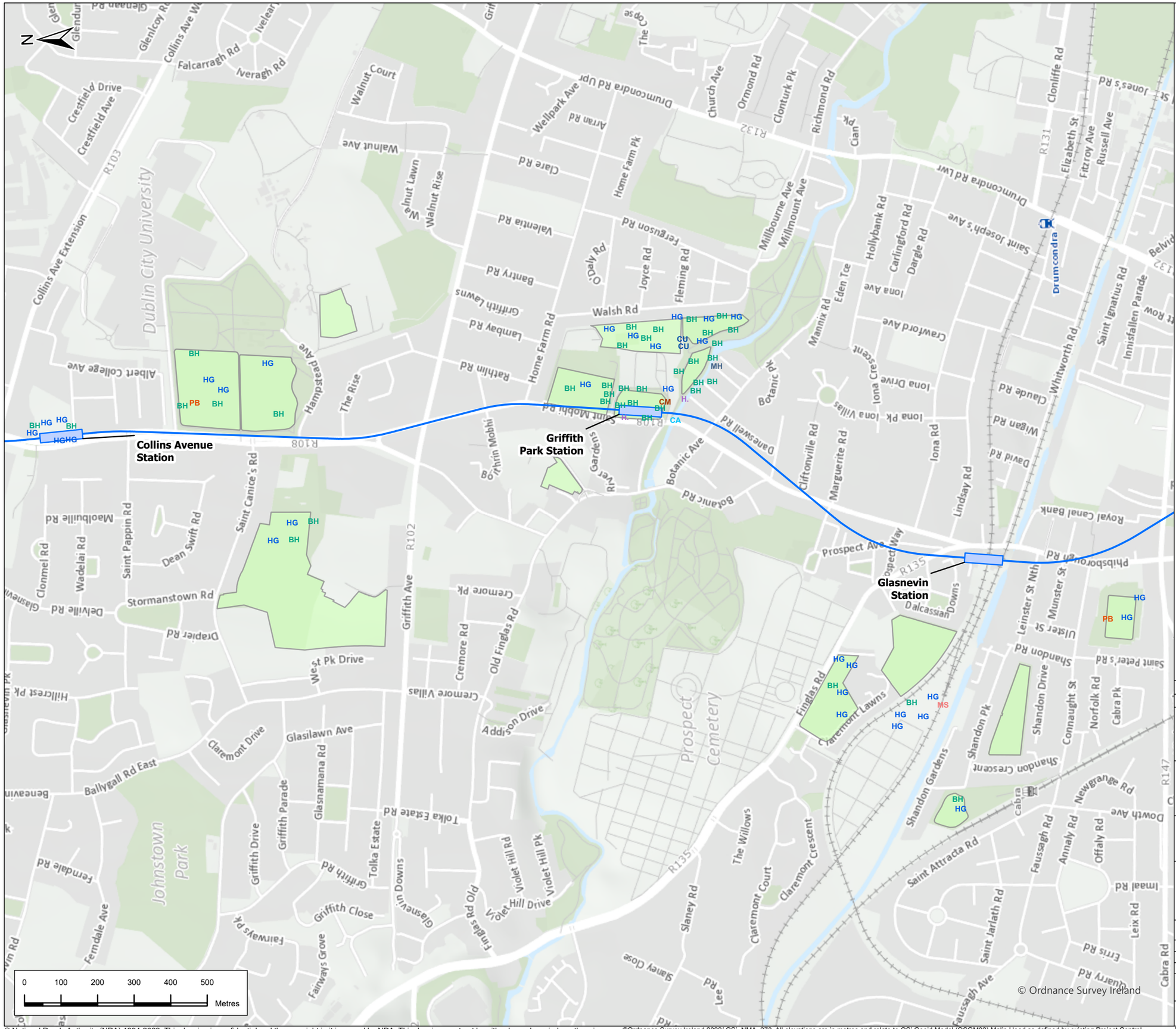
Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40084	Rev P02

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 100 200 300 400 500 Metres

Path: \\gblon0us01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.10 Wintering bird survey results.aprx



Legend

Alignment

- ▬ Tunnel
- 🟦 Station Locations
- 🟩 Wintering Birds Survey Area

Wintering Birds

Label, Common Name

- BA,Bar-Tailed Godwit
- BH,Black-Headed Gull
- BW,Black-Tailed Godwit
- BZ,Buzzard
- CA,Cormorant
- CM,Common Gull
- CO,Coot
- CU,Curlew
- ET,Little Egret
- FF,Fieldfare
- GB,Great Black-Backed Gull
- GP,Golden Plover
- GV,Grey Plover
- H.,Grey Heron
- HG,Herring Gull
- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LG,Little Grebe
- MA,Mallard
- MH,Moorhen
- MS,Mute Swan
- OC,Oystercatcher
- PB,Light-Bellied Brent Goose
- RE,Redwing
- RK,Redshank
- SH,Sparrowhawk
- SN,Snipe
- T.,Teal
- TU,Tufted Duck

P02	26/2/24	Final Issue	GL	RH	RH	NC
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Client

Project

METROLINK

Drawing Title

Figure 2 Wintering bird survey results 2022
Sheet 5 of 7

Drawing Status

FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40085	Rev P02

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.10 Wintering bird survey results.aprx

Tara Station

St Stephen's Green Station

O'Connell St Station

Mater Station

Glasnevin Station

0 100 200 300 400 500 Metres

Legend

Alignment

- Tunnel
- Station Locations
- Wintering Birds Survey Area

Wintering Birds

Label, Common Name

- BA,Bar-Tailed Godwit
- BH,Black-Headed Gull
- BW,Black-Tailed Godwit
- BZ,Buzzard
- CA,Cormorant
- CM,Common Gull
- CO,Coot
- CU,Curlew
- ET,Little Egret
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- PB,Light-Bellied Brent Goose
- RE,Redwing
- RK,Redshank
- SH,Sparrowhawk
- SN,Snipe
- T.,Teal
- TU,Tufted Duck

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	26/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 2 Wintering bird survey results 2022 Sheet 6 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40086	Rev P02

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.10 Wintering bird survey results.aprx

St Stephen's Green Station

Charlemont Station

0 100 200 300 400 500 Metres

Legend

Alignment

- Tunnel
- Station Locations
- Wintering Birds Survey Area

Wintering Birds

Label, Common Name

- BA,Bar-Tailed Godwit
- BH,Black-Headed Gull
- BW,Black-Tailed Godwit
- BZ,Buzzard
- CA,Cormorant
- CM,Common Gull
- CO,Coot
- CU,Curlew
- ET,Little Egret
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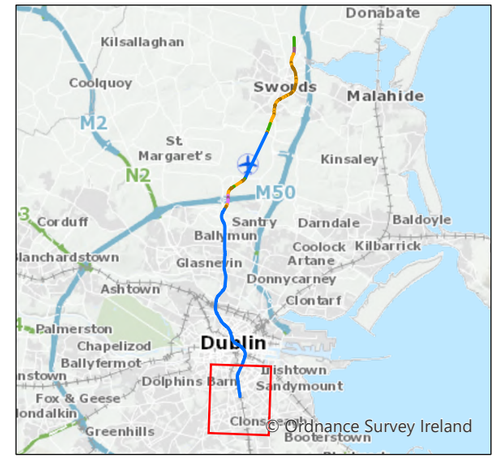
- OC,Oystercatcher
- PB,Light-Bellied Brent Goose
- RE,Redwing
- RK,Redshank
- SH,Sparrowhawk
- SN,Snipe
- T.,Teal
- TU,Tufted Duck



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	26/2/24	Final Issue	GL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 2 Wintering bird survey results 2022
Sheet 7 of 7

Drawing Status	FINAL	
Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40087	Rev P02

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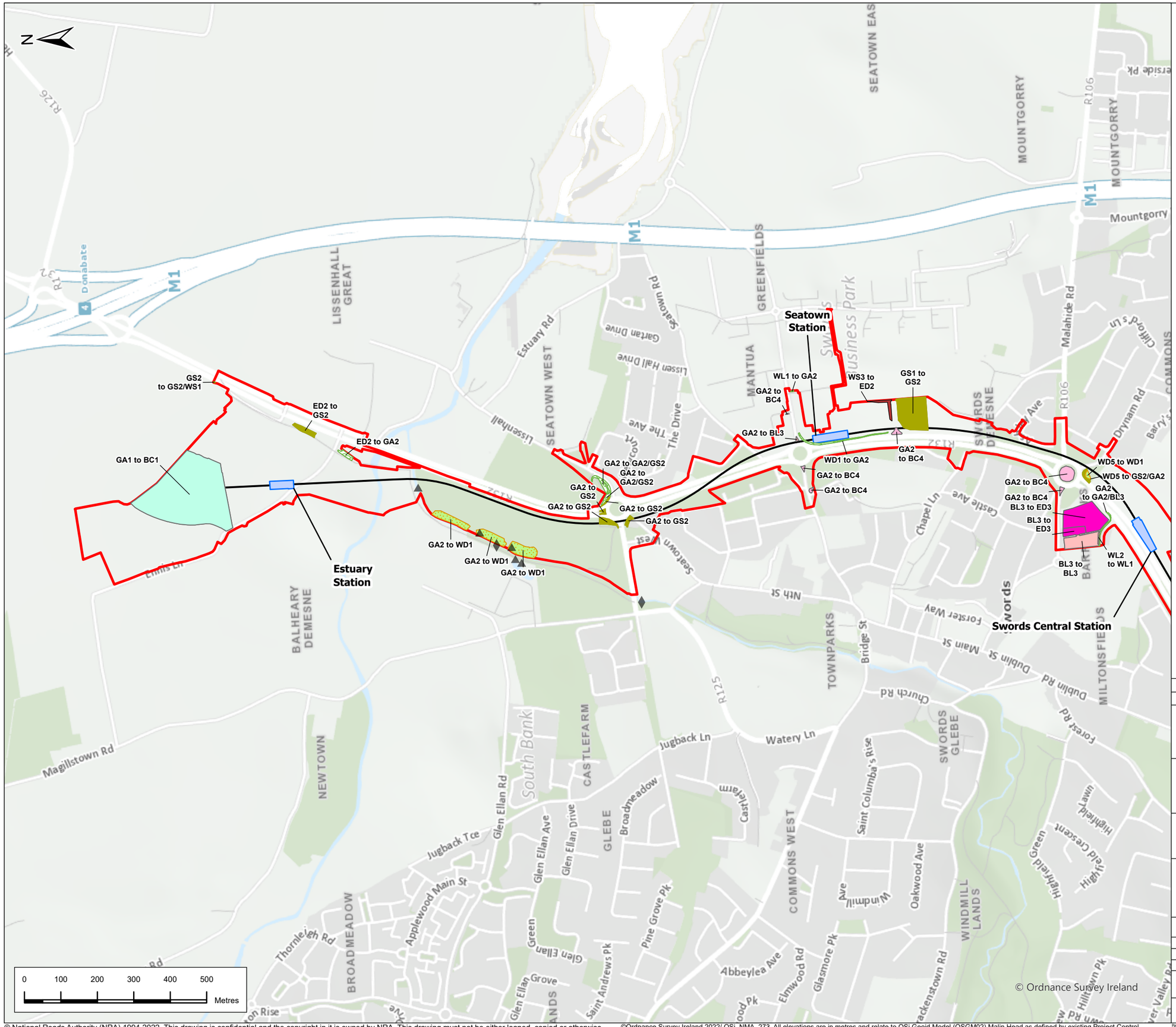
Path: \\gblon0vs01\GISPro\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.10 Wintering bird survey results.aprx



