

**RATOATH OUTER RELIEF ROAD
CONSTRAINTS STUDY & ROUTE OPTIONS REPORT**

BEO PROPERTIES LIMITED

PROJECT: L308

26th FEBRUARY 2020



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OCSC

O'CONNOR | SUTTON | CRONIN

Multidisciplinary
Consulting Engineers

BEO PROPERTIES LIMITED

Ratoath Outer Relief Road

Constraints Study & Route Options Report



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CONTENTS:

PAGE

APPENDICES:

1. Executive Summary	1
2. Introduction	3
3. Planning Context	4
4. Review of Constraints	9
4.1. Available Mapping & Photography	9
4.2. Extents of Study Area	10
4.3. Windshield Surveys	11
4.4. Land Ownership	11
4.5. Granted & Pending Planning Permissions	12
4.6. Archaeology	13
4.7. Ecology	21
4.8. Topography	24
4.9. Soils & Geology	25
4.10. Site Investigation	26
4.11. Traffic	26
5. Relief Road Design Standards	28
6. Route Options	33
6.1. General	33
6.2. Do Nothing	33
6.3. Do Minimum	34
6.4. Alternative I: Red Northern Alignment	34
6.5. Alternative II: Blue Central Alignment	36
6.6. Alternative III: Green Central Alignment	37
7. Emerging Preferred Route	39
7.1. General	39
7.2. Assessment Criteria	39
7.3. Comparisons Against Assessment Criteria	39
7.4. Discussion	40
8. Summary & Conclusions	42

Appendix A: Site Walkover Photographs

Appendix B: Alignment Options Drawings

- **Drawing L308-OCSC-XX-XX-SK-C-0010 S2 Red Route Horizontal Alignment**
- **Drawing L308-OCSC-XX-XX-SK-C-0011 S2 Red Route Vertical Alignment**
- **Drawing L308-OCSC-XX-XX-SK-C-0012 S2 Blue Route Horizontal Alignment**
- **Drawing L308-OCSC-XX-XX-SK-C-0013 S2 Blue Route Vertical Alignment**
- **Drawing L308-OCSC-XX-XX-SK-C-0014 S2 Green Route Horizontal Alignment**
- **Drawing L308-OCSC-XX-XX-SK-C-0015 S2 Green Route Vertical Alignment**

