Marshall Yards Development Company Ltd.

Residential Zoned lands at Ballybin Road, Ratoath, Co. Meath

Construction Management Plan (Planning Submission)

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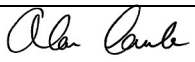
S2.P02	24.06.20204	Planning Submission	Meath County Council	1E	

Contents

1 Introduction

Donnachadh O'Brien & Associates Consulting Engineers Ltd. (DOBA) have been instructed by the Client, Marshall Yards Development Company Limited, to prepare a planning stage Construction Management Plan (CMP) to accompany a planning application to Meath County Council (MCC) for the proposed Large Scale Residential Development (LRD) on lands at Ballybin Road, Ratoath, Co. Meath. This CMP address **Construction & Demolition Resource & Waste Management** (Section 4), **Construction Environmental Management** (Section 5 which includes a **Surface Water Management Plan**) and finally **Construction Traffic Management** (Section 6). Following appointment, the Contractor shall be responsible for detailing and maintaining this CMP and updating it as appropriate as the project progresses.

2 Existing Site

The existing site is predominantly a greenfield site in agricultural use with 2 existing detached dwellings and agricultural buildings as illustrated in **Figure 1** below. The site is bound to the west and north by the existing Fox Lodge Woods / Manor residential development, to the east by agricultural lands and also the Ballybin Road and to the south by the R125. The existing private dwellings on the site are served by 2 no. existing vehicular accesses – one off the R125 roundabout to the south of the site and one off the Ballybin Road. The site topography is gently sloping from west to east with existing levels extending from ca. +82.50m along the western boundary to +77.50m along the eastern boundary. The existing site is illustrated on Engineering drawings C-0001, C-0002 & C-0003.

Figure 1 Site Location (Source: Google Maps)

3 Proposed Development Description

The proposed development is at a site with a total area of 5.48 hectares principally located at Main Street/R125 and Ballybin Road, Ratoath, Co. Meath. The total site contains a proposed residential development site with an area of 3.66 hectares (bisected by a proposed realigned Ballybin Road) and a proposed infrastructural development site with an area of 1.82 hectares (principally for road and related works, water services and open space amalgamation). The site is generally bound by: Fox Lodge Woods and Fox Lodge Manor to the west and north; existing agricultural lands and residential development to the north and east; existing Ballybin Road and Moulden Bridge to the east; and Main Street/R125 and Jamestown Road/L1016 to the south. The site also incorporates parts of: the existing Ballybin Road (north and west of Moulden Bridge), Main Street/R125, Jamestown Road/L1016 and green open space in Fox Lodge Manor.

The proposed development principally consists of the demolition of 2 No. dwellings (594 square metres gross floor area combined) and 1 No. agricultural shed (988.7 square metres gross floor area) and the construction of 141 No. residential dwellings with a gross floor area of 12,428 square metres in buildings of 2 No. and 3 No. storeys. The dwellings include 117 No. houses (57 No. 2-bed, 52 No. 3-bed, 7 No. 4-bed and 1 No. 5-bed) and 24 No. maisonette/duplex units (18 No. 1-bed and 6 No. 3-bed).

The development also proposes a reconfiguration of the road layout at the south (Main Street/R125 and Jamestown Road/L1016) and east (Ballybin Road) of the site. Specifically, it is proposed to demolish/remove the existing 5-arm roundabout and to replace same with a new 4-arm signalised junction and reconfigured access to the existing Ratoath Childcare site. The new junction arrangement will facilitate a proposed realignment of the southern section of the existing Ballybin Road (approximately 172 metres) as the northern arm of the new signalised junction and a revised entrance for the existing dwelling to the north-east of the site at Ballybin Road (known as 'Fox Lodge Farm', Eircode A84 KF97). The proposed road infrastructure works also include: road markings, traffic signals, traffic signage, footpaths and cycle infrastructure.

The development also proposes:

- 2 No. new multi-modal accesses onto the proposed realigned Ballybin Road to serve the bisected residential site;
- 2 No. pedestrian accesses onto Main Street/R125 and 1 No. pedestrian access onto the realigned Ballybin Road;
- Relocation of existing eastbound bus stop at Main Street/R125 approximately 130 metres to the west;

- Repurposing of the closed section of Ballybin Road as a pedestrian/cycle greenway;
- Internal roads and footpaths;
- 228 No. car parking spaces;
- Cycle parking spaces;
- Hard and soft landscaping, including public open space, communal amenity space and private amenity space (as rear gardens and terraces/balconies facing multiple directions);
- Demolition of the wall at the north-west corner of the site interfacing with Fox Lodge Manor and the amalgamation of existing public open in the estate and proposed public open space;
- Boundary treatments;
- Public lighting;
- Rooftop PV panels;
- 2 No. ESB sub-stations; and
- All other associated site and development works above and below ground.

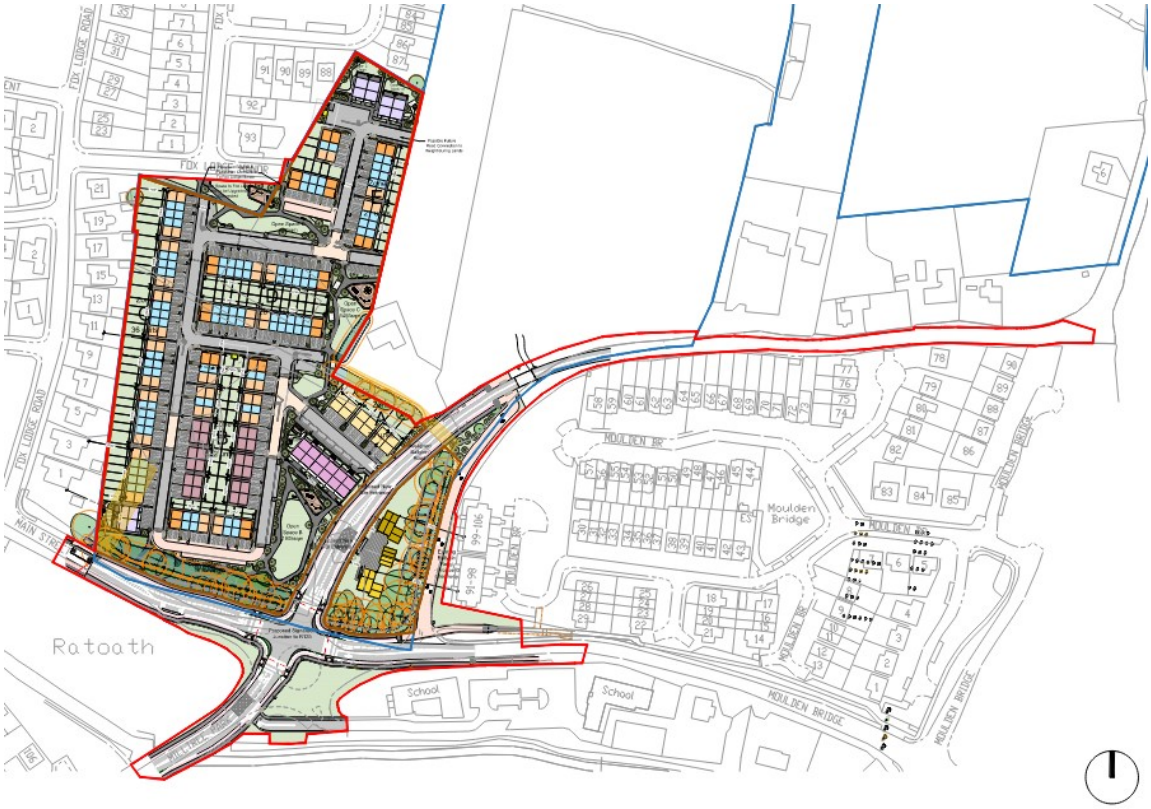


Figure 2 Proposed development (source: JFA)

4 Construction & Demolition Resource & Waste Management

The content and headings used in this section of the CMP comply with the Department of the Environment, Heritage and Local Government (DoEHLG) Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects, 2021.

4.1 Definition of Waste

Waste, as defined in Section 4(1) of the Waste Management Act 1996, as amended, means any substance or object which the holder discards or intends or is required to discard.

4.2 Waste Management Objectives

The principal objective of sustainable resource and Waste management is to use material resources more efficiently, where the value of products, materials and resources are maintained in the economy for as long as possible and the generation of Waste is minimised. To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy as indicated in **Figure 3** below.

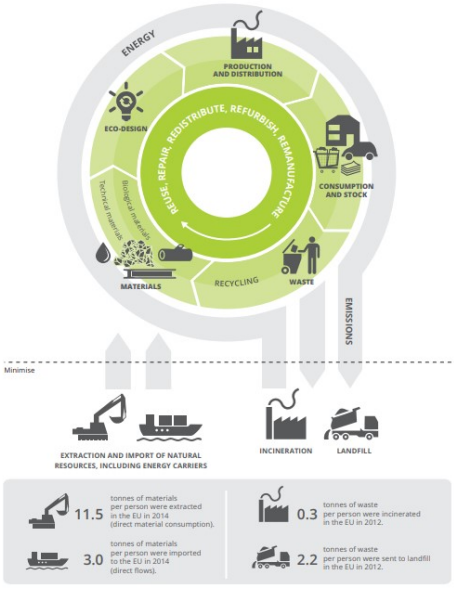


Figure 3 Circular Economy for Materials and Energy (source: European Environment Agency)

In December 2015, the European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on Waste to stimulate Europe's transition towards a circular economy. However, where residual Waste is generated, it should be dealt with in a way that follows the Waste hierarchy as shown in **Figure 4** below and actively contributes to the economic, social and environmental goals of sustainable development.

Figure 4 EU Waste Hierarchy (source: European Commission)

The Waste management objectives for the proposed development are described in the following sections and will facilitate material reuse and recycling where possible and seek to divert Waste from landfill.

4.2.1 Prevention

The Contractor shall prevent and minimise Waste generation where possible by ensuring large surpluses of construction materials are not delivered to site through coordination with the suppliers, operate a just-in-time delivery system and ensure Sub-Contractors conform to the Construction Waste Management Plan (CWMP) for all operations on site.

4.2.2 Reuse

Reuse Wastes and surplus materials where feasible and in as many high value uses as possible.

4.2.3 Recycle

Recycle Waste where possible such as introducing on-site crushers to produce Waste derived aggregates which may, subject to appropriate testing and approvals, may be re-used in the project.

4.2.4 Disposal

Where disposal of Waste is unavoidable this will be undertaken in accordance with the Waste Management Act 1996, as amended.

4.3 Waste Management Legislation & Policy

The key components of EU, national and local policy, legislation and guidance relevant to the proposed Construction works are summarised as follows:

- prevention and minimisation of Waste is the preferred option,
- where construction Waste is generated, it should be source separated to facilitate recycling and maximise diversion of Waste from landfill,
- where Waste may not be prevented or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution,
- Waste may only be transferred by a Waste collection permit holder and delivered to an authorised Waste facility.

4.3.1 Legislation

The following is a list of the legislation which governs Waste management in Ireland and are applicable to the proposed development: -

European

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and repealing certain Directives

National

- Waste Management Act 1996, as amended and Regulations Made under the Acts
- Waste Management (Collection Permit) Regulations, 2007, S.I. No 820 of 2008, as amended
- Waste Management (Shipments of Waste) Regulations 2007, S.I. No. 419 of 2007

4.3.2 Policy

The following is a list of the policy which governs Waste Management in Ireland and are applicable to the proposed development: -

European

- Circular Economy Package, European Commission (2018)
- Europe 2020 Strategy, European Commission (2010)
- Roadmap to a Resource Efficient Europe, European Commission (2011)
- 7th Environmental Action Programme, European Commission (2014)

National

- Department of the Environment, Heritage and Local Government (2012) A Resource Opportunity- Waste Management Policy in Ireland
- EPA National Waste Statistics and Bulletins

- EPA (2014) National Municipal Waste Recovery Capacity. An Assessment for the Department of the Environment, Community and Local Government
- Environmental Protection Agency (2014) National Hazardous Waste Management Plan, 2014-2020
- EPA (2015) Waste Classification – List of Waste and Determining if Waste is hazardous or Non Hazardous.
- EPA, "*Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for C&D Projects*", 2021

Regional

- The Eastern Midlands Region Waste Management Plan 2015-2021

4.4 Roles & Responsibilities

4.4.1 Waste Producer

In accordance with the Waste Management Act 1996, as amended, the Waste producer is responsible for Waste from the time it is generated through until it is legally recycled, recovered or disposed of. Therefore, the onus lies with the producer, i.e. the Client, to ensure that Waste is correctly managed or can face prosecution as a result of incidents of pollution as a result of incorrect management of Waste produced. Contractors appointed by the Client must ensure that facilities receiving Waste hold either a Certificate of Registration (COR) or Waste permit (granted by the Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007) or Waste licence or Industrial Emissions licence (granted by the EPA) while transporters of Waste must hold a collection permit which is issued by a National Waste Collection Permit Office (NWCPO).