Legend

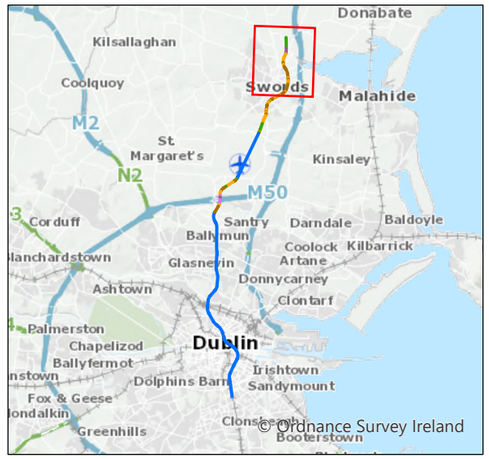
- Alignment
- Station Locations
- Project Boundary

Habitat Change in 2022

- BC1
- BC4
- BL3
- ED2
- ED3
- GA2
- GS2
- WD1
- WL1

Invasive Plant Species

- Giant hogweed
- Himalayan balsam



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	01/3/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

Drawing Status	FINAL	
Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40081	Rev P01

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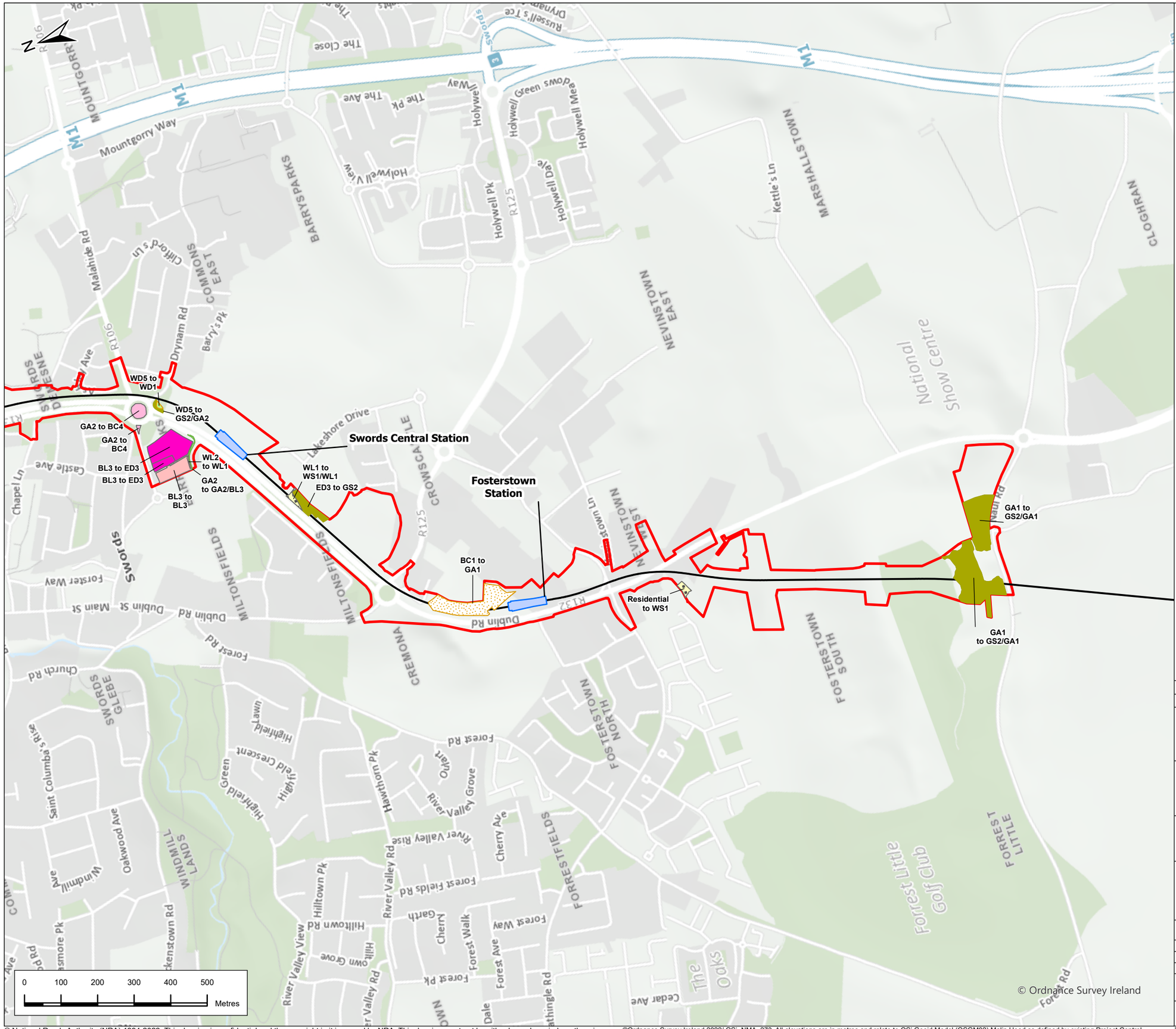
Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.6 Habitat survey results (including locations of invasive plant species).aprx

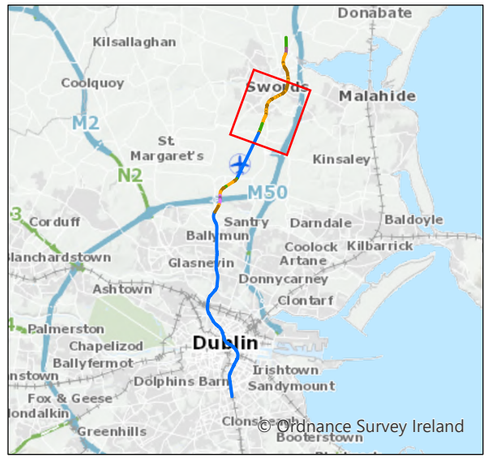


Legend

- Alignment
- Station Locations
- Project Boundary

Habitat Change in 2022

- BC4
- BL3
- ED3
- GA1
- GA2
- GS2
- WD1
- WL1
- WS1



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	01/3/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40082	Rev P01