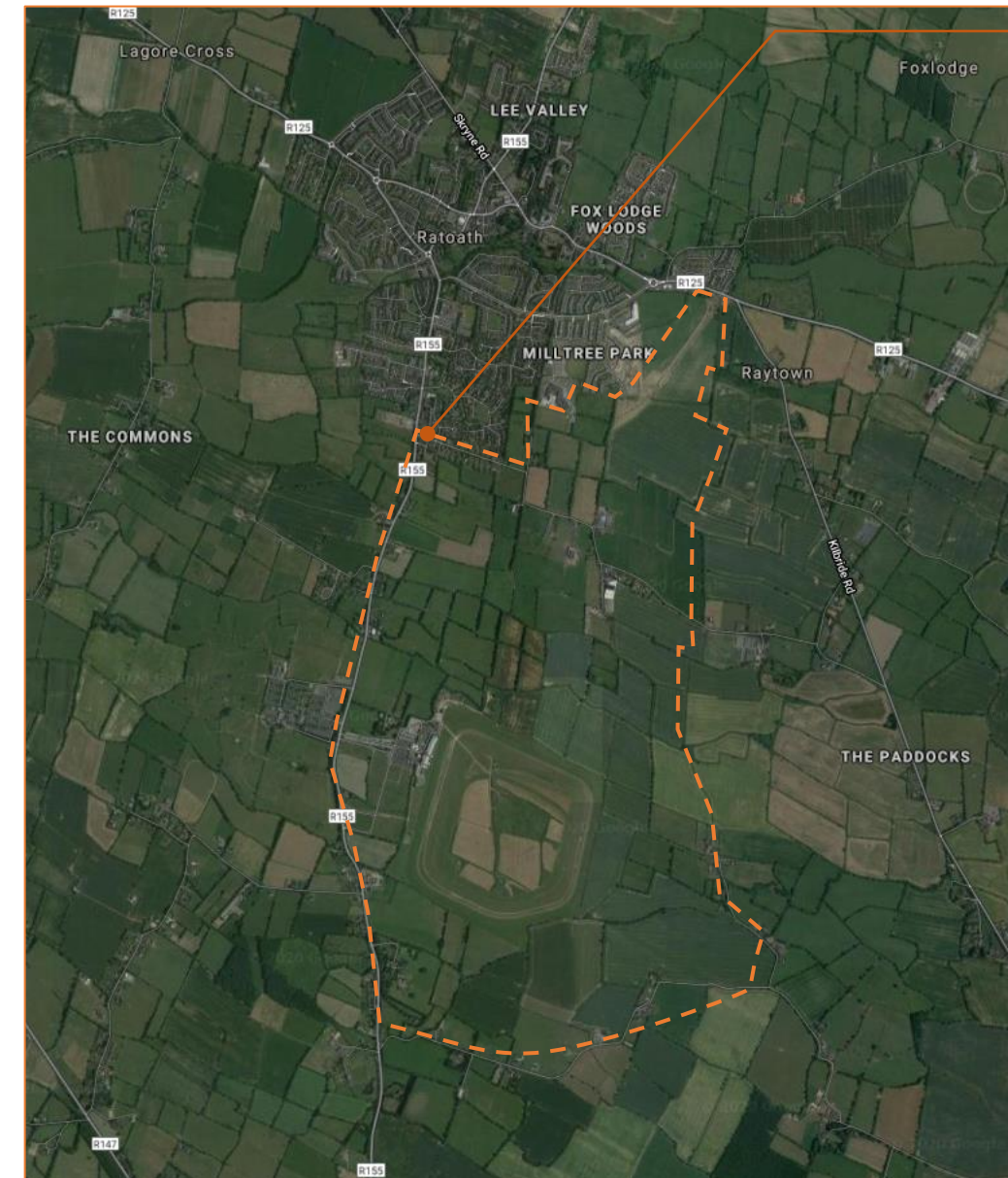
1. EXECUTIVE SUMMARY

The provision of the Ratoath Outer Relief Road (RORR) for Ratoath is an objective of the Ratoath Local Area Plan 2009 – 2015 (LAP). The road is to run on the eastern side of the town and link the R125 Swords-Ratoath-Dunshaughlin Regional Road with the R155 Fairyhouse Regional Road. In that regard the route is a strategic link which will allow for the ongoing development of the town whilst removing unnecessary through traffic from the central areas. An initial northern section of the RORR, which has benefitted from Local Infrastructure Housing Activation Fund (LIHAF) funding, is currently under construction from the R125 southwards.

This *Constraints Study & Route Options Report* considers the current appropriateness of the outstanding southern, section of the RORR, as shown in the 2013 – 2019 CDP in the context of additional zoning being brought forward in the Draft 2020 – 2026 CDP, examines constraints to the development of alternative alignments, brings forward alternative alignment options and, finally, recommends an Emerging Preferred Route for the completion of the RORR. The report notes the changed focus in the Draft Development Plan in relation to the potential of the bloodstock industry to provide an expanded employment base, and the designation of lands between the existing Town and Fairyhouse/Tattersalls. Such a change in focus is considered to demand an alignment review for the Relief Road from that shown in the original LAP.

In order to commence the Constraints and Route Options process it is first necessary to define an appropriate Study Area. There is a balance to be struck in defining any Study Area between the need to assimilate as much information as possible, so as to best select all suitable Route Options, and the need to adopt a considered approach which identifies clear boundaries to what would be a reasonable area. Prior to defining a specific Study Area for this report, it is worth looking at an extended view of Ratoath. As noted above, the lands between the existing built up area of Ratoath and Fairyhouse/Tattersalls Equestrian complex, have been designated as a strategic employment site to facilitate an approach to the marketing of the sites which was adopted with the original five strategic employment sites designated in the *Economic Development Strategy for County*

Meath. It is evident that the alignment selection for the remainder of the RORR must be carried out in the context of this new economic and development reality. It is further evident that the Study Area should not significantly exceed the boundaries of the town or of the equestrian facilities. The identified Study Area is shown in Figure 1.