4.4.2 Contractor

The Contractor shall, prior to the commencement of the Works, nominate and appoint an adequately trained Construction Waste Manager (CWM) with overall responsibility for implementation of this CWMP. The Contractor's CWM shall be responsible for the following: -

- Instructing all site personnel to comply with the specific provisions of the CWMP, in particular the Objectives regarding the prevention, reduction, re-use and recycling.
- Ensuring that copies of the CWMP will be made available to all relevant personnel on site.
- Informing through regular training of all site personnel of the objectives of the plan and their responsibilities in relation to compliance with the plan.
- Ensuring that where training is required regarding the handling and management of Wastes on site that this is provided to staff as required to ensure they can: -
    - Distinguish reusable materials from materials suitable for recycling
    - Ensure maximum segregation at source

- Co-operate with the Contractor's management regarding stockpiling of reusable material and ensure separation of materials for recovery
- Identify and liaise with operates of recovery outlets

- Informing Contractor staff and Sub-Contractors of content of the plan and for maintaining and keeping detailed records.

In addition, an appropriate staff member from each Sub-Contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the CWMP are performed on an on-going basis. In the event of the CWM leaving the project team, the Contractor will nominate a suitable replacement.

4.5 Construction Waste Arising

Construction Waste is defined as Waste which arises from construction activities. The following sections analyse the wastes arising from construction activities on site and provides methods for management of waste through prevention, reuse and recycling.

4.5.1 Construction Hazardous & Non-Hazardous Wastes

The typical types of Construction Hazardous and Non-Hazardous Wastes that may be expected on a typical project are as per the EPA List of Wastes (LOW) codes outlined in the following table.

Table 1 EPA Hazardous & Non-Hazardous EPA LoW & associated codes

Description	**EPA LoW Codes**
HAZARDOUS WASTE	
Wastes from Wood processing and the production of panels and furniture, pulp, paper and cardboard	**03**
Wastes from wood preservation	**03 02**
Non-halogenated organic wood preservatives	03 02 01
Organ chlorinated wood preservatives	03 02 02
Organometallic wood preservatives	03 02 03
Inorganic wood preservatives	03 02 04
Other wood preservatives containing hazardous substances	03 02 05
Wood preservatives not otherwise specified	03 02 09
Oil Wastes and Wastes of Liquid Fuels	**13**
Wastes of Liquid Fuels	**13 07**
Fuel oil and diesel	13 07 01
Petrol	13 07 02

Other fuels (including mixtures)	13 07 03
Wastes not otherwise specified in the list	**16**
Wastes from electrical and electronic equipment	**16 02**
Transformers and capacitors containing PCBs	16 02 09
Discarded equipment containing chlorofluorocarbons, HCFC, HFC	16 02 11
Discarded equipment containing free asbestos	16 02 12
Discarded equipment other than those mentioned in 16 02 09 to 16 02 13	16 02 14
Hazardous components removed from discarded equipment	16 02 15
Batteries & Accumulators	**16 06**
Lead Batteries	16 06 01
Ni-Cd Batteries	16 06 02
Mercury-containing batteries	16 06 03
Alkaline batteries (except 16 06 03)	16 06 04
Other batteries and accumulators	16 06 05
Separately collected electrolyte from batteries and accumulators	16 06 06
Construction Wastes **(Including excavated soil from contaminated sites)**	**17**
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances	17 01 06
Glass, plastic and wood containing or contaminated with hazardous substances	17 02 04
Metals (including their alloys)	**17 04**
Metal Waste contaminated with hazardous substance	17 04 09
Cables containing oil, coal tar and other hazardous substance	17 04 10
Soil (including excavated soil from contaminated sites), stones and dredging spoil	**17 05**
Soil and stones containing hazardous substances	17 05 03
Insulation materials and asbestos containing construction materials	**17 06**
Insulation materials containing asbestos	17 06 01
Other insulation materials consisting of or containing hazardous substances	17 06 03
Construction materials containing asbestos	17 06 05

Gypsum-based construction material	**17 08**
Gypsum-based construction materials contaminated with hazardous substances	17 08 01
Other construction Wastes	**17 09**
Construction Wastes containing mercury	17 09 01
Construction Wastes containing PCBs	17 09 02
Construction Wastes containing dangerous substances	17 09 03
Municipal Wastes (Household Waste & Similar Commercial Waste, Industrial & Institutional Waste) including separately collected fractions	**20**
Fluorescent tubes and other mercury containing Waste	20 01 21
Paint, inks, adhesives and resins containing hazardous substances	20 01 22
NON-HAZARDOUS WASTE	
Construction Wastes **(including excavated soil from contaminated sites)**	**17**
Concrete, bricks tiles and ceramics	**17 01**
Concrete	17 01 01
Bricks	17 01 02
Tiles and ceramics	17 01 03
Wood, glass & plastic	**17 02**
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and tarred products	**17 03**
Bituminous mixtures containing coal tar	17 03 01
Coal tar and tarred products	17 03 03
Metals (including their alloys)	**17 04**
Copper, bronze, brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
Zinc	17 04 04
Iron and steel	17 04 05

Tin	17 04 06
Mixed metals	17 04 07
Municipal Wastes (Household Waste & Similar Commercial Waste, Industrial & Institutional Waste) including separately collected fractions	**20**
Separately collected fractions	**20 01**
Paper and cardboard	20 01 01
Glass	20 01 02
Biodegradable kitchen and canteen Waste	20 01 08
Textiles	20 01 11
Edible oil and fat	20 01 25

4.5.1.1 Asbestos

An asbestos survey will be carried out on the existing buildings on site prior to demolition. The Contractor, should ACMs be uncovered during the works, shall handle ACMs in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, as amended and associated approved Codes of Practice. The Contractor shall be responsible for preparing specified Risk Assessment and Method Statements for the identification and removal of all ACMs on site.

4.5.1.2 Invasive Species

In order to identify and manage any invasive species, such as Japanese Knotweed, a site walk over was conducted by Enviroguide and its surrounding areas along its perimeter. **No** Schedule 3 of SI 355/2015 invasive species were recorded within the property boundary.

4.5.2 Excavation Waste Management

A suite of ground investigations, refer to **Appendix A** of the Infrastructure Design Report (IDR), has been carried out on site which includes the following;

- Trial Pits & BRE365 soakaway tests
- Boreholes
- Dynamic Probes
- Plate Bearing Tests
- Geotechnical Laboratory Testing
- Geo-environmental Testing

In summary,

- The underlying strata consists of predominately brown slightly sandy gravelly CLAYS.

4.5.2.1 Landfill Disposal of Excavated Soils

2 no. samples from the geotechnical site investigation trial pits were assessed using the RILTA Suite of Geo-Environmental Tests and compared with the European limits for inert landfills as set out in the European Council Decision 2003/33/EC Establishing Criteria and Procedures for the Acceptance of Waste at Landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC. The results of the WAC analyses determined that the samples were in compliance with the inert landfill limits as stipulated in the European Landfill Directive.

4.5.2.2 Estimated Excavation Waste Arising

Any potentially contaminated material encountered during construction, will require testing and classification as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' 13 using the HazWasteOnline application. The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC. The Contractor will be responsible for determining how excavation material from the proposed development will be managed and a full list of all facilities to which hazardous and non-hazardous waste excavation soil and stones will be sent will be provided in the detailed CMP prepared by the Contractor.

The proposed development will require excavation for the following which is a non-exhaustive list:-

- Service trenches including storm water, waste water, water supply, SuDS features, ESB, telecoms, data, etc.
- Foundations and ground floor slabs for houses
- Boundary walls to residential units

The re-use of clean, inert / non-hazardous excavation material as landscaping or engineering fill will also be considered following appropriate material testing and risk assessment to ensure the material is suitable for its proposed end use. Where excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable or disposal to an appropriate licensed landfill in accordance with the Landfill Decretive. The above figures do not allow for bulking or for the additional dig required for temporary/construction slopes, services, utilities, etc.

4.5.2.3 Reuse

The reuse of excavated material must be certain. There must be no intention or requirement for it to be discarded. In addition, there must be no further processing required in order for it to be reused. Soil, rock and naturally occurring material excavated in the course of construction activities can be reused within the proposed development where feasible, subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use. Where naturally occurring, material is used for the purpose of construction in its natural state within the proposed

development this material is not deemed to be a Waste in accordance with Article 2 of the Waste Directive 2008/98/EC, the European Communities (Waste Directive) Regulations, 2011 and Section 3 of the Waste Management Act 1996, as amended. Where a certificate of registration, Waste facility permit or Waste licence is required by the Contractor in order to reuse excavation material within the proposed development this will be obtained from either the local authority or the EPA. Furter to rock reusability testing, the Ground Investigation notes that rock fill is suitable for use as 6F2 capping material across the development subject to appropriate material testing and grading on site.

4.5.2.4 Article 27

Article 27 of the EC Waste Directive Regulations 2011 permits surplus excavation material to be declared as a by-product for use in one of more known construction projects. An Article 27 notification to the EPA under Article 27 of the EC Waste Directive Regulations 2011 is required to achieve by-product status for soil and stones. By-product notifications to the EPA provide an opportunity for reuse of surplus clean soil & stone material arising from construction activity which bring significant economic benefits while facilitating beneficial re-use of by-products. Prior to the commencement of construction, the CMP will be updated to reflect specific measures to minimise waste generation and resource consumption during construction, including providing details of proposed waste contractors and destinations of each waste stream while the CMP will be fully implemented during the proposed construction phase. Furthermore, a quantity of 20,000m^3 of both topsoil and sub soil will need to be excavated to facilitate the proposed development and this may include the importation / exportation of topsoil & sub soil while the Site Investigation (SI), Waste Acceptance Criteria Testing (WAC testing) and Soil Analysis will be used to classify and determine the suitability of soil. Any soil (topsoil & sub soil) identified as 'contaminated' or not equivalent to virgin greenfield for by-product soil and stone, will be treated as waste and will be segregated on-site, stored in skips or other suitable receptacles in designated areas and will be removed from site to a suitable waste facility by a registered waste contractor. All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities. Where soil and stone can be re-used as fill, and is considered to be a By-Product, it will be imported / exported under notification of Article 27 to the EPA, in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a By-Product. Finally, a log of all By-Product material movements will be recorded and maintained.

4.5.2.5 Licenced Waste Facilities

Where removal of Wastes from the proposed development is unavoidable it will be delivered by the Contractor to licensed Waste facilities which are authorised under the Waste Management Act 1996, as amended, and which hold the appropriate certificate of registration, Waste facility permit or EPA licence. Activity in relation to soil recovery facilities described in Class 5 Third Schedule, Part 1 of the Waste Management (Facility Permit and Registration) Regulations 2007, as amended, notes

"*Recovery of excavation or dredge spoil, comprising natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert Waste, through deposition for the purposes of the improvement or development of land, where the total quantity of Waste recovered at the facility is less than 100,000 ton*nes."

EPA licensed Waste activities authorised to accept soil and stones for recovery and disposal include soil recovery sites, landfills, transfer stations and materials recovery facilities which typically handle a larger tonnage of Wastes than facilities holding certificates of registration of Waste facility permits.

Where the Contractor proposes to deliver excavated materials from the proposed development to facilities holding a certificate of registration, Waste facility permit or EPA Waste licence the Contractor is responsible for ensuring the authorisation is valid and allows acceptance of the relevant List of Waste Code. A copy of the authorisation will be included in the CWMP and evidence will be provided that the proposed facility will have capacity to accept the required quantity of Waste from the proposed development.

4.5.2.6 Proposed Importation of Aggregate

The development will require the following quantities of aggregate to be imported for use;

- Dwelling sub-structure = 4,250m^3
- Driveways = 2,800m^3
- Roadways = 3,000m^3
- Main drainage = 4,000m^3
- Site services trenches /under paths = 2,800m^3

4.5.3 Estimate of Construction Waste Arising

The Building Research Establishment (BRE) UK have produced benchmarks derived from data out of the BRE SMARTWaste Plan issued in June 2012 as outlined in **Figure 5** below.