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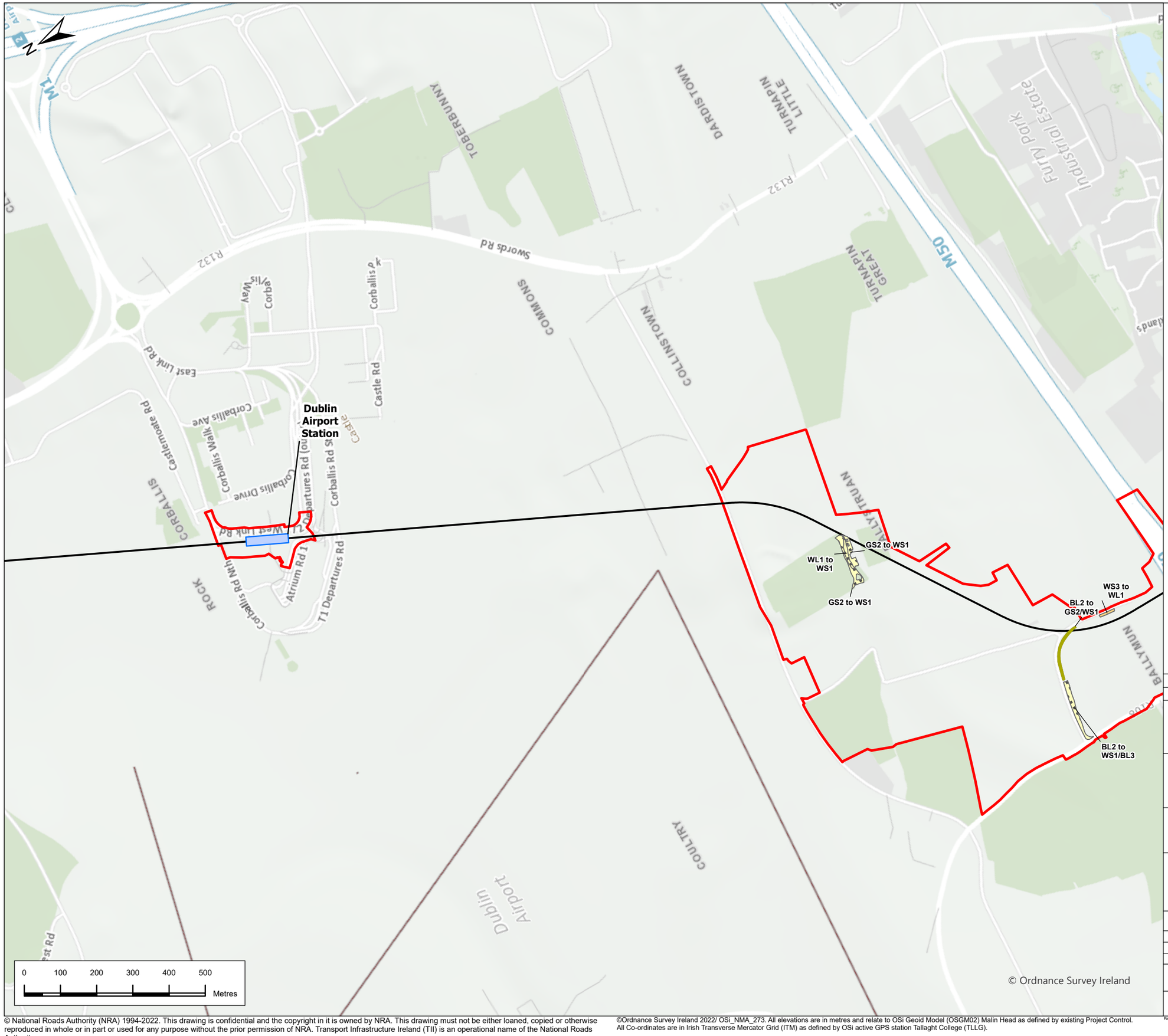
Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.6 Habitat survey results (including locations of invasive plant species).aprx



Legend

- Alignment
- Station Locations
- Project Boundary

Habitat Change in 2022

- GS2
- WL1
- WS1

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	01/3/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		

Drawing No.: ML1-JAI-EIA-ROUT_XX-DR-Y-40083 Rev P01

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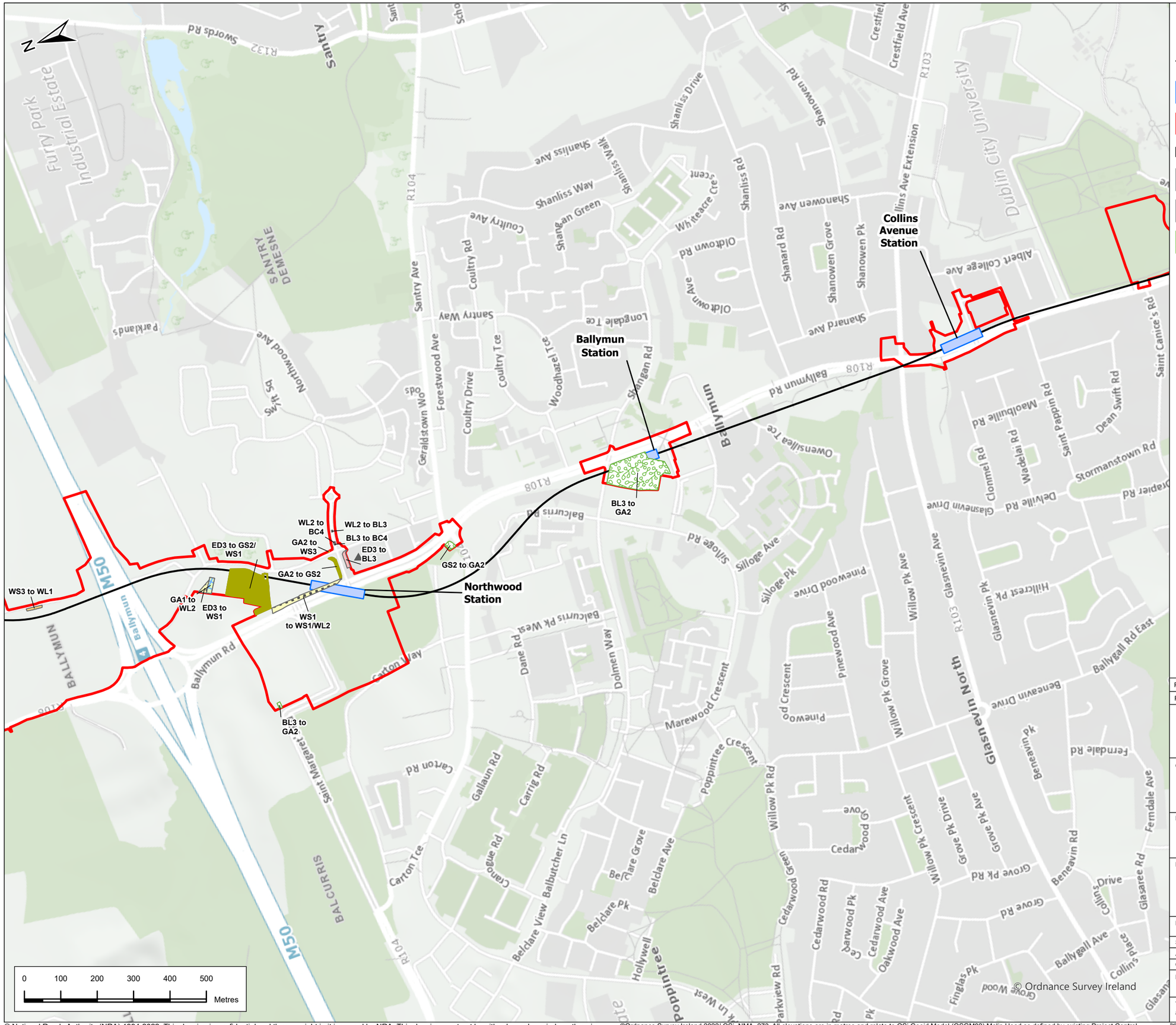
Path: \\gblon0ns01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.6 Habitat survey results (including locations of invasive plant species).aprx



Legend

- Alignment
- Station Locations
- Project Boundary

Habitat Change in 2022

- BC4
- BL3
- GA2
- GS2
- WL1
- WL2
- WS1
- WS3

Invasive Plant Species

- Giant hogweed

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	01/3/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

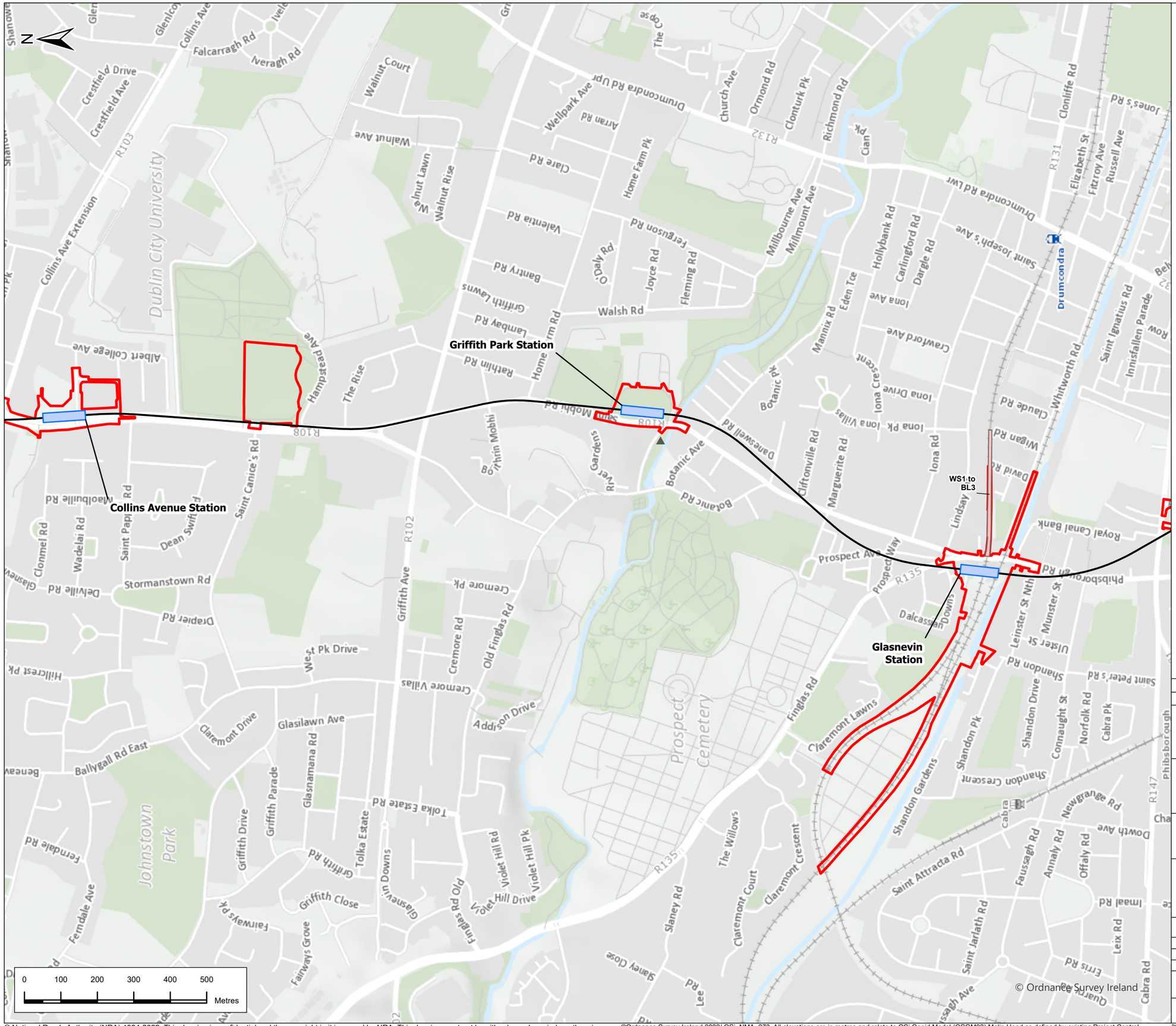
Project: METROLINK

Drawing Title: Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

Drawing Status	FINAL	
Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40084	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Path: \\gblon0v01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.6 Habitat survey results (including locations of invasive plant species).aprx