Study Area

Figure 1 Study Area

Following a consideration of identifiable constraints within the defined (535 hectare) Study Area, the study developed a Do Nothing and Do Minimum option along with 3 no. Do Something options for the Ratoath Outer Relief Road. The constraints considered included archaeology, ecology, topography and ground conditions as well as extant and

pending planning permissions and the existing built environment. Each of the developed alignment options is described in the report and each is assessed against a multi criteria assessment matrix in order to bring forward an Emerging Preferred Route for the RORR. The 8 no. assessment criteria used in the Route Selection process include:

- Directness & Length of Route;
- LAP Compliance of Route;
- Impact of Route on Existing Dwellings;
- Relationship of Route with Fairyhouse Racecourse and Tattersalls Complexes;
- Cost of Construction;
- Buildability;
- Safety;
- Potential of Route to alleviate Town Centre Congestion.

The Emerging Preferred Route is the Blue Central Route as developed and the horizontal and vertical alignment for same are shown in Figure 2 adjacent.

It is intended that the Emerging Preferred Route will now be further developed with a view to obtaining planning permission for the scheme later this year and then commencing construction as soon as possible following the receipt of planning permission.



Figure 2: Emerging Preferred Route

2.1 INTRODUCTION

O'Connor Sutton Cronin & Associates Multidisciplinary Consulting Engineers (OCSC) have been appointed by Beo Properties Limited to prepare a *Constraints Study & Route Options Report* for the completion of the Ratoath Outer Relief Road (RORR). The general alignment of the RORR as indicated in the 2009 – 2015 LAP is shown in Figure 3.

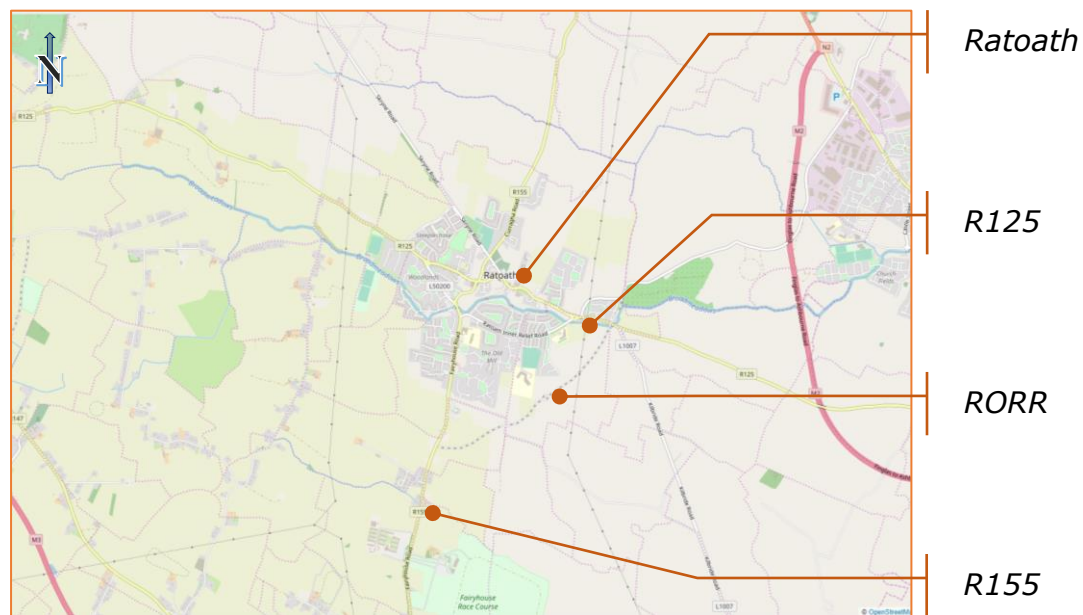


Figure No. 3: Site Location (Source: Open Street Maps)