Project Type	Number of projects data relates to	Average $m^3/100m^2$	Number of projects data relates to	Average $m^3/£100K$
Residential	677	18.1	669	12.3
Public Buildings	49	20.9	55	10.7
Leisure	71	14.4	69	9.2
Industrial Buildings	54	13.0	55	10.8
Healthcare	86	19.1	85	9.1
Education	263	20.7	272	10.0
Commercial Other	4	17.4	2	9.7
Commercial Offices	60	19.8	56	9.3
Commercial Retail	123	20.9	122	15.0
Total number of projects	1387		1385	

Figure 5 BRE SMARTWaste benchmark data by project type

The table below is a breakdown of the quantities of Construction Waste which will be produced based on the BRE data outlined above.

Table 2 Quantities of Proposed Construction Waste

Type	Proposed Gross Internal Floor Area (m^2)	Average m^3/ $100m^2$	Construction Waste (m^3)
Residential	c. 12,428	18.10	2,249

Therefore, the total Waste from buildings to be generated during the construction phase of the project is estimated at c. 2,249m^3. The Contractor will ensure that Waste generation on site is minimised and that Waste removed from site for recovery or disposal is reduced where feasible.

4.5.4 Construction Waste Management

The Contractor shall as a minimum implement the following measures to prevent Waste generation, facilitate Waste recycling and minimise Waste disposal during the construction phase:

4.5.4.1 Source Segregation

Metal, timber, glass and other recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation. Office and food Waste arising on site will be source separated at least into dry mixed recyclables, biodegradable residual Wastes. Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations. All hazardous Waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate Waste collection holder. Waste bins, containers, skip containers and storage areas will be clearly labelled with Waste types which they should contain, including photographs as appropriate. The site will be maintained to prevent litter and regular litter picking will take place throughout the site.

4.5.4.2 Material Management

'Just in time' delivery will be used so far as is reasonably practicable to minimise material wastage. Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised Waste facility. The Contractor will ensure that any off-site interim storage facilities for excavated material have the appropriate Waste licences or Waste facility permits in place.

4.5.4.3 Further Detailed Development of the CWMP by the Contractor

The Contractor will be required to further develop and detail this CWMP prior to commencement of the proposed works and, as a minimum, include the following: -

- Details of the Contractor including the nominated project manager,
- names, roles, responsibilities and authority of key personnel involved in Waste management in the design team and on site,
- Estimates of Waste generation including the types and quantity of Wastes generated,
- Types and quantities of excavation material, if any,
- Measures to reduce Waste generation,
- The amounts of material intended to be stored temporarily on site and the location of such storage,
- Measures to prevent nuisances etc.,
- Authorised Waste hauliers with appropriate and up to date Waste Collection Permits,
- Recycling and disposal sites, including copies of permits/licences for Waste facilities,
- Any other relevant item during the works, which may be brought to the attention of the design team or the Contractor which should be reasonably addressed and inserted into the detailed Construction Waste management Plan.

The following procedures, as a minimum, should be included in the plan where relevant: -

- Control of Sub-Contracts, if applicable, which must include the assessment of the sub-Contractor's Waste management policies and control capabilities, and the identification and

implementation of additional controls needed on such Sub-Contractors to fulfil the design teams and Contractor's obligations in respect of Waste management,

- Waste management including liaison with third parties, statutory bodies, Waste hauliers, Waste disposal facilities and other companies,
- Excavation and handling of Waste materials to prevent nuisance,
- Segregation and proper storage of materials on site to facilitate reuse and recycling,
- Management of any hazardous or contaminated Waste,
- Control of all documentation relating to the handling, transportation and disposal of Waste,
- Management review/audits to monitor and demonstrate control over the implementation of the detailed Construction Waste Management Plan.

4.6 Collection of Construction Waste

Waste from Construction will be transported by authorised Waste collectors in accordance with the Waste Management (Collection Permit) Regulations 2007, as amended. An up-to-date list of all Waste collectors used to transport Waste from site during the proposed development will be maintained on site and updated by the Contractor and be similar to the sample Waste Collection Permit table below. The Contractor shall hold valid Waste collection permits on site.

Table 3 Sample Waste Collection Permit Table (form is left blank intentionally)

Name of Authorised Waste Collector	Company Address	National Waste Collection Permit Number	Waste Types Collected (Text Description)	Waste Types Collected (EPA LoW Codes)

4.7 Offsite Disposal of Construction Waste

Waste from Construction will be delivered to authorised Waste facilities in accordance with the Waste Management Act 1996, as amended. The Contractor shall maintain an up-to-date list, similar to the sample Table below, of all Waste facilities to which Waste from the site will be delivered and copies of valid appropriate facility Certificates of Registration, Waste Facility Permits and Waste Licences.

Table 4 Sample Authorised Waste Facilities (form is left blank intentionally)

Name of Authorised Waste Facility	Waste Facility Address	Number of Waste Licence/ Waste Permit/ Certificate of Registration	Regulatory Authority	Waste Types to be delivered (Text Description)	Waste Types to be delivered (EPA LoW Coes

4.8 Construction Waste Management Costs

As required by the Department of the Environment, Heritage and Local Government Best Practice Guidelines, and the EPA Guidelines, on the Preparation of Waste Management Plans for Construction Projects this section addresses costs of Waste management. The total cost of implementation of the CWMP will be measured by the Contractor and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

4.8.1 Reuse/ Recovery

By reusing materials on site, there will be a reduction in the transport and disposal costs associated with the requirement for a Waste Contractor to take the material away to landfill. Clean and inert soils, gravel, stones etc. which cannot be reused on site may be classified as a by-product (under Article 27 of the 2011 Waste Directive Regulations), used as capping material for landfill sites, or for the reinstatement of quarries etc. subject to approvals by EPA. This material is often taken free of charge for such purposes, or when used as capping in landfills will not attract the landfill tax levy, thereby reducing final Waste disposal costs.

4.8.2 Recycling

Salvageable metals will earn a rebate which can be offset against the cost of collection and transportation of the skips. Clean, uncontaminated cardboard and certain hard plastics can be recycled. Waste Contractors will charge considerably less to take segregated Wastes such as

recyclable Waste from a site than mixed Waste. Timber can be recycled as chipboard. Again, Waste Contractors will charge considerably less to take segregated Wastes, such as timber from a site than mixed Waste.

4.8.3 Disposal

Landfill charges are currently at approximately €160/tonne (includes a €75 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2012) for non-hazardous Waste and €25/tonne for inert Waste. In addition to disposal costs, Waste Contractors will also charge a collection fee for skips. Collection of segregated C&D Waste usually costs less than municipal Waste. Specific C&D Waste Contractors take the Waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the Waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material wherever possible.

4.9 CMWP Auditing

The Contractor's CWMP shall carry out regular Waste Audits in accordance with the Contractors Project Specific Waste Audit Plan which shall be a systematic study of the Waste management practices applied in the project to highlight the problems that Waste can cause and the benefits of prevention and minimisation. The CWMP's Audits shall allow the Contractor to monitor the quantity and type of Waste produced by different Sub-Contractors and identify opportunities for Waste reduction throughout each stage of the project. The Audit should identify details of raw material inputs and the quantity, type and composition of all Waste form the site. The Contractor will record the quantity in tonnes and types of Waste and materials leaving the site during the works. The name, address and authorisation details of all facilities and locations to which Waste and materials are delivered will be recorded along with the quantity of Waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of. The Audit shall highlight corrective actions that may be taken in relation to management policies or site practice in order to bring about further Waste reductions which shall be supplemented with a tracking system to determine the success or failure of the corrective actions. Finally, summary audit reports outlining types, quantities of Waste arising's and their final treatment method should be sent to the relevant Authority for their information.

4.10 References

- Department of the Environment, Heritage and Local Government (DoEHLG), 2006a. Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects (latest edition)
- Environmental Protection Agency (EPA), 2017. Construction and Demolition Waste Statistics for Ireland. Latest Reference Year: 2014
- EPA, 2016. Ireland's Environment 2016 – An Assessment. EPA, Wexford, Ireland

- EPA, 2015. Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-hazardous.
- EPA, 2014. National Waste Report 2012. EPA, Wexford, Ireland

5 Construction Environmental Management

5.1 General

The following section outline the Construction Environmental Management Plan (CEMP) which provides a framework that outlines how the appointed Contractor will manage and minimise, where possible, negative environmental effects during the construction of the proposed development where construction is considered to include all site preparation, enabling works, construction activities, materials delivery, materials and waste removal and associated engineering works. This CEMP;

- Outlines and indicative programme for Construction,
- Describes the land-use requirements of the construction phase,
- Outlines the employment requirements, roles and responsibilities associated with the construction phase of the proposed development,
- Outlines all the measures which shall be implemented by the appointed contractor to ensure that no significant effects on the environment occur during the construction phase of the proposed development.

Following appointment, the Contractor, as part of the CMP, shall be required to develop more specific Method Statements and submit a Project Specific CEMP that is cognisant of the proposed construction activities, equipment and plant usage and environmental monitoring plan for the proposed development. This CEMP outlines the range of potential types of construction methods, plant and equipment which may be used by any Contractor appointed in order to enable their impacts to be assessed by the competent authority for the purposes of the environmental impact assessment and appropriate assessment prior to determining whether to grant planning permission. This CEMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that need to be implemented throughout construction. Compliance with this CEMP does not absolve the Contractor or its Sub-Contractors from compliance with all legislation and bylaws relating to their construction activities.

5.2 Duration and Sequencing

It is envisaged that the construction of the proposed development shall be phased as noted in Table 5 below. See also in **Appendix A** sketches of a potential phasing of the construction of the new signalised junction to replace the existing roundabout along the R125.

Table 5 Proposed Development Phase Durations

Phase 1	
Enabling Works & Site Set Up	11 months for completion of first 82 houses and associated infrastructure
Construction of the realigned Ballybin Road and the new signalised junction replacing the existing roundabout along the R125.	
Installation of Wastewater and Surface Water outfalls, to the south of the site and east of the site along the Ballybin Road	
Construction of new development entrance off the realigned Ballybin Road	
Construction of the upgraded existing residential entrance north of the new development entrance from Ballybin Road	
Installation of internal site surface water sewers, wastewater sewers, water mains and surface water attenuation.	
Construction of Phase 1 housing units	
Installation of Phase 1 roads and footpaths	
Installation of Phase 1 hard and soft landscaping and permeability links	
Phase 2	
Site Set Up	7 months for completion of second phase of 59 units with associated infrastructure & open space
Installation of surface water sewers, wastewater sewers, water mains and surface water attenuation.	
Construction of Phase 2 housing units	
Installation of Phase 2 roads and footpaths	
Installation of Phase 2 hard and soft landscaping and permeability links to adjacent lands	

5.3 Construction Compound

The Contractor's construction compound will be located on site and shall primarily consist of

- Site Offices & associated welfare facilities,
- Materials drop-off and storage areas;
- Set down areas for HGVs

Materials to be stored on-site will be stored in a safe manner and will minimise the risk of any negative environmental effects and will be managed on a 'just-in-time' basis. All fuel storage areas will be bunded in the compound and will be clearly marked. Fuel will be transported from the offsite compound to the plant and equipment in mobile units based on need. A dedicated fuel filling point will be set up on site with all plant brought to this point for filling. Temporary toilets and wash facilities will be provided for construction workers which may require periodic waste pumping and waste offsite haulage and shall be carried out by an authorised sanitary waste contractor. Alternatively, the Contractor may utilise an existing foul drainage connection for site welfare facilities, subject to agreement with Irish Water.

5.4 Site Management

5.4.1 Hoarding

The Contractor will establish a site boundary with the provision of appropriate signage, construction of hoarding, and welfare facilities, site office, and establishment of appropriate access and egress. The construction site hoarding will be provided as a secure site boundary to what can be a dangerous environment for people who have not received the proper training and are unfamiliar with construction operations established around the work area before any significant construction activity commences. Site hoarding minimises some of the potential environmental impacts associated with construction, namely:

- Noise,
- Visual impact,
- Dust.

Controlled access points to the site, in the form of gates or doors, will be kept locked for any time that these areas are not monitored (e.g. outside working hours). The hoarding shall be painted, well maintained and contain graphics relating to the proposed development.