Legend

— Alignment

🟦 Station Locations

🟥 Project Boundary

Habitat Change in 2022

🟥 BL3

Invasive Plant Species

▲ Giant hogweed

P01	01/3/24	Final Issue	JL	RH	RH	NC
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

JACOBS IDOM

Client

TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project

METROLINK

Drawing Title

Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

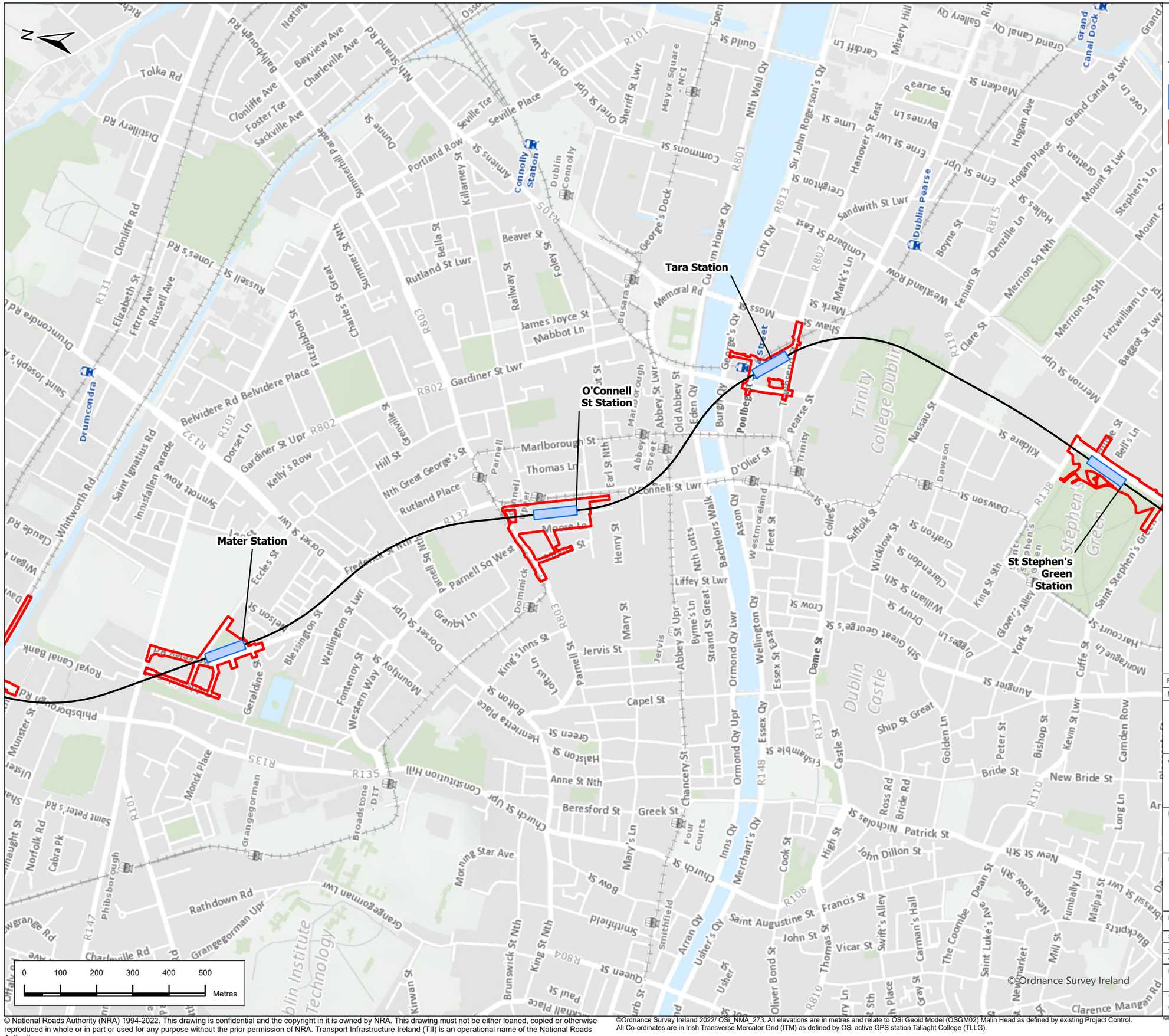
Drawing Status

FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40085	Rev P01

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.6 Habitat survey results (including locations of invasive plant species).aprx

All elevations are in metres and relate to OSi Geoid Model (OSGM02) Malin Head as defined by existing Project Control. All Co-ordinates are in Irish Transverse Mercator Grid (ITM) as defined by OSi active GPS station Tallaght College (TLLG).



Legend

- Alignment
- ▭ Station Locations
- ▭ Project Boundary

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	01/3/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client

TII
Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Project

METROLINK

Drawing Title

Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

Drawing Status

FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40086	Rev P01

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

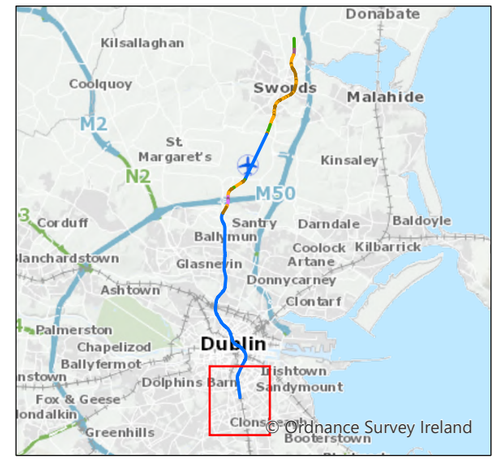
Legend

- Alignment
- Station Locations
- Project Boundary

St Stephen's Green Station

Charlemont Station

0 100 200 300 400 500 Metres



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	01/3/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

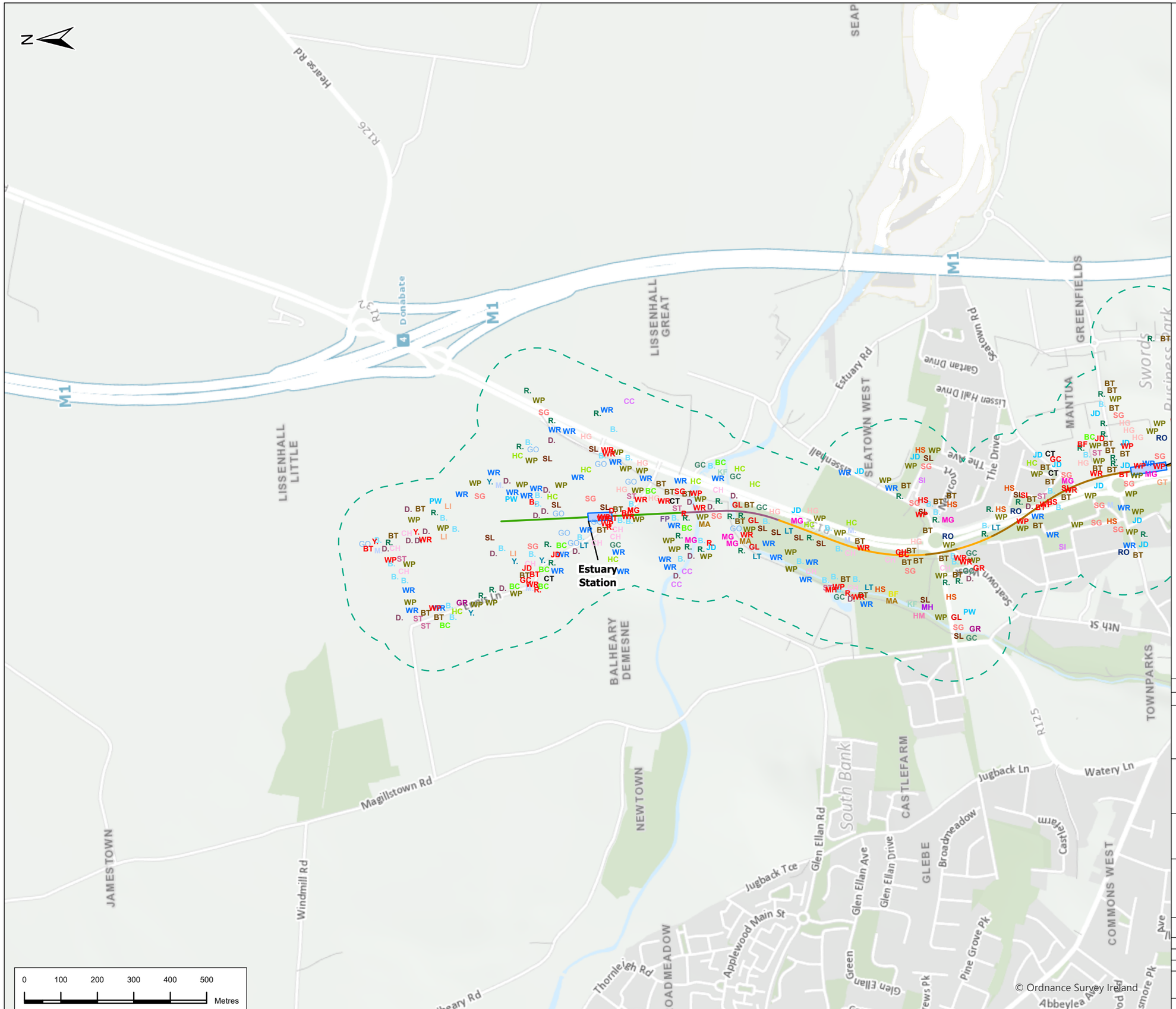
Drawing Title: Figure 3 Habitat Changes within the Proposed Project Boundary and Changes to Non-native Invasive Species Baseline