Ratoath is located approximately 25km from Dublin City Centre and 20km north of Dublin Airport. The town is at the crossing of the strategically important R125 and R155 Regional Roads. Ratoath is a bustling commuter town in the south of Meath located almost midway between the M2 and M3 Motorways. The town has experienced very significant development over recent years and now has a strong local community. The town had a population of 9,533 in the 2016 Census which was an increase of 490 or 5.4% from the 9,043 recorded in the 2011 Census. The Draft CDP 2020 – 2026 states that Ratoath is currently the fourth largest town in County Meath. The key planning challenge for Ratoath is to facilitate a plan led transition from an unsustainable commuter settlement to a sustainable settlement based on the 'live work' community model championed by the *Economic Strategy for County Meath 2014-2022*. Ratoath is defined by a strong

residential and retail/amenity core surrounded by agricultural and recreational land uses and the town is well connected by road – Figure 4. There is little by way of public transport in Ratoath and the town has no direct rail links to Dublin or other major settlements. The Clonsilla – Pace Rail Line terminates at the Pace Park & Ride facility and this is approximately 9 km from Ratoath Town Centre.



Figure No. 4: Ratoath Developed Area Layout

The draft CDP notes that the international equestrian facilities in the town are a key attractor and employment generator and will be targeted as a future key growth sector for Ratoath. The bloodstock industry is one of the prime economic assets in County Meath. The existence of these facilities at a strategic location relative to the Town Centre means that the future development of the town is well placed to benefit from their expansion and diversification including an expanded employment base. The lands between the existing built up area of Ratoath and Fairyhouse/Tattersalls Equestrian complex, identified for the creation of an equestrian based employment hub, have been designated as a strategic employment site to facilitate an approach to the marketing of the sites which was adopted with the original five strategic employment sites designated in the Economic Development Strategy for County Meath.

It is evident then that the alignment selection for the remainder of the RORR must be carried out in the context of this new economic and development reality.

3. PLANNING CONTEXT

The overall planning context for the county is set in the Meath County Development Plan 2013 – 2019 (CDP). A Draft 2020 – 2026 County Development Plan is now on public display and is expected to be adopted later in the year. The local context is set by the Ratoath Local Area Plan 2009 – 2015 (LAP).

Settlement Policy

The overall strategic settlement policy for Ratoath is governed by the approach of the Meath County Development Plan 2013-2019. Ratoath is designated as a Small Town in the settlement hierarchy for the County set out in the Development Plan. The County Development Plan outlines the varying characteristics of the Small Towns in Meath and has identified Ratoath as a dormitory town which facilitates commuters mainly to Dublin. The growth of such Small Towns in the short term should be prioritised to encourage a more balanced town to develop along with the expansion of social infrastructure and promotion of local employment opportunities. It is also important to note that Ratoath has been included in the RPG's as an employment base because of its educated workforce and as such other economic investment opportunities should be considered and supported where sustainable and in keeping with the size and services of the town.

The broad approach of the Development Plan for Small Towns is to manage growth in line with the ability of local services to cater for growth and respond to local demand. Relatively small and locally financed businesses are expected to locate in Small Towns. However, other economic investment opportunities should be considered and supported where sustainable and in keeping with the size and services of the town. Retail is likely to be mainly in the convenience category, with a small supermarket and possible local centres serving only the town and its local catchment area.