5.4.2 Security

The Contractor shall ensure that the site hoarding will avoid unauthorised entry to site and thus minimise the risk of vandalism.

5.4.3 Site Maintenance

The Contractor shall continuously maintain the site and its surround environs by carrying out the following: -

- Maintain work areas and ensure staff welfare facilities and material storage areas are kept clean,
- Provide site layout maps identifying key areas such as first aid posts, material storage, spill kits, material and waste storage and welfare facilities,
- Maintain all plant, material and equipment required to complete the construction work,
- Maintain construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times,
- Prevention of the discharge of fuel & oil from bunded areas,
- Provision of appropriate waste management at each working area,
- Prevention of infestation from pests or vermin,
- Maintenance of wheel washing facilities,
- Prevention of site runoff or surface water discharge,
- Maintenance of public rights of way, diversions and entry/ exit areas around working areas for pedestrians and cyclists where practicable,
- Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

5.4.4 Site Lighting

The Contractor shall implement the following measures in relation to site lighting: -

- Site lighting will be provided with the minimum luminosity sufficient for safety and security purposes to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas,
- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption,

- Site lighting positioned and directed so as not to unnecessarily intrude on adjacent buildings and land uses, ecological receptors and to avoid causing distraction or confusion to passing motorists,
- Provide tower crane mounted 1000W metal halide floodlights which will be cowled and angled to minimise spillage to surrounding properties.

5.4.5 Working Hours

The proposed normal working hours, subject to Planning Permission and conditions from the local authority, during the construction phase are as follows: -

Start	Finish	Day(s)
08 00	18 00	Monday to Friday
08 00	13 00	Saturday

No works are proposed on Sundays or Bank Holidays or after the hours noted above, however, it may be necessary to work outside of these hours in exceptional circumstances such as Night Works or Weekend Works during certain construction activities. In such an instance, a derogation will be sought from the Local Authority.

5.4.6 Employment

It is anticipated that at the peak of the construction phase that there will be an average work force of 90 people.

5.4.7 Construction Health & Safety

The Contractor shall comply with the requirements of the Safety, Health and Welfare at Work Act 2005, the Safety, Health and Welfare at Work (Construction) Regulations, 2006 and other relevant Irish and EU safety legislation at all times. As required by the Regulations, a Health and Safety Plan will be formulated which will address health and safety issues from the design stages through to completion of the construction and maintenance phases. This plan will be reviewed and updated as required, as the development progresses. In accordance with the Regulations, a "Project Supervisor Construction Stage" will be appointed as appropriate. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses.

5.4.8 Emergency Response

The Contractor will maintain an Emergency Response Action Plan which will cover all foreseeable risks, i.e., fire, spill, flood, etc. and will be developed in accordance with the site emergency plan. Appropriate site personnel will be trained as first aiders and fire marshals and be trained in environmental issues and spill response procedures.

5.4.9 Construction Waste Management

The Contractor will be required to produce a CWMP for approval by Meath County Council prior to commencing the Works. The Contractor shall refer to and expand on this Construction Waste Management Plan prepared by DOBA and shall include but not be limited to the following: -

- Description of the Project and details of the Contractor's Construction Waste Manager
- Construction Waste Arising and proposals for waste minimisation, reuse and recycling
- Procedures for waste prevention & management
- Estimated costs of waste management
- Training & education proposals for the workforce regarding C&D Waste procedures
- Waste collection & disposal including licensing, permits and associated records
- CWMP Auditing

5.4.10 Construction Surface Water Run-off

The Contractor shall provide site drainage during the Construction Phase to collect surface runoff prior to discharge to the local foul drainage network, the details of which shall be agreed with Irish Water.

5.5 Environmental Management

The final contractor's CEMP will include all of the mitigation measures described in the NIS and EIAR reports. The following section summarises a non-exhaustive list of construction related mitigation and monitoring measures that must be implemented by the appointed Contractor during the construction phase of the proposed development and should be read in conjunction with the NIS and EIAR.

5.5.1 Mitigation Measures

5.5.1.1 Traffic & Transport

The Contractor is required to develop a Site-Specific Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) in order to implement the requirements as outlined in this CEMP and shall be agreed with Meath County Council and if required to do so, with An Garda Síochána prior to commencement.

5.5.1.2 Air Quality

The following are the Air Quality mitigation measures which are deemed appropriate to the proposed development:

- Spraying of exposed earthwork activities and site haul roads during dry weather;
- Provision of wheel washes,

- Covering of stockpiles,
- Control of vehicle speeds, speed restrictions and vehicle access;
- Sweeping of hard surface roads.

In addition, the following measures will be implemented for during the construction phase of the proposed development:

- A min. 1.8m hoarding will be provided around the site works to minimise the dispersion of dust from the working areas,
- Any generators will be located away from sensitive receptors in so far as practicable,

Any asbestos discovered during construction will be removed by a Specialist Contractor in accordance with Safety, Health, and Welfare at Work (exposure to Asbestos) Regulations 2006/20137, and disposed of by specialist contractors to an appropriately licensed facility. Traceable records of this activity, including the disposal licence, will be kept.

5.5.1.3 Climate

As no significant impacts are predicted during the construction phase, no mitigation measures are proposed.

5.5.1.4 Noise

- The Contractor shall implement the following mitigation measures during construction activities in order to reduce the noise and vibration impact to nearby noise sensitive areas.
    - Site compounds will be located away from noise sensitive receptors within the site constraints.
    - The use lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.
    - For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.
    - For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
    - For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
    - Demountable enclosures to screen operatives using hand tools and will be moved around site as necessary.

- All items of plant will be subject to regular maintenance to prolong the effectiveness of noise control measures.
- Construction site hoarding to be constructed around the site boundaries of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.
- Construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion and be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.
- The following noise conditions shall be adhered to:
    - 70dB(A) (LAeq 1 hour) between 0800 hours and 1800 hours Monday to Friday inclusive (excluding bank holidays) and between 0800 hours and 1300 hours on Saturdays when measured at any noise sensitive location in the vicinity of the site. Sound levels shall not exceed 45dB(A) (LAeq 1 hour) at another other time following completion of the site development works.

5.5.1.5 Vibration

Vibration Limits to be applied for the duration of construction works are as set out in BS 5228-2:2009+A1:2014 (Code of Practice for Vibration Control on Construction and Open Sites) and BS 7385: 1993 (Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration). Allowable vibration during the construction phase is summarised below in **Table 6.**

Table 6 Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive properties to the source of vibration

Allowable vibration at the closest part of sensitive properties adjacent		
Less than 4Hz	15 to 40 Hz	40Hz (and above)
12mm/so	12.5mm/so	50mm/so

5.5.1.6 Biodiversity

The potential vector for impacts would be seen to be via surface water networks measures should be in place to protect the biodiversity of the Broadmeadow River to the south of the site. The measures outlined below will ensure the protection of ecological sensitivities at the site and downstream. No additional mitigation measures are required besides those outlined below, during the construction and

operational phases of the development, to protect against potential negative impacts on designated conservation sites or species of conservation importance.

Additional measures to be carried out to prevent impacts on Habitats, Botany and Avian Ecology

- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August).
- Specific bat mitigation will be addressed in the EcIA and final bat report.
- Replanting of the perimeter treelines, hedgerows and wildflower meadows should be carried out with native species.
- Construction operations outside of daylight hours should be kept to a minimum in order to minimise disturbance to fauna in addition to roosting bird species.
- Where possible, treelines and mature trees that are located immediately adjacent to planned construction areas or are not directly impacted should be avoided and retained intact. Overall impacts on these sites should be reduced through modified design and sensitivity during construction. Retained trees should be protected from root damage by machinery by an exclusion zone of at least 5 metres or equivalent to canopy height. Such protected trees should be fenced off by adequate temporary fencing prior to other works commencing.
- Boundary vegetation. Linear features such as hedgerows and treelines may serve as commuting corridors for bats (and other wildlife) and the onsite boundary vegetation should be retained and /or replaced once construction ends. Native species should be chosen in all landscaping schemes. Planting schemes should attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors. Retention of boundary hedgerows and treelines will also serve to screen the development.
- Lighting restrictions. In general, artificial light creates a barrier to bats so lighting should be avoided where possible. Where lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) should be used to prevent overspill. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Mature trees should not be directly lit during construction or operation of the proposed development.

The Arborist mitigation plan includes the following measures:

- Tree planting is proposed to mitigate the loss of trees and must be carried out and maintained as specified by the Landscape Architect.

- All new tree planting must be carried out in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape.
- Recommendations. New tree planting should take into consideration the mature growing size of the trees proposed, to ensure that a harmonious relationship between trees and buildings and hard surfaces can be sustained for the long term, without the need for unnecessary pruning works or removals.

Please also refer to the Tree and Hedgerow Management Plan, submitted under separate cover as part of the Arboricultural Report.

5.5.1.7 Additional Mitigation

- All water leaving the site during construction will be desilted using standard techniques including silt buster/silt socks etc.
- During the enabling works all surface water from site will go to foul following desilting. All surface/pumped water will go to foul until the surface water infrastructure is complete, flow controls installed and inspected.
- Desilting and petrochemical interception of all surface runoff/pumped water will take place for the length of the construction project.
- A petrochemical interceptor will be placed on the surface water network prior to discharge.
- Local silt traps established throughout site.
- Mitigation measures on site include dust control, stockpiling away from watercourse and drains
- Stockpiling of loose materials will be a minimum of 20m from drains.
- Stockpiles and runoff areas following clearance will have suitable silt barriers to prevent runoff of fines into the drainage system.
- Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, excavations and other locations where it may cause pollution.
- Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the surface water network. Prior to discharge of water from excavations adequate filtration and petrochemical interception will be provided to ensure no deterioration of water quality and ensure compliance with the Water Pollution Acts.
- Site layout during excavation works will be designed to ensure vehicles do not enter the works area unless necessary for the excavation and soil removal processes. All machinery

leaving the works area will be thoroughly cleaned before being allowed on to public roads. A road sweeper (including vacuum) will be in place (as required) to unsure cleanliness of nearby and haul roads (where necessary), particularly during enabling works.

- Dust may deposit on surrounding roads thus entering into the surface water network. Effective site management regarding dust emissions will be carried out.

5.5.1.8 Archaeology

All archaeological recommendations contained within the Archaeology Report will be actioned during the pre-construction phase, or in advance of the main construction stage, during the site clearance / ground reduction stage. In accordance with the John Cronin & Associates report submitted with this planning application, archaeological monitoring of groundworks during the construction phase is recommended in order to establish if any subsurface archaeological features or deposits are present within the site

5.5.1.9 Land & Soils

- Precautionary measures will be taken to contain any areas within the planning boundary at risk of contaminated run-off. The Contractors CEMP shall include the following measures:-
- Provide adequate security to potential pollutants against vandalism,
- Provide procedures to ensure that any spillages will be immediately contained, and contaminated soil shall be removed from the proposed development and properly disposed of in an appropriately licensed facility,
- Minimise dust generation by wetting down haul roads,
- Store stockpiles of earthworks and site clearance material on impermeable surfaces and covered with appropriate materials,
- Place silt traps in road gullies to capture any excess silt in the run-off from working areas,
- Carry out earthworks operations such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding,
- Control runoff will be controlled erosion and sediment control structures appropriate to minimise the possible impacts.

The Contractors CEMP shall include a plan for responding to emergencies and shall include actions for dealing with potential pollution incidents such as:-

- Containment measures;
- Emergency discharge routes;
- List of appropriate equipment and clean-up materials;

- Maintenance schedule for equipment;
- Details of trained staff, location and provision for 24-hour cover;
- Details of staff responsibilities;
- Notification procedures to inform the EPA or the Environmental Department in Meath County Council
- Audit and review schedule;
- Telephone numbers of statutory water consultees; and
- List of specialist pollution clean-up companies and their telephone numbers.