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40087	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.6 Habitat survey results (including locations of invasive plant species).aprx



Legend

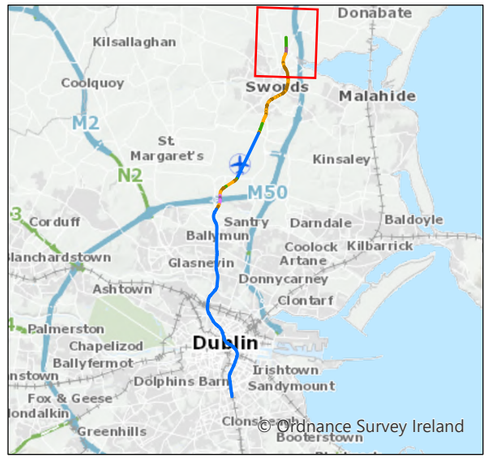
Alignment

- Cut & Cover
- Retained Cut
- Surface
- Viaduct
- Station Locations
- Breeding Birds 150m Buffer

Breeding Birds

Label, Common Name

- B.,Blackbird
- BC,Blackcap
- BF,Bullfinch
- BT,Blue Tit
- BZ,Buzzard
- CA,Cormorant
- CC,Chiffchaff
- CD,Collared Dove
- CH,Chaffinch
- CT,Coal Tit
- D.,Dunnock
- FP,Feral Pigeon
- GB,Great Black-Backed Gull
- GC,Goldcrest
- GL,Grey Wagtail
- GO,Goldfinch
- GR,Greenfinch
- GT,Great Tit
- H.,Grey Heron
- HC,Hooded Crow
- HG,Herring Gull
- HM,House Martin
- HS,House Sparrow
- JD,Jackdaw
- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LI,Linnet
- LR,Redpoll (Lesser)
- LT,Long-Tailed Tit
- M.,Mistle Thrush
- MA,Mallard
- MG,Magpie
- MH,Moorhen
- MP,Meadow Pipit
- MS,Mute Swan
- PH,Pheasant
- PW,Pied Wagtail
- R.,Robin
- RB,Reed Bunting
- RN,Raven
- RO,Rook
- S.,Skylark
- SC,Stonechat
- SG,Starling
- SH,Sparrowhawk
- SI,Swift
- SL,Swallow
- ST,Song Thrush
- SW,Sedge Warbler
- WH,Whitethroat
- WP,Woodpigeon
- WR,Wren
- WW,Willow Warbler
- WW,Wood Warbler
- Y.,Yellowhammer



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	22/2/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 4 Breeding bird Survey Results 2022
Sheet 1 of 7

Drawing Status	FINAL	
Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40061	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.9 Breeding bird survey results.aprx

Legend

Alignment

- Cut & Cover
- Retained Cut
- Surface
- Tunnel
- Station Locations
- Breeding Birds 150m Buffer

Breeding Birds

Label, Common Name

B.,Blackbird
BC,Blackcap
BF,Bullfinch
BT,Blue Tit
BZ,Buzzard
CA,Cormorant
CC,Chiffchaff
CD,Collared Dove
CH,Chaffinch
CT,Coal Tit
D.,Dunnock
FP,Feral Pigeon
GB,Great Black-Backed Gull
GC,Goldcrest
GL,Grey Wagtail
GO,Goldfinch
GR,Greenfinch
GT,Great Tit
H.,Grey Heron
HC,Hooded Crow
HG,Herring Gull
HM,House Martin
HS,House Sparrow
JD,Jackdaw
K.,Kestrel
KF,Kingfisher
LB,Lesser Black-Backed Gull
LI,Linnet
LR,Redpoll (Lesser)
LT,Long-Tailed Tit
M.,Mistle Thrush
MA,Mallard
MG,Magpie
MH,Moorhen
MP,Meadow Pipit
MS,Mute Swan
PH,Pheasant
PW,Pied Wagtail
R.,Robin
RB,Reed Bunting
RN,Raven
RO,Rook
S.,Skylark
SC,Stonechat
SG,Starling
SH,Sparrowhawk
SI,Swift
SL,Swallow
ST,Song Thrush
SW,Sedge Warbler
WH,Whitethroat
WP,Woodpigeon
WR,Wren
WW,Willow Warbler
WW,Wood Warbler
Y.,Yellowhammer

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	22/2/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 4 Breeding bird Survey Results 2022
Sheet 2 of 7

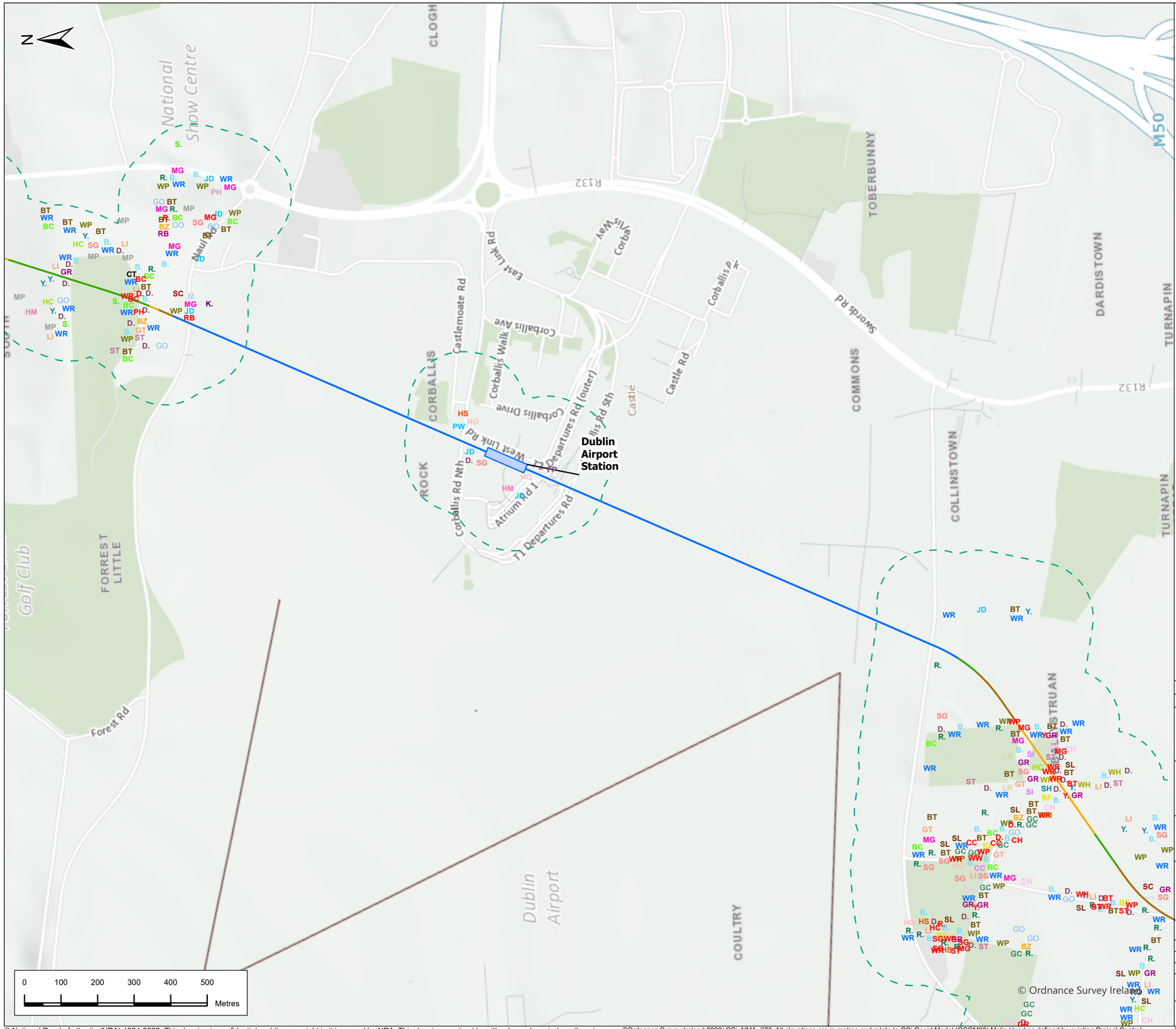
Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40062	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.9 Breeding bird survey results.aprx

0 100 200 300 400 500 Metres



Legend

Alignment
- Cut & Cover
- Retained Cut
- Surface
- Tunnel
- Station Locations
- Breeding Birds 150m Buffer

Breeding Birds

Label, Common Name

B.,Blackbird
BC,Blackcap
BF,Bullfinch
BT,Blue Tit
BZ,Buzzard
CA,Cormorant
CC,Chiffchaff
CD,Collared Dove
CH,Chaffinch
CT,Coal Tit
D.,Dunnock
FP,Feral Pigeon
GB,Great Black-Backed Gull
GC,Goldcrest
GL,Grey Wagtail
GO,Goldfinch
GR,Greenfinch
GT,Great Tit
H.,Grey Heron
HC,Hooded Crow
HG,Herring Gull
HM,House Martin
HS,House Sparrow
JD,Jackdaw
K.,Kestrel
KF,Kingfisher
LB,Lesser Black-Backed Gull
LI,Linnet
LR,Redpoll (Lesser)
LT,Long-Tailed Tit
M.,Mistle Thrush
MA,Mallard
MG,Magpie
MH,Moorhen
MP,Meadow Pipit
MS,Mute Swan
PH,Pheasant
PW,Pied Wagtail
R.,Robin
RB,Reed Bunting
RN,Raven
RO,Rook
S.,Skylark
SC,Stonechat
SG,Starling
SH,Sparrowhawk
SI,Swift
SL,Swallow
ST,Song Thrush
SW,Sedge Warbler
WH,Whitethroat
WP,Woodpigeon
WR,Wren
WW,Willow Warbler
WW,Wood Warbler
Y.,Yellowhammer
- Rail Stations
- Rail Halts