5.5.1.10 Hydrogeology

The Contractor's CEMP will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors to minimise the risk of soil, groundwater and surface water contamination. In addition, Groundwater Monitoring shall be carried out by the Contractor, throughout the Construction Phase of the Project and for a minimum of one full hydrological year following completion or such time as approved by Meath Co. Co. and / or as specified in the planning decision. The Contractor shall appoint a suitably qualified professional to monitor ground water during and after construction and shall install a minimum of 2 no. boreholes with standpipes to monitor groundwater at locations to be agreed with the Engineer prior to the commencement of construction. The Contractor shall implement the following measures to minimise the risk of spills and contamination of soils and waters: -

- Treat all excavated spoil to remove excess fluid prior to stockpiling and transportation where possible,
- Transfer excess soil materials from stockpile areas off-site during dry periods where feasible,
- Restrict stockpile and transfer of excess soil material to specified and impermeable areas that are isolated from the surrounding environment,
- Provide wheel washes at site entrances and exit points,
- Train staff to follow vehicle cleaning procedures.
- Train site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures,
- Bund all fuel storage facilities away
- Implement a regular vehicle inspection plan for fuel, oil and hydraulic fluid leaks.
- Provide suitable equipment to deal with spills on site;

- Minimise the use of cleaning chemicals; and

5.5.1.11 Waste Management

As noted previously, the Contractor will be required to produce a Construction Waste Management Plan (CWMP) for approval by Meath County Council prior to commencing the Works.

5.5.1.12 Material Assets

The Contractor shall put measures in place to ensure that there are no interruptions to existing services and that all services and utilities are maintained, unless this has been agreed in advance with the relevant service provider and local authority. Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

5.5.1.13 Major Accidents & Incidents

The construction phase of the proposed development will be carried out by the Contractor in compliance with best practice construction measures. Asbestos, where identified, shall be removed from site and disposed of prior to construction in accordance with statutory requirements.

5.5.2 Monitoring Measures

5.5.2.1 Traffic & Transportation

Refer to Section 6 of this document.

5.5.2.2 Air Quality

The Contractor shall undertake dust monitoring at a range of nearest sensitive receptors during the construction phases with the Technical Instructions on Air Quality Control (TA Luft) dust deposition limit set at 350 mg/m^2/day, averaged over one year and applied as a 30-day average.

5.5.2.3 Climate

As no significant impact is predicted to occur during the construction phase of the proposed development, no monitoring measures are required.

5.5.2.4 Noise & Vibration

The Contractor shall carry out noise monitoring in accordance with the International Standard ISO 1996: 2017: Acoustics - Description, measurement and assessment of environmental noise and vibration in accordance with BS 7385-2 (1993)

5.5.2.5 Biodiversity

The Contractor shall ensure that the discharge of treated surface water from dewatering activities will be monitored to ensure that the discharged treated water will be in accordance with the Irish Water agreed Discharge Licence. The Contractor shall employ a suitably qualified Site Environmental Manager to oversee the control of settlement and advise of silt bag replacement where required.

5.5.2.6 Archaeology

Archaeological monitoring of groundworks during the construction phase is recommended in order to establish if any subsurface archaeological features or deposits are present within the site.

5.5.2.7 Water

In addition to those measures noted in Section 5.4 of this CMP, the Contractor shall carry out visual monitoring of the proposed development to ensure existing surface water runoff is draining from the site and is not exposed to any contaminants. In addition, the contractor is required to monitor the weather forecasts to inform the programming of earthworks and stockpiling of materials.

5.5.2.8 Land & Soils

The Contractor shall employ a suitably qualified person to monitor excavations in made ground to ensure that any contaminated material is identified, segregated and disposed of appropriately. The Contractor shall monitor excavations to ensure consistency with the descriptions and classifications according to waste acceptance criteria testing carried out as part of the site investigations. Any identified hotspots shall be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. In addition, care shall be taken to ensure that the hotspots do not cross contaminate clean soils elsewhere.

5.5.2.9 Hydrogeology

The Contractor shall carry out visual monitoring to ensure the groundwater resource is not impacted by the proposed development.

5.5.2.10 Waste Management

The Contractor shall manage waste during the construction phase in accordance with the Contractors CWMP. The data will be maintained to advise on future projects.

5.5.2.11 Material Assets

Construction phase mitigation measures have been proposed to ensure that significant negative effects on material assets will be avoided, prevented or reduced during the construction of the proposed development. As such, no monitoring measures are proposed during the construction phase.

5.5.2.12 Major Accidents & Incidents

No monitoring is proposed specific to reducing the risk of major accidents/ disasters during construction.

5.5.2.13 Construction of Proposed Surface Water Outfalls, Proposed Signalised Junction to replace the existing Ballybin Road/R125 Roundabout, Proposed realigned Ballybin Road, Proposed Wastewater Outfall in Ballybin Road. This section describes the proposed works associated with the construction of the following;

- New surface water outfalls (for both the southern and eastern discharge locations as shown on the DOBA Proposed Surface Water Drainage Layout plans, namely 2334-DOB-XX-SI-DR-C-0200 series),
- New Signalised Junction at the existing Ballybin Road/R125 Roundabout (as shown on DOBA drawing, 2334-DOB-XX-SI-DR-C-0600), being designed based on traffic modelling data being provided by Systra,
- Realigned Ballybin Road (as shown on DOBA drawings, 2334-DOB-XX-SI-C-0500 series),
- Proposed Wastewater Outfall in Ballybin Road (as shown on the DOBA Proposed Wastewater Drainage Layout plans, namely 2334-DOB-XX-SI-DR-C-0300 series).

The final measures will be agreed with Meath Co. Co. prior to commencement.

- The works involved in the installation of the above works will be monitored by a suitably qualified Ecologist as an Ecological Clerk of Works.
- In line with Inland Fisheries Ireland (2016) Guidelines on protection of fisheries during construction works in and adjacent to waters, there will be no direct discharges to surface waters.
- Construction work in terms of ground preparation for the installation of the works at the proposed outfalls, proposed signalised junction, and proposed Ballybin Road realignment will be undertaken during dry conditions during a period of settled weather. All rock breaking, blasting and other high-intensity construction activities as may be required within the site.
- A buffer zone of 5m, where possible, from the adjacent water course will be established by erecting a temporary fence along the length of the site in that area. This fence will comprise a silt curtain to prevent surface water runoff to the water course and will be retained in place for the duration of the construction period until soft landscaping of the buffer zone is implemented.
- A line of double lined and sealed sandbags will be lowered onto the lower bank level of the watercourse to a working height above the expected river water level in the event of a rainfall event and this sandbag bank will be lined with an impervious silt curtain to prevent runoff to

the river during the preparation of the working area prior to installation of the discharge headwall. Tools and equipment are not to be cleaned in watercourses.

- Trucks entering/leaving the site will pass through a wheel washing system. This will be carried out in a dedicated wash down zone with a dedicated site personnel.
- Any, and all excavated material will NOT be temporarily stored adjacent to watercourses.
- No storage of hydrocarbons or any polluting chemicals will occur within 10m of the SAC/ SPA.
- The use of precast concrete headwalls will be utilised. There are no concrete works, i.e. pouring of wet concrete, associated with the installation of the pre-cast headwall or any of the associated works.
- Any fuels or chemical required for construction will be stored within double sealed tanks with bunds to prevent any seepage of same into ground water.
- All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses and away from drains and adjacent watercourses as far as reasonably practicable. Vehicles will not be left unattended during refuelling.
- All plant shall be well maintained with any fuel or oil drips attended to on an ongoing basis.
- Any minor spillage during this process will be cleaned up immediately.
- The Construction Management Plan will be read and signed by the Contractor /Site Foreman.

5.6 Surface Water Management Plan

The main Contractor shall prepare a site-specific Surface Water Management Plan as part of the Construction Management Plan and apply best practice standards which will follow the guidance set out in the following CIRIA documents: -

- C532 Control of Water Pollution from Construction Sites
- C692 Environmental Good Practice on Site
- ICE Earthworks, A Guide
- TII Specification for Road Works Series 600 – Earthworks
- IFI Publication 2016, "*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*"

The plan shall be focused around water quality protection and water quality monitoring. The following sub-sections outline the minimum requirements of the Contractor's Surface Water Management Plan.

5.6.1 Water Quality Protection

The following site-specific measures are proposed for all phases of the project with respect to the protection of the quality of water in the Broadmeadow River and groundwater;

- Excavation works will be in accordance with the requirements of the Office of Public Works (OPW) and Inland Fisheries Ireland (IFI).
- Pollution prevention measures in accordance with guidance from Inland Fisheries Ireland (2016). This will include the installation sediment traps and culverting of drainage ditches 'in the dry', where required.
- No direct discharges made to waters where there is potential for cement or residues in discharge.
- Designated impermeable cement washout areas must be provided and which are to drain into the designated settlement tank on-site & then discharged to the Irish Water foul network.
- Any in-situ concrete work to be lined and areas bunded (where possible) to stop any accidental spillage.
- Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility.
- All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.
- All surface water infrastructure is to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Local Authority Requirements.
- Connections to the public network are be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning.
- All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase.
- Care will be required for the environmental management of the site to ensure that no potential contamination issues are experienced which may impact on the overall surface water quality.
- Potential issues can be mitigated against by ensuring that the development's environmental management plan is adhered to prevent accidental on-site oil spillages and the regular maintenance of on-site plant to eliminate potential risks.
- Implement best practice construction methods and practices complying with relevant legislation to avoid or reduce the risk of contamination of watercourses or groundwater.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Weather conditions and seasonal weather variations will also be taken account of when planning excavations, with an objective of minimizing soil erosion.

- Concrete batching will take place off site or in a designed area with an impermeable surface.
- Concrete wash down and wash out of concrete trucks will take place off site or in an appropriate facility.
- Discharge from any vehicle wheel wash areas is to be directed to the onsite settlement tank for discharge to the IW foul network.
- Oil and fuel stored on site for construction should be stored in designated areas. These areas shall be bunded and should be located away from surface water drainage and features.
- Refuelling of construction machinery shall be undertaken in designated areas away from surface water drainage in order to minimise potential contamination of the water environment. Spill kits shall be kept in these areas in the event of spillages.
- As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in the dedicated site compound. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.
- Hazardous construction materials shall be stored appropriately to prevent contamination of watercourses or groundwater.
- Dewatering measures should only be employed where necessary.
- In respect of surface water networks, during the construction period the system and traps are to be inspected a minimum 4 times a year as the accumulation of silt is prevalent during this period. The number of inspections should be pro-active and if silting is found to be excessive in any of the apparatus the number of inspections should be raised accordingly and continually monitored and reviewed.
- Pipe ends associated with the surface water network should be blocked/capped off with proprietary fittings until connected to the completed storm-water system.
- To ensure protection of the downstream lands and watercourse on the eastern boundary there will be an installation of a silt curtain along the entire length of the boundary of the site where works are proposed; specifically, between the site works and the edge of the development site. The purpose of this membrane will be to prevent any sediment discharge from draining into the watercourse. These specific measures to include the silt curtain will be installed on-site at the preliminary phase 1 stage of construction and remain in-situ and be adhered to until the development is complete. The Contractor's detailed CMP shall identify how this silt curtain is to be installed and maintained throughout the construction phase.
- Where there is a risk or threat of pollution arising from the construction works, works shall cease on-site pending remediation measures. The full scope of monitoring and site management particulars in this regard to be agreed with the Planning Authority in conjunction with a site management plan prior to commencement of works.

- In respect of disposal of any wastewater from the site, discharge from any vehicle wheel wash areas is to be directed to designated on-site settlement ponds; and any debris or sediment captured by vehicle wheel washes are to be disposed off-site at a licensed facility. In terms of activities associated with concrete deliveries/pours, all 'wash out' of concrete trucks will take place off site and any excess concrete is not to be disposed of on site.

5.6.2 Water Quality Monitoring

- water samples taken at the commencement of works to establish the baseline scenario.
- visual inspection and water samples of the watercourse daily to ensure no sediment/pollutant deposits are evident.
- water samples will be taken once a month during the construction phase to demonstrate compliance with surface water regulation EQS standards.
- The proposed surface water monitoring suite will include the following parameters: pH, electrical conductivity, total suspended solids, Total Petroleum Hydrocarbons, nitrate, ammonia, & COD
- Following the construction phase, in addition to the regular maintenance and cleaning of the SUDs features it is proposed to conduct surface water quality monitoring in the outlet to the existing public surface water sewer biannually (twice a year) for a period of 2 years following completion of the construction phase of the proposed development in order to ensure that the discharge is meeting all the relevant EQS limits.

6 Construction Traffic Management Plan

6.1 Construction Traffic Management Plan

This section sets out a framework for a CTMP that will be put in place to support the construction of the proposed Large Scale Residential Development (LRD) on lands at Ballybin Road, Ratoath, Co. Meath.

The CTMP will be finalised by the main contractor (once appointed), who will confirm the programme of works, the agreed routes to Site, and details of a Site Liaison Officer who will have responsibilities for managing traffic, and mitigating transport impacts, during construction.