Road Network
- U
- M
- A
- B
- C

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	22/2/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 4 Breeding bird Survey Results 2022 Sheet 3 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40064	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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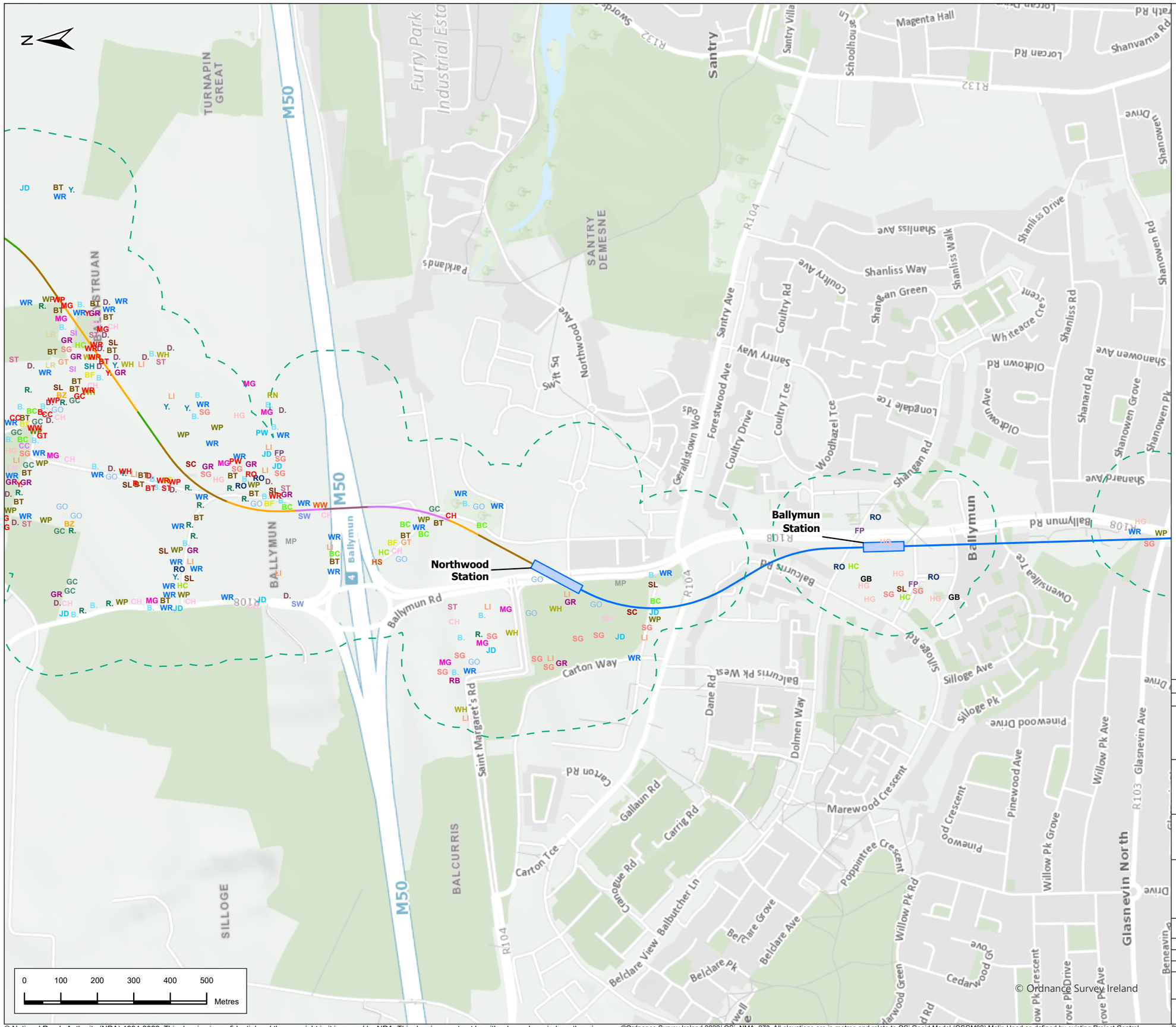
Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.9 Breeding bird survey results.aprx



Legend

Alignment
- Cut & Cover
- Incline
- Retained Cut
- Surface
- Tunnel
- Viaduct
- Station Locations
- Breeding Birds 150m Buffer

Breeding Birds

Label, Common Name

B.,Blackbird
BC,Blackcap
BF,Bullfinch
BT,Blue Tit
BZ,Buzzard
CA,Cormorant
CC,Chiffchaff
CD,Collared Dove
CH,Chaffinch
CT,Coal Tit
D.,Dunnock
FP,Feral Pigeon
GB,Great Black-Backed Gull
GC,Goldcrest
GL,Grey Wagtail
GO,Goldfinch
GR,Greenfinch
GT,Great Tit
H.,Grey Heron
HC,Hooded Crow
HG,Herring Gull
HM,House Martin
HS,House Sparrow
JD,Jackdaw
K.,Kestrel
KF,Kingfisher
LB,Lesser Black-Backed Gull
LI,Linnet
LR,Redpoll (Lesser)
LT,Long-Tailed Tit
M.,Mistle Thrush
MA,Mallard
MG,Magpie
MH,Moorhen
MP,Meadow Pipit
MS,Mute Swan
PH,Pheasant
PW,Pied Wagtail
R.,Robin
RB,Reed Bunting
RN,Raven
RO,Rook
S.,Skylark
SC,Stonechat
SG,Starling
SH,Sparrowhawk
SI,Swift
SL,Swallow
ST,Song Thrush
SW,Sedge Warbler
WH,Whitethroat
WP,Woodpigeon
WR,Wren
WW,Willow Warbler
WW,Wood Warbler
Y.,Yellowhammer

- Rail Stations
- Rail Halts

Road Network
- U
- M
- A

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	22/2/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

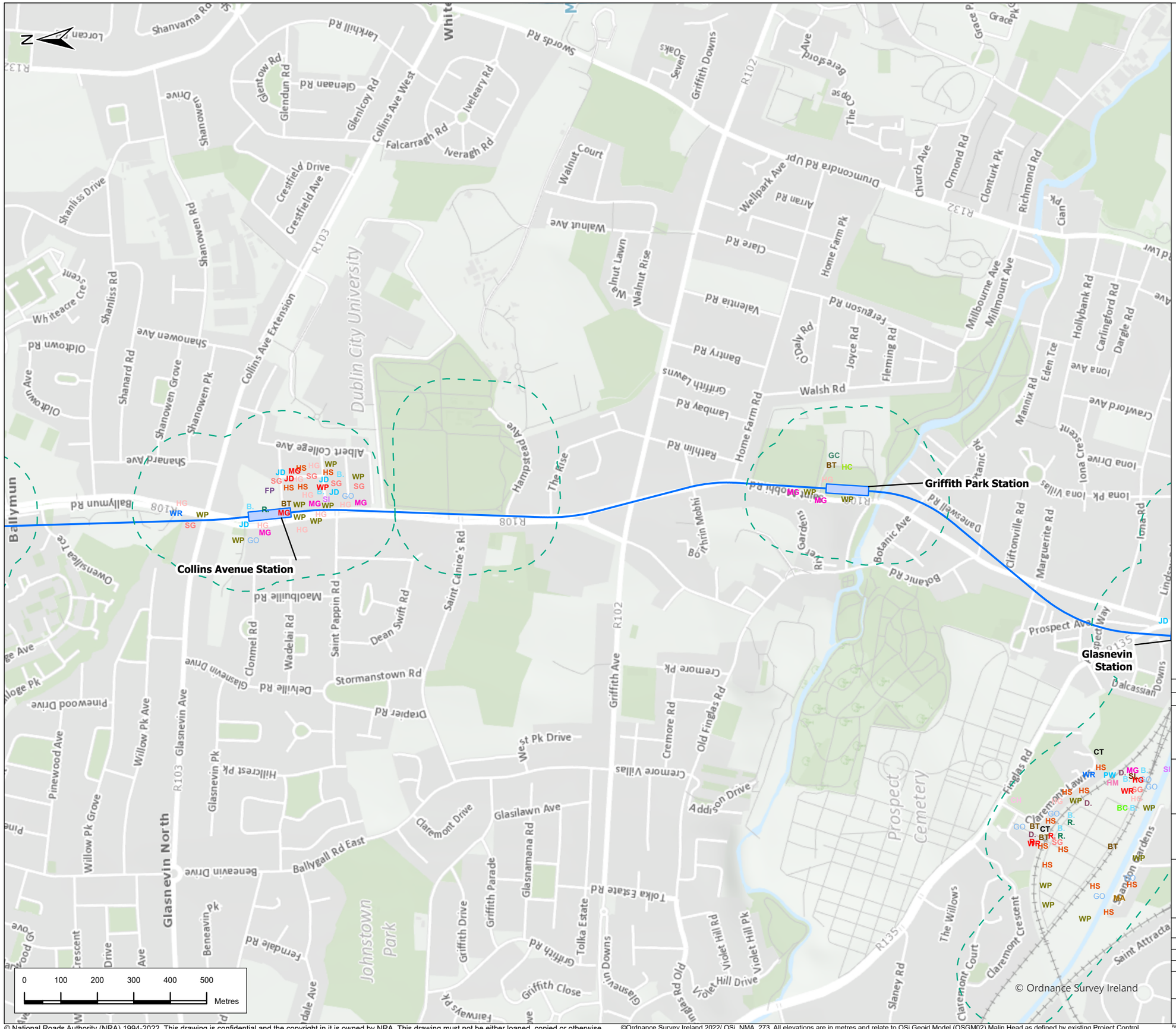
Drawing Title: Figure 4 Breeding bird Survey Results 2022 Sheet 4 of 7

Drawing Status	FINAL	
Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40065	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

©Ordnance Survey Ireland 2022/ OSi_NMA_273. All elevations are in metres and relate to OSi Geoid Model (OSGM02) Malin Head as defined by existing Project Control. All Co-ordinates are in Irish Transverse Mercator Grid (ITM) as defined by OSi active GPS station Tallaght College (TLLG).