6.2 Construction Programme

Subject to securing the necessary consents, the construction phase is anticipated to commence in 2025 Q3 (subject to a grant of planning in January 2025), and to take place over a 16-month period.

6.3 Construction Compound

6.3.1 The construction compound will be located within the site, and will be securely gated when not in use

6.3.2 It will provide sufficient space for the delivery and laydown of materials, and the storage of machinery and tools. Staff offices and welfare facilities will also be located within the compound.

6.3.3 Sufficient parking for staff vehicles will be provided in the construction compound. No staff will be permitted to park on public roads.

6.3.4 Turning facilities within the site will allow all vehicles to enter and leave in a forward gear.

6.3.5 Materials to be stored on site will be stored in a safe manner and will minimise the risk of any negative environmental effects and will be managed on a 'just-in-time' basis. All fuel storage areas will be bunded in the compound and will be clearly marked. Fuel will be transported from the offsite compound to the plant and equipment in mobile units based on need. A dedicated fuel filling point will be set up on site with all plant brought to this point for filling. Temporary toilets and wash facilities will be provided for construction workers which may require periodic waste pumping and waste offsite haulage and shall be carried out by an authorised sanitary waste contractor.

6.4 Site Working Hours

Construction site working hours are expected to be between:

- 08:00 to 18:00 Monday to Fridays; and
- 08:00 to 13:00 on Saturdays.

No work will be undertaken on Sundays or Bank Holidays. In such an instance, a derogation will be sought from the Local Authority.

6.5 Construction Traffic Generation

6.5.1 During the peak of the construction phase there are expected to be around 35 HGV deliveries per day (for approx. 4 months) reducing to 14 HGV deliveries per day off peak. Peak staff vehicle movements (assuming a peak of 80 – 90 persons on site with min. car occupancy of 2) are therefore expected to be in the region of 30 – 40 inbound trips in the AM period, and 30 – 40 outbound trips in the PM period as the project nears completion.

6.5.2 There are not expected to be any abnormal loads (loads that cannot be transported by regular construction HGV's) generated by the development.

6.6 Construction Route

The proposed construction routes for HGV traffic are shown on **Figure 6** below.

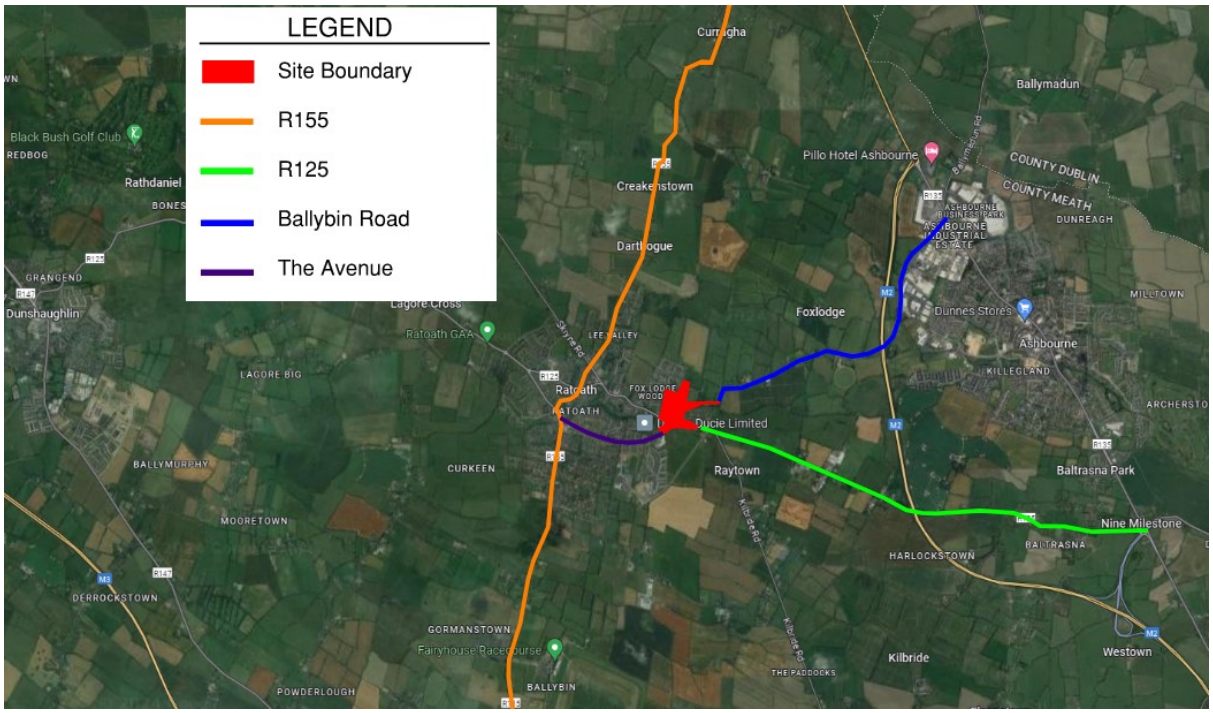


Figure 6 Proposed Construction Traffic Route

The following routes are proposed and avoid Ratoath Main Street where possible:

- To / from the R125 east of the site
- To / from the Ballybin Road to the north of the site

- To / from the N2 north of the site via the R155 and Jamestown Road/L1016
- To / from the M3 south of the site via the R155 and Jamestown Road/L1016

It is expected that most HGV deliveries will arrive from the R125 route to the east of the site.

The final construction routes will be agreed between the main contractor and Meath County Council (MCC) prior to commencement of works on the site.

6.7 Measures to Minimise and Mitigate Construction Traffic Impacts

There are a number of traffic management measures which can be implemented to reduce the impact of HGVs. These measures are described below.

Minimise the Volume of Imported and Exported Material

In order to minimise the volume of imported and exported material it is anticipated that a proportion of materials (stone, topsoil etc.) would be sourced/re-used from within the boundaries of the Proposed Development site.

Delivery Control

The appointed contractor will be required to plan and manage deliveries and collections from the site to minimise the impact on the surrounding road network, and to minimise the impact on the local community.

The contractor will ensure the following measures during the construction period:

- Delivery of materials will not be within the morning and evening road network peaks, and will avoid the times that children are travelling to school, in so far as is possible;
- The number of delivery trips will be minimised through a combination of consolidated ordering, rationalising suppliers, and consolidated deliveries; and
- On-site waste will be minimised through recycling and re-use.

Sustainability

The appointed contractor will have a high regard to sustainability. A Resource Waste Management Plan will be provided by the Contractor ahead of construction starting on site.

In particular the following objectives will be put in place:

- Minimisation of vehicle movements to / from the site;
- Promotion of shared transport arrangements for site operatives;
- Thorough pre-planning of operations on-site to optimise the redistribution of earthworks materials together with minimisation of haul distances;

- Reduction in the amount of aggregates used on-site by means of alternative construction techniques;
- Application of a reduce-reuse-recycle philosophy to all waste processing activities; and
- Conforming to construction / building codes of practice in relation to sustainability objectives and waste disposal procedures.

Wheel Washing

In order to reduce mud and debris being deposited onto the local road network, a wheel washing facility will be installed. All of the public roads within the immediate environs of the subject site (R125, Jamestown Road/L1016, Ballybin Road) will be regularly swept by a road sweeping vehicle to ensure that it is kept free of dust and dirt.

Speed Limit

It is proposed to impose an additional contractor speed limit of 30km/h on the R125, Jamestown Road/L1016 and Ballybin Road, when approaching the site.

Local residents will be able to report any instances of speeding, or dangerous driving to an appointed site representative who will take necessary action to prevent a repeated incident.

Signage

Temporary construction signage will be erected along the R125, Jamestown Road/L1016 and the Ballybin Road to warn drivers, cyclists, pedestrians of construction activities, and to provide directions to site traffic. The signage will also notify construction traffic of the 30km/h speed limits that is in place.

Signage will be in accordance with the Department for Transport, Tourism and Sport's (DTTAS) Traffic Signs Manual. The exact nature and location of the signage will be confirmed with MCC.

Staff Induction & Code of Conduct

All site staff, and delivery drivers, will be informed about traffic management arrangements and procedures via site induction packs.

Transportation of materials to and from the site should be conducted by HGV vehicles operated by drivers with an in-date Driver Certificate of Professional Competence (CPC) qualification.

In addition to the Driver CPC qualification, regular 'in-house' coaching will be provided to ensure drivers maintain best practice when operating HGVs.

Drivers will be fully inducted and enrolled into a code of conduct which outlines how driving duties should be undertaken. The driver's code of conduct should include guidance on the following:

- Construction routes;

- Required license categories;
- General vehicle operation and highway code;
- Drivers working hours / fatigue management;
- Breakdowns / RTC / Emergencies;
- Use of electronic devices;
- Drug and Alcohol policy; and
- Behavioural expectations.

The items listed above are not exhaustive and are only indicative of the elements that should be included in the driver's code of conduct document.

Contracts and Emergency Procedures

The main contractor will be responsible for creating a final list of stakeholder contacts and ensuring this list is kept up to date on an on-going basis. Stakeholder contacts would include the roads authority, emergency services, hospitals, local landowners, local businesses, Community Councils, and local residents.

The principal contractor will be responsible for preparing an Emergency Plan for the site. The Emergency Plan will contain information and details of procedures in the event of emergencies. Construction staff would be informed of the Plan and information provided in relation to the location of the nearest hospital, fire assembly points and inclement weather procedures.

Implementation of the CTMP

The implementation of the CTMP will be the responsibility of the appointed principal contractor. Further evolution of the CTMP may be required during the construction period itself.

The main contractor may employ a number of sub-contractors on the Site, and all will fall under the umbrella of the CTMP and will have an obligation to adhere to the CTMP.

A Site Liaison Officer will be identified for the project who will be the key point of contact for the CTMP.

The Liaison Officer will be responsible for the co-ordination of all elements of traffic and transport during the construction process. This person will liaise with the local community so that the community have a direct point of contact within the Developer's organisation who they may contact for information purposes or to discuss matters pertaining to traffic management or site operation.

6.8 Monitoring of the CTMP

The CTMP will be monitored by the Liaison Officer who in turn will report to MCC in relation to any required changes to the CTMP.

Appendix A Sketches of Potential Phased Construction of New Signalised Junction

Ratoath LRD

Signalised Junction Phasing Sketches

For Discussion with MCC

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ENABLING WORKS (TO ALLOW CONSTRUCTION OF PHASE 1)

DONNACHADH O'BRIEN
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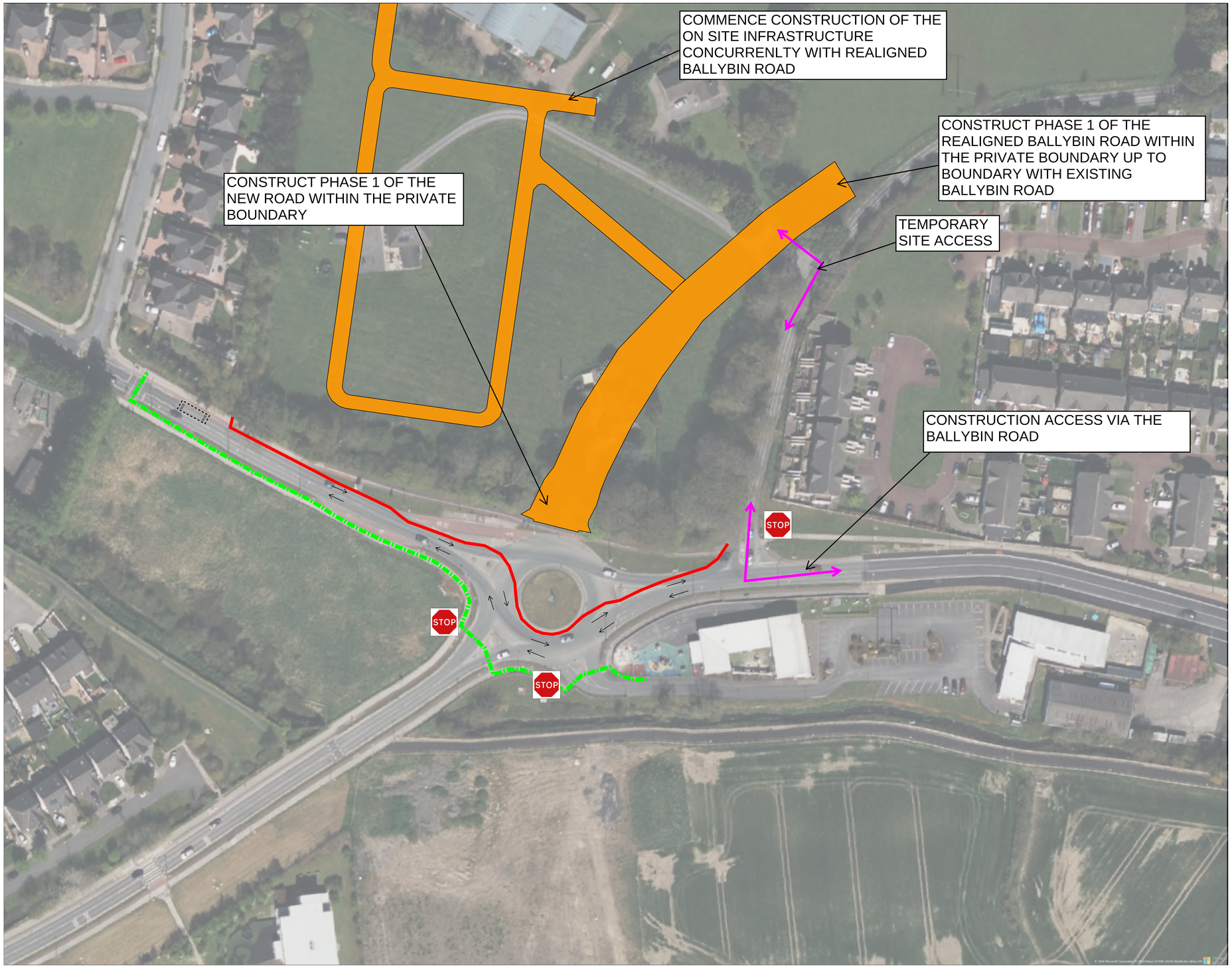
PHASE 1 WORKS