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\Ch 15 - Fig 15.9 Breeding bird survey results.aprx



Legend

Alignment

- Tunnel
- Station Locations
- Breeding Birds 150m Buffer

Breeding Birds

Label, Common Name

- B.,Blackbird
- BC,Blackcap
- BF,Bullfinch
- BT,Blue Tit
- BZ,Buzzard
- CA,Cormorant
- CC,Chiffchaff
- CD,Collared Dove
- CH,Chaffinch
- CT,Coal Tit
- D.,Dunnock
- FP,Feral Pigeon
- GB,Great Black-Backed Gull
- GC,Goldcrest
- GL,Grey Wagtail
- GO,Goldfinch
- GR,Greenfinch
- GT,Great Tit
- H.,Grey Heron
- HC,Hooded Crow
- HG,Herring Gull
- HM,House Martin
- HS,House Sparrow
- JD,Jackdaw
- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LI,Linnet
- LR,Redpoll (Lesser)
- LT,Long-Tailed Tit
- M.,Mistle Thrush
- MA,Mallard
- MG,Magpie
- MH,Moorhen
- MP,Meadow Pipit
- MS,Mute Swan
- PH,Pheasant
- PW,Pied Wagtail
- R.,Robin
- RB,Reed Bunting
- RN,Raven
- RO,Rook
- S.,Skylark
- SC,Stonechat
- SG,Starling
- SH,Sparrowhawk
- SI,Swift
- SL,Swallow
- ST,Song Thrush
- SW,Sedge Warbler
- WH,Whitethroat
- WP,Woodpigeon
- WR,Wren
- WW,Willow Warbler
- WW,Wood Warbler
- Y.,Yellowhammer

- Rail Stations
- Rail Halts

Road Network

- U
- M
- A
- B
- C
- Railway Lines

N.Irl Urban Areas

- <all other values>

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	22/2/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Éireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Figure 4 Breeding bird Survey Results 2022 Sheet 5 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40066	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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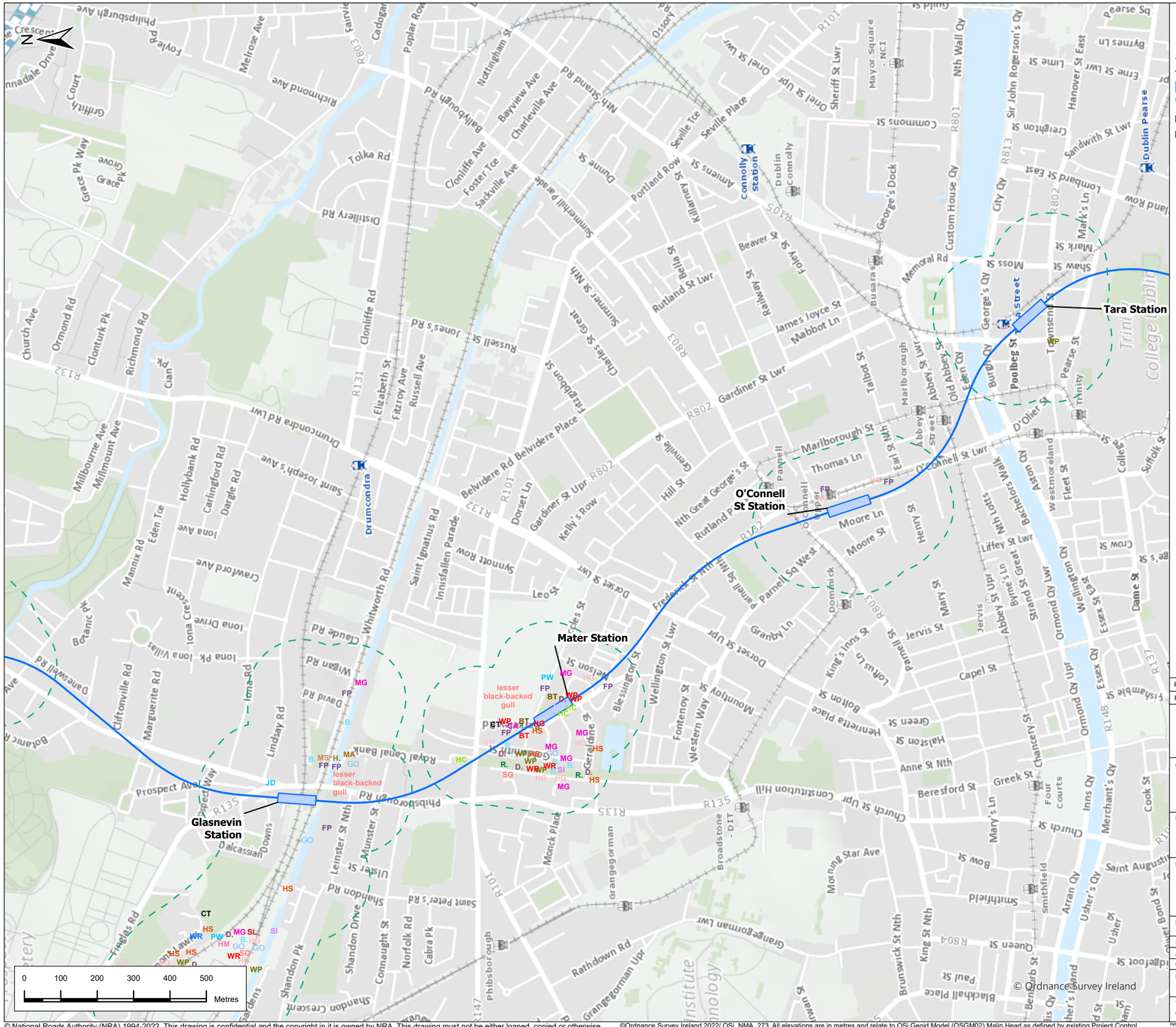
Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.9 Breeding bird survey results.aprx



Legend

Alignment

━ Tunnel

▭ Station Locations

╍ Breeding Birds 150m Buffer

Breeding Birds

Label, Common Name

B.,Blackbird
BC,Blackcap
BF,Bullfinch
BT,Blue Tit
BZ,Buzzard
CA,Cormorant
CC,Chiffchaff
CD,Collared Dove
CH,Chaffinch
CT,Coal Tit
D.,Dunnock
FP,Feral Pigeon
GB,Great Black-Backed Gull
GC,Goldcrest
GL,Grey Wagtail
GO,Goldfinch
GR,Greenfinch
GT,Great Tit
H.,Grey Heron
HC,Hooded Crow
HG,Herring Gull
HM,House Martin
HS,House Sparrow
JD,Jackdaw
K.,Kestrel
KF,Kingfisher
LB,Lesser Black-Backed Gull
LI,Linnet
LR,Redpoll (Lesser)
LT,Long-Tailed Tit
M.,Mistle Thrush
MA,Mallard
MG,Magpie
MH,Moorhen
MP,Meadow Pipit
MS,Mute Swan
PH,Pheasant
PW,Pied Wagtail
R.,Robin
RB,Reed Bunting
RN,Raven
RO,Rook
S.,Skylark
SC,Stonechat
SG,Starling
SH,Sparrowhawk
SI,Swift
SL,Swallow
ST,Song Thrush
SW,Sedge Warbler
WH,Whitethroat
WP,Woodpigeon
WR,Wren
WW,Willow Warbler
WW,Wood Warbler
Y.,Yellowhammer

P01	22/2/24	Final Issue	JL	RH	RH	NC
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

JACOBS IDOM

Client

TII
Bonneagar Iompair Éireann
Transport Infrastructure Ireland

Project

METROLINK

Drawing Title

Figure 4 Breeding bird Survey Results 2022
Sheet 6 of 7

Drawing Status

FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40067	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.9 Breeding bird survey results.aprx

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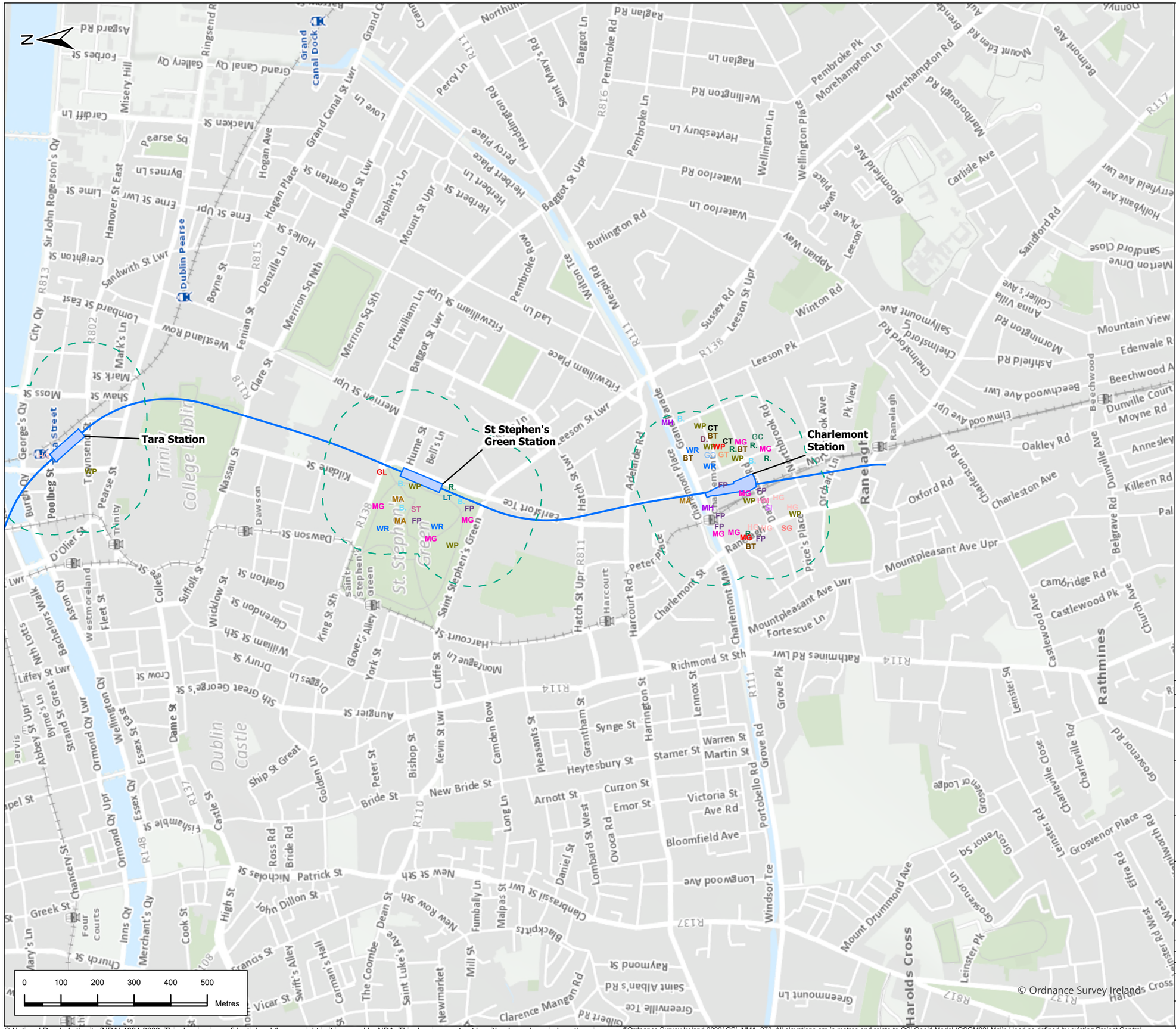

Legend

Alignment

- Tunnel
- Station Locations
- Breeding Birds 150m Buffer

Breeding Birds

Label, Common Name

- B.,Blackbird
- BC,Blackcap
- BF,Bullfinch
- BT,Blue Tit
- BZ,Buzzard
- CA,Cormorant
- CC,Chiffchaff
- CD,Collared Dove
- CH,Chaffinch
- CT,Coal Tit
- D.,Dunnock
- FP,Feral Pigeon
- GB,Great Black-Backed Gull
- GC,Goldcrest
- GL,Grey Wagtail
- GO,Goldfinch
- GR,Greenfinch
- GT,Great Tit
- H.,Grey Heron
- HC,Hooded Crow
- HG,Herring Gull
- HM,House Martin
- HS,House Sparrow
- JD,Jackdaw
- K.,Kestrel
- KF,Kingfisher
- LB,Lesser Black-Backed Gull
- LI,Linnet
- LR,Redpoll (Lesser)
- LT,Long-Tailed Tit
- M.,Mistle Thrush
- MA,Mallard
- MG,Magpie
- MH,Moorhen
- MP,Meadow Pipit
- MS,Mute Swan
- PH,Pheasant
- PW,Pied Wagtail
- R.,Robin
- RB,Reed Bunting
- RN,Raven
- RO,Rook
- S.,Skylark
- SC,Stonechat
- SG,Starling
- SH,Sparrowhawk
- SI,Swift
- SL,Swallow
- ST,Song Thrush
- SW,Sedge Warbler
- WH,Whitethroat
- WP,Woodpigeon
- WR,Wren
- WW,Willow Warbler
- WW,Wood Warbler
- Y.,Yellowhammer

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	22/2/24	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title

Figure 4 Breeding bird Survey Results 2022
Sheet 7 of 7

Drawing Status: FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40068	Rev P01

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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All Co-ordinates are in Irish Transverse Mercator Grid (ITM) as defined by OSi active GPS station Tallaght College (TLLG).

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\Ch 15 - Fig 15.9 Breeding bird survey results.aprx

Legend

Alignment

- Tunnel
- Station Locations
- Project Boundary
- Construction Compound

Otter Mitigation Measures

- Otter fence (indicative location)
- Otter ledge (indicative location)

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P02	3/6/2024	Final Issue	JL	RH	RH	NC

JACOBS IDOM

Client: TII Bonneagar Iompair Eireann Transport Infrastructure Ireland

Project: METROLINK

Drawing Title: Otter Mitigation Measures at Royal Canal

Drawing Status: FINAL

Scale @ A3	1:1,500	DO NOT SCALE
Jacobs No.	32108600	
Client No.		
Drawing No.	ML1-JAI-EIA-ROUT_XX-DR-Y-40100	Rev P02

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

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All Co-ordinates are in Irish Transverse Mercator Grid (ITM) as defined by OSi active GPS station Tallaght College (TLLG).

Path: \\gblon0vs01\GISProj\Metro\Working\Oral Hearing\Biodiversity\CH 15 - Fig 15.14 Otter Mitigation.aprx

RETAINING WALL

TEMPORARY WORKING PLATFORM

SHEET PILES

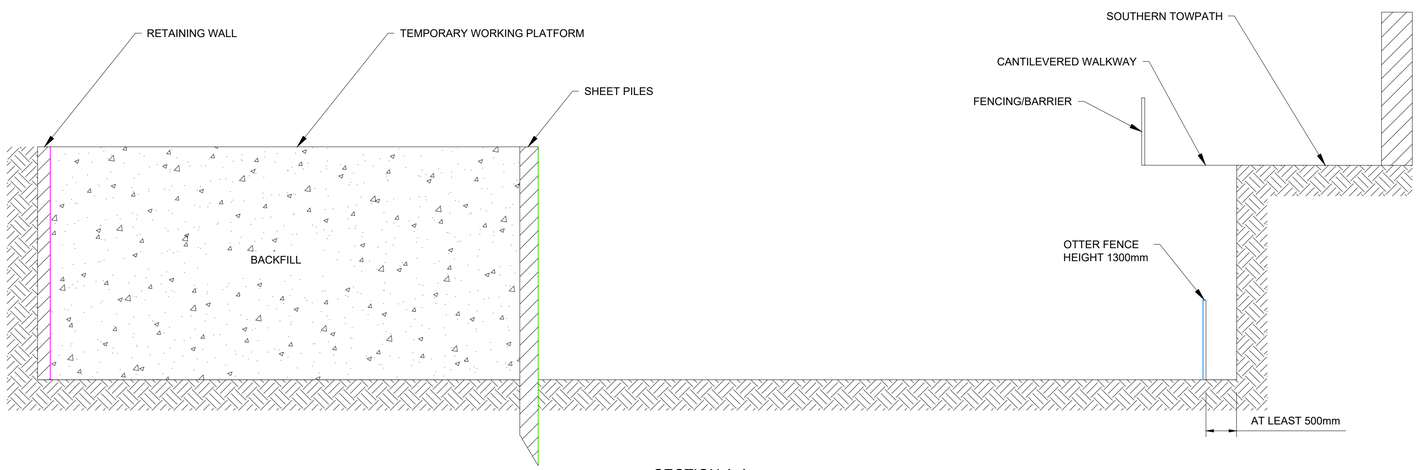
OTTER FENCE

A

A

0 10 20 30 40 50

SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES



SECTION A-A
OPEN CUT

0 0.5 1 2

SCALE 1:20 (A1)
SCALE 1:40 (A3)
MILLIMETRES

DRAWING LEGEND:

- RETAINING WALL
- SHEET PILES
- OTTER FENCE
- METRO RAIL TRACKS

NOTES:

1. FOR DETAILS OF STRUCTURES (INCLUDING STATIONS) SEE BOOK OF STRUCTURES DRAWINGS (E.G. DRAWINGS COMMENCING ML ST OR ML BR ETC.)
2. FOR DETAILS OF PROPERTY SEE BOOK OF PROPERTY DRAWINGS (DRAWINGS COMMENCING ML P)
3. FOR DETAILS OF UTILITIES SEE BOOK OF UTILITIES DRAWINGS (DRAWINGS COMMENCING ML UC) AND BOOK OF SURFACE WATER DRAWINGS (DRAWINGS COMMENCING ML UN)

REV.	DATE	Description	DRAWN BY	CHECKED BY	REVIEWED BY	APPROVED BY
P01	06/03/24	For Railway Order	JM	SB	SB	RH

Client: TII Transport Infrastructure Ireland; NTA Údarás Náisiúnta Iompair / National Transport Authority

Project: METROLINK

Consultant: JACOBS; IDOM

Drawing Title: OTTER MITIGATION MEASURES AT ROYAL CANAL CROSS SECTION

Drawing Status: S1

Drawing Nº: ML1-JAI-EIA-ROUT_XX-DR-Y-310002

Plan Drawing Nº: ML-RO 304 N-O

Scales Original Size A1 AS SHOWN

Sheet 1 of 1