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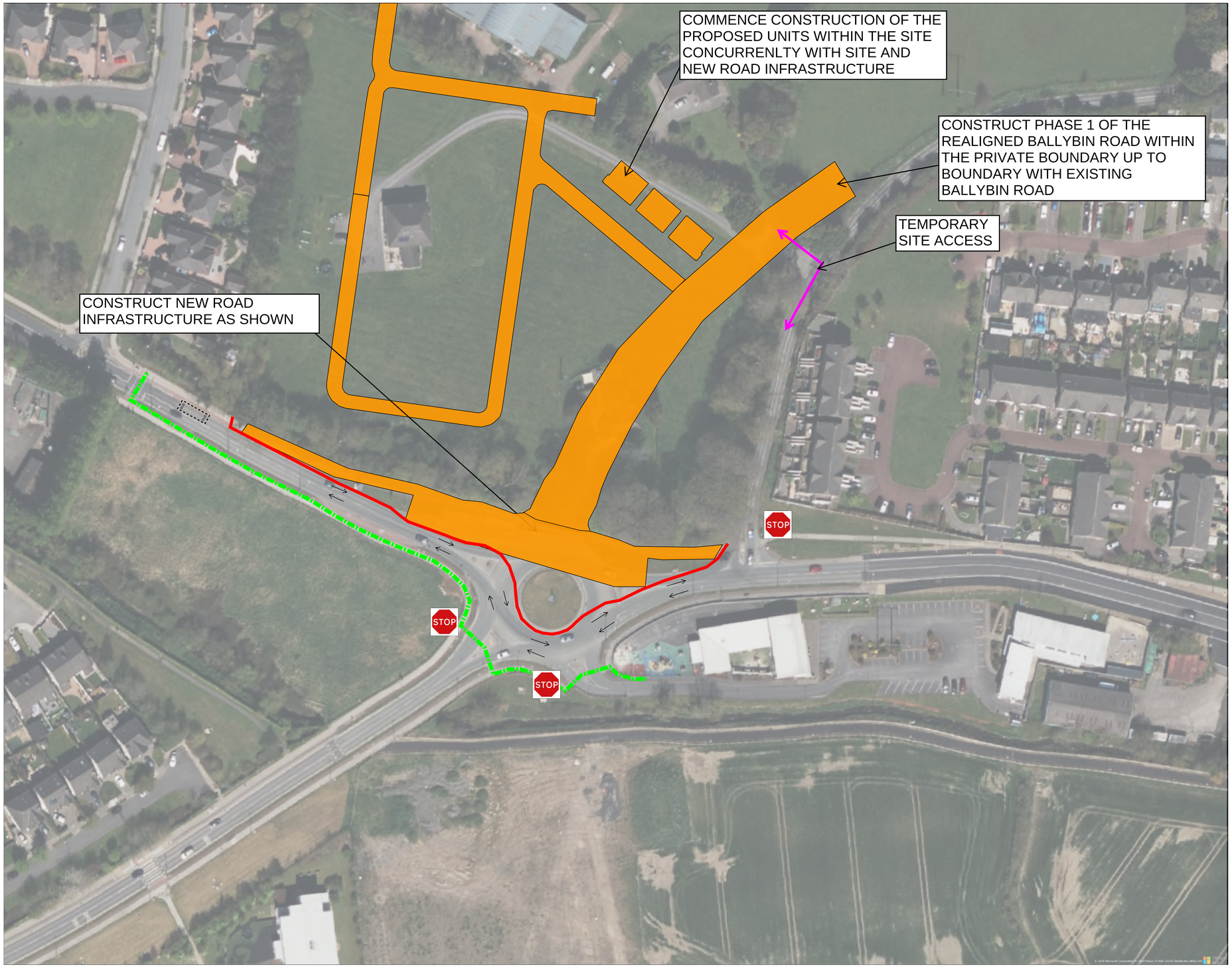
PHASE 2 WORKS



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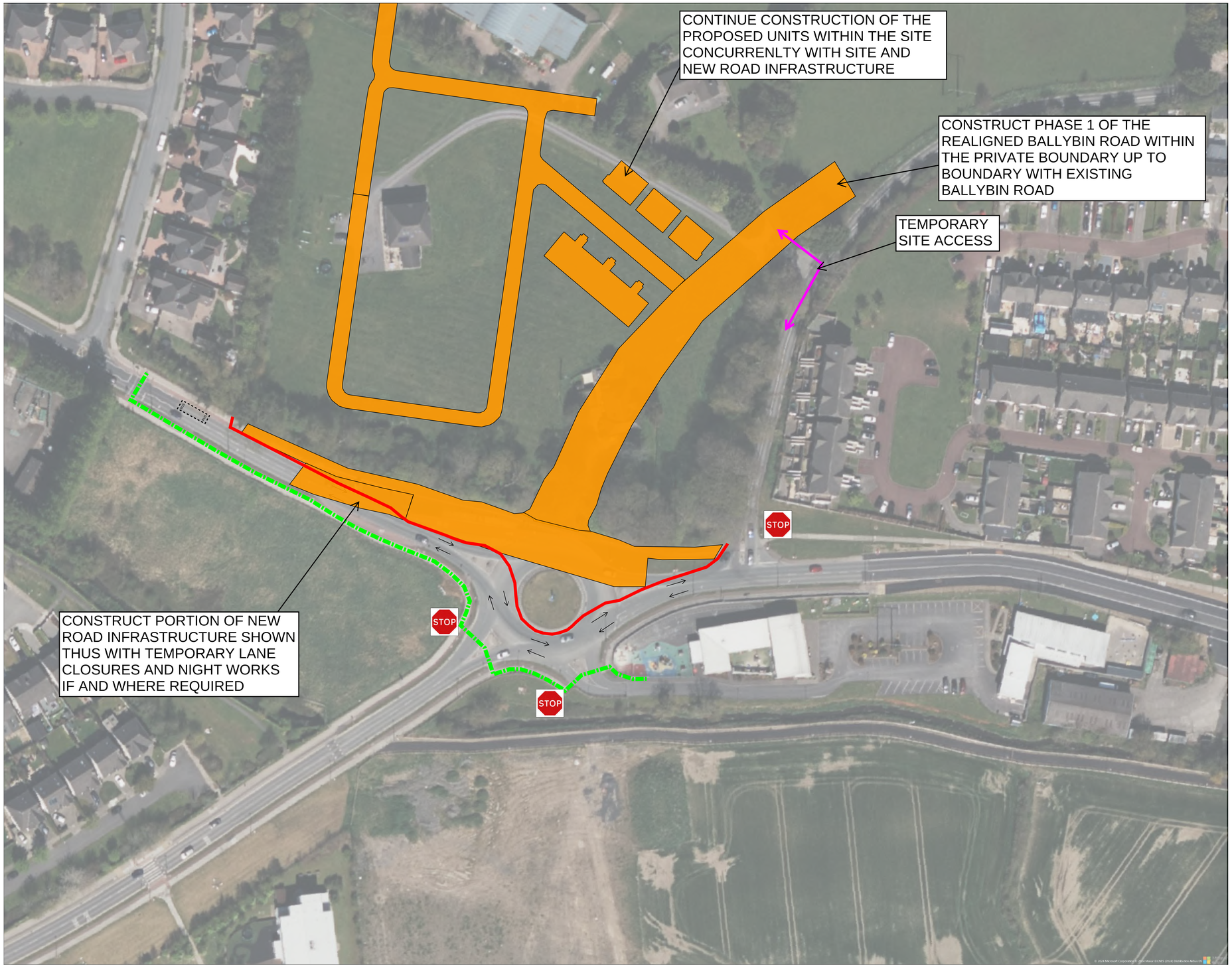
PHASE 3 WORKS



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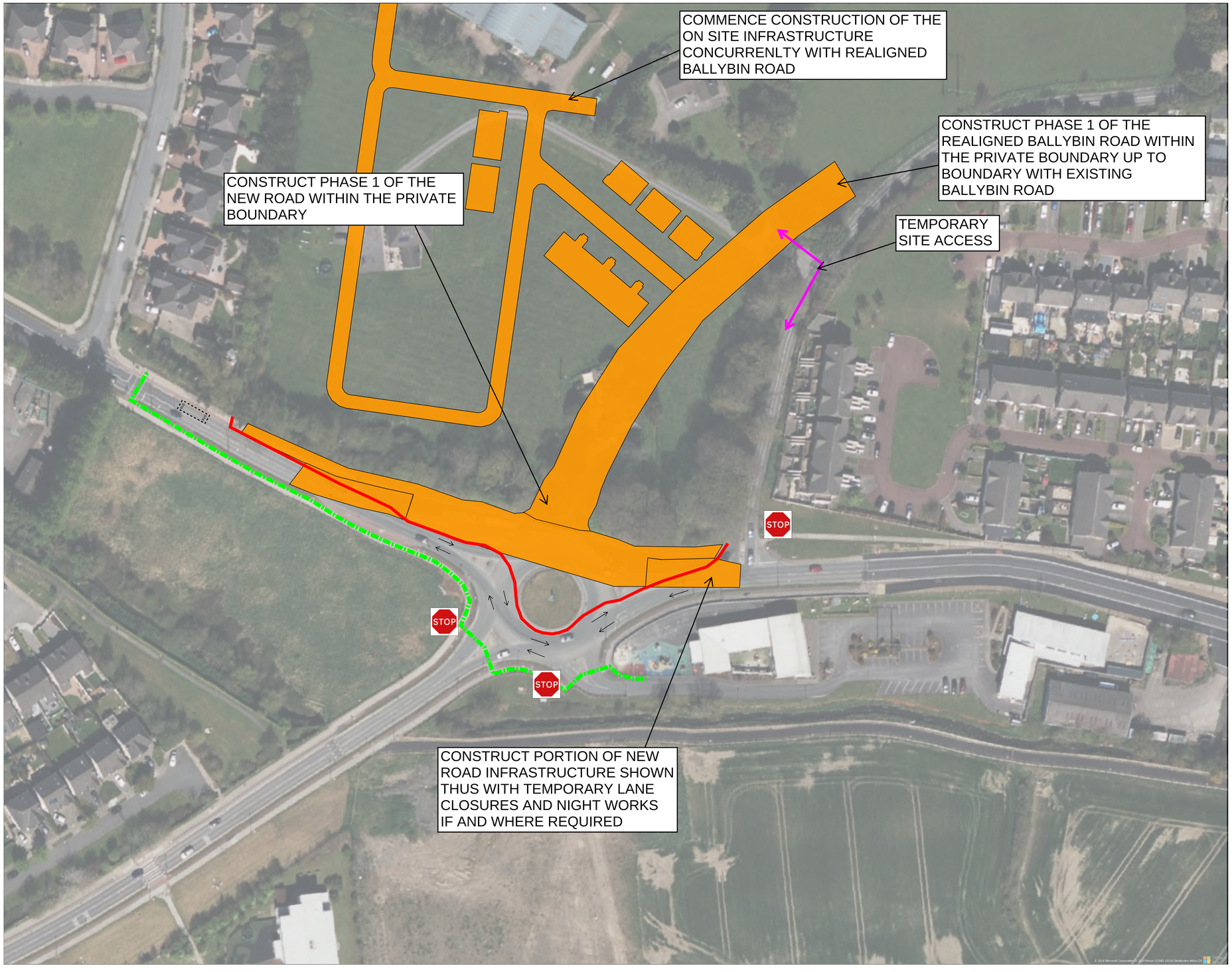
PHASE 4 WORKS



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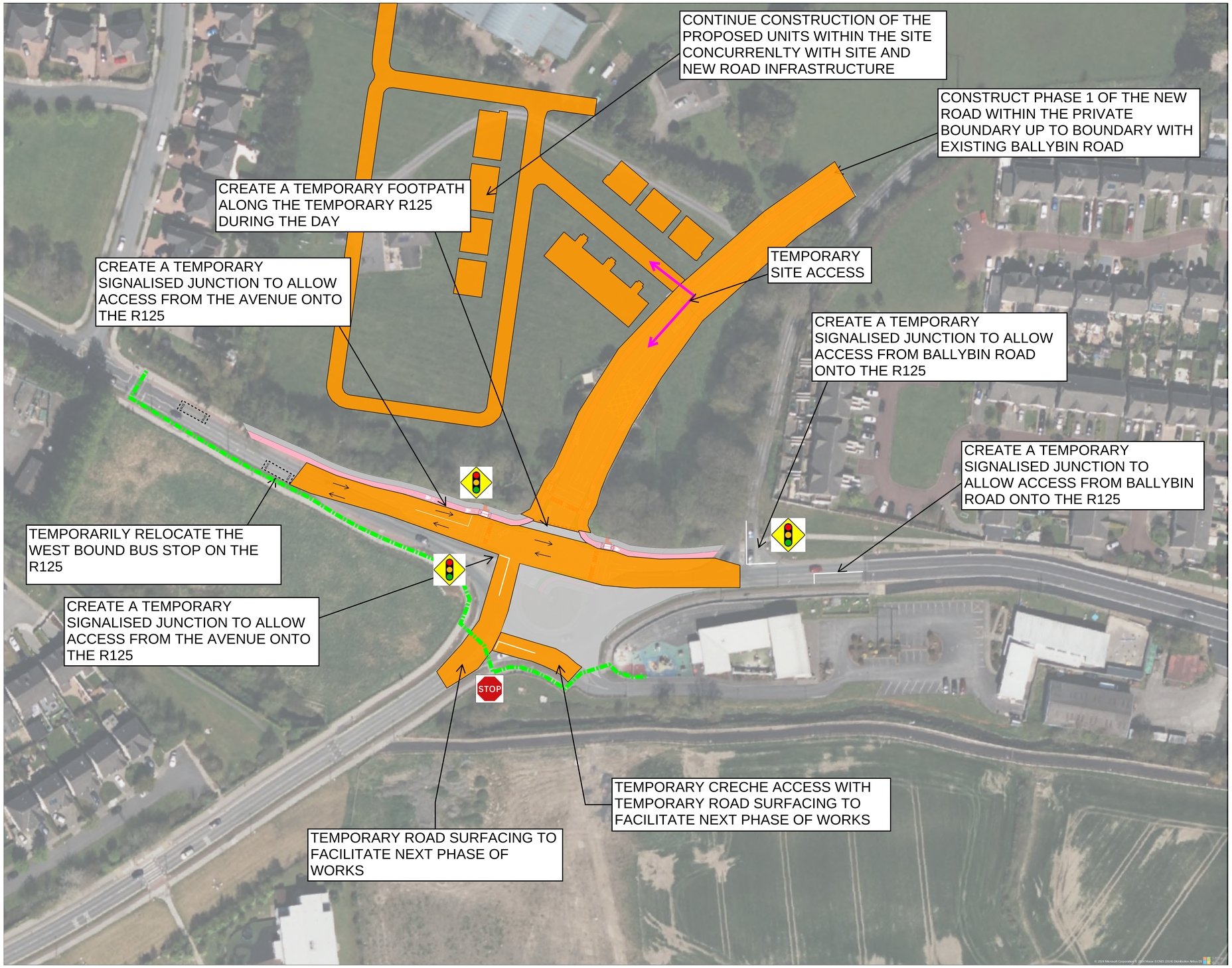
PHASE 5 WORKS



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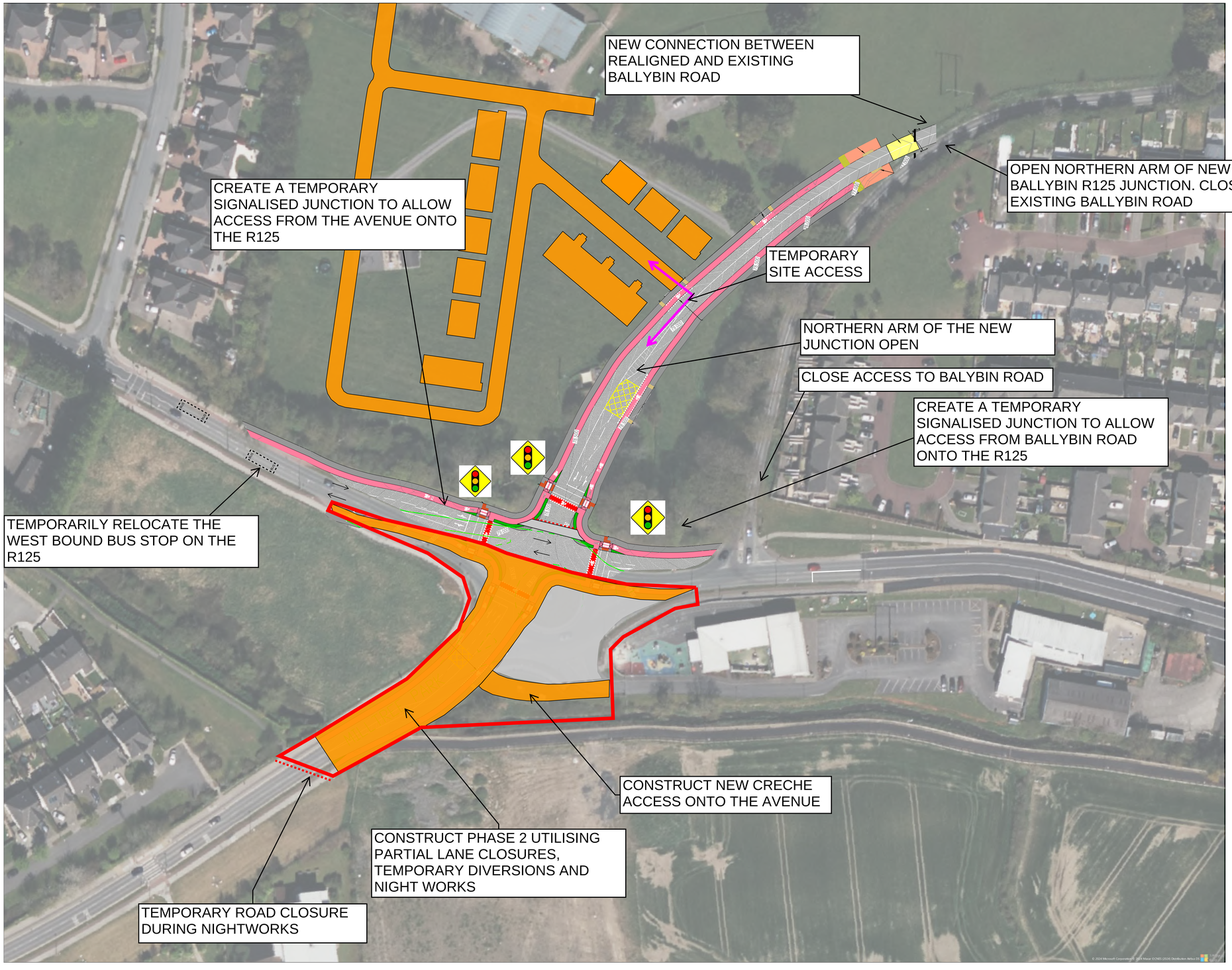
PHASE 6 WORKS



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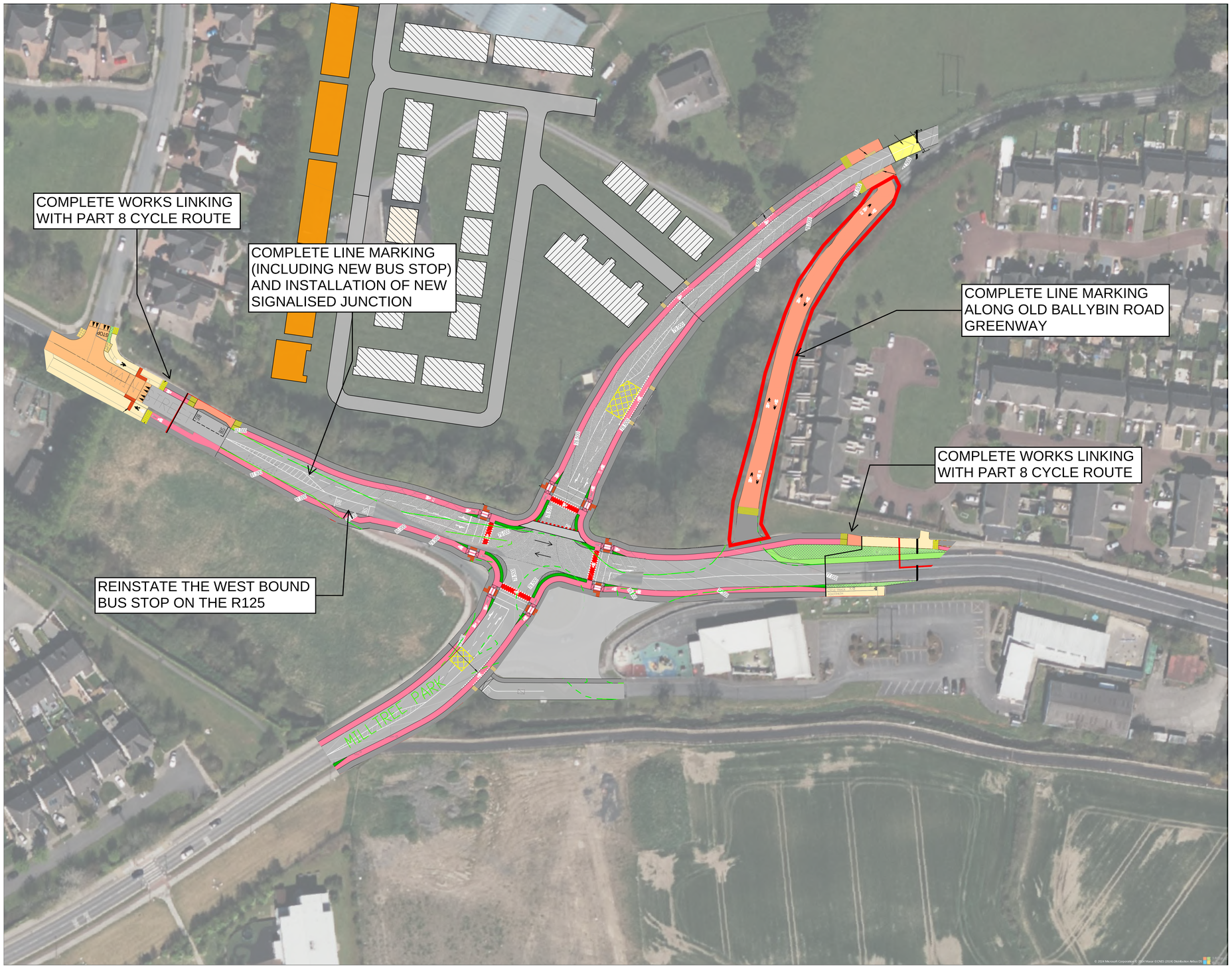
PHASE 7 WORKS



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WORKS COMPLETED

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