In line with the guidance contained in the 'Sustainable Residential Development Guidelines for Planning Authorities' (Department of the Environment, Heritage and Local Government, 2009), within all Small Towns no one proposal for residential development should increase the existing housing stock (including permitted units) generally by more

than 15% within the lifetime of the Development Plan. The Land Use Zoning Map for the Ratoath LAP is shown in Figure 5

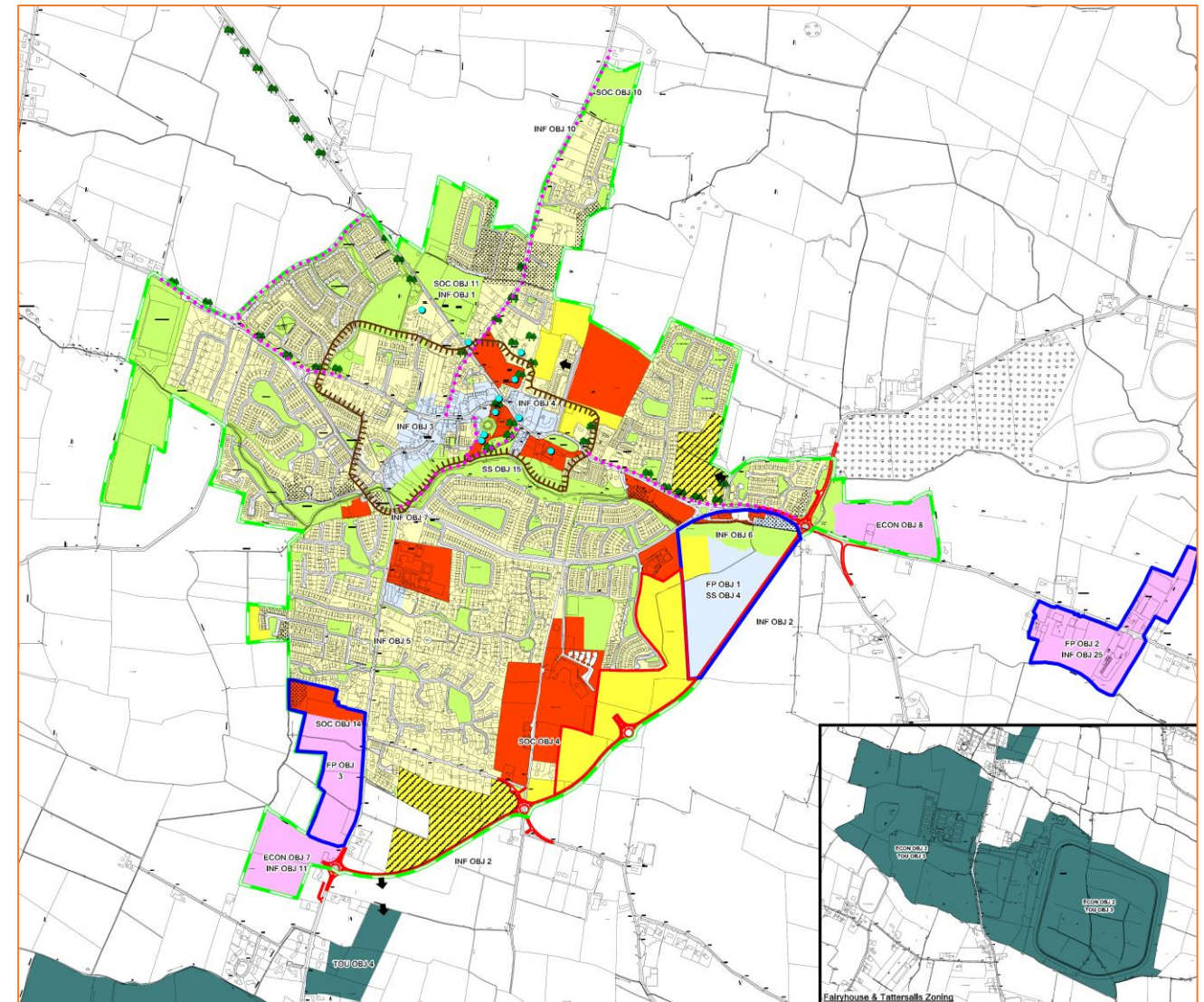


Figure No. 5: Ratoath Land Use Zoning Map (2009 – 2015 LAP)

The Local Area Plan process is specifically identified as a mechanism for delivery of a number of actions, including:

- Zoning of sufficient lands for employment generating activities at suitable locations;
- Support provision of high quality business/office parks;
- Ensure adequate provision of incubator/start-up units;

- Identify and promote specific and unique roles for Ratoath as part of the Secondary Economic Growth Town of Ashbourne / Dunboyne and to assist in marketing, creating critical mass and avoid duplication of necessary infrastructure and services;
- Support and provide for enhancement and diversification of existing equine and related industry in Ratoath;
- Enhance social infrastructure provision e.g. housing, health and schools;
- Improve physical and communication linkages between Ashbourne- Dunboyne and Ratoath.
- Create a self-sufficient critical mass ensuring adequate lands are zoned for a multiplicity of uses and that densities are appropriate to each location.

The Meath County Development Plan acknowledges that the bloodstock industry plays a vital role in the economic and recreational development in the County and in Ratoath in particular. Through the policies of this Local Area Plan, the Planning Authority will continue to support the bloodstock industry, in particular, the facilities at Fairyhouse and Tattersalls. The Development Plan also states that the development of employment generating uses in the urban area of Ratoath is a priority. The LAP identifies three Framework Plan areas which the Planning Authority considers an effective means of guiding new development and providing essential social and physical infrastructure in a phased and sustainable manner. Once such area is located at Fairyhouse Racecourse and is designated as both ECON OBJ2 and TOU OBJ3.

FP OBJ3 Framework Plan 3

To identify lands off the Fairyhouse Road to provide for employment generating uses in accordance with an approved Framework Plan and subject to the provision of necessary physical infrastructure ('General Enterprise & Employment (Category 3)' land use zoning objective applies). The development of these lands shall also provide for reservation of a 4 acre site for the provision of a swimming pool site and include the re-alignment of the Fairyhouse Road and provision of footpaths, cycleway and public lighting along the road frontage of the site. Any planning application made for development on these lands shall be accompanied by a Framework Plan detailing development proposals for the full extent of the lands. This shall include details of the

overall site and building layout for the lands, building height and design principles, landscaping, mix of uses for the site, traffic impact assessment and management proposals and service arrangements. The development of these lands shall be on a phased basis with the reservation of the swimming pool site forming part of the first phase.

The County Development Plan designates Ratoath as a Small Town, which gives it the primary economic aim of facilitating local needs, thus building sustainable communities. Sustainable development requires local job creation which will improve the quality of life of the residential population of Ratoath by reducing the dependence on commuting for employment. Notwithstanding the success of the bloodstock industry, as with other centres in County Meath, employment generating development has not kept pace with the level of residential development in the town. A key issue to be addressed in Ratoath is the creation of a sustainable settlement in accordance with the County Development Plan, i.e. a balance of residential and other uses including employment generating uses.

Notwithstanding the designation of Ratoath as a Small Town, the RPG's have identified Ratoath as having a unique role having regard to its well educated resident workforce. The RPG's has linked the development of Ratoath to the Secondary Economic Growth Town of Ashbourne and Dunboyne and indicates that it should aim to capitalise on the synergy with those settlements. The RPG's particularly outline that "it is important that Ratoath should become more self-sustaining in terms of providing employment opportunities locally. Therefore, sustainable higher end economic investment opportunities consistent with the size of the town should be supported".

The goal of the Economic Strategy of the current County Development Plan seeks "to build on and enhance the competitiveness and attractiveness of County Meath in order to make it one of the country's prime locations for indigenous and foreign economic and employment generating investment".

Economic Development

The LAP states that it will be a primary aim of the Planning Authority to attract sustainable forms of employment to Ratoath to stimulate economic growth locally and to counter

existing unsustainable commuting patterns. The economic development of Ratoath will be promoted in order to create a more sustainable community whereby people can reside close to where they are employed. Sufficient lands will be zoned for employment generating development and the adequacy of employment generating land supply will be closely monitored throughout the Plan period.

The *Economic Development Strategy* of the County Development Plan facilitates a more diversified economic base, a focus on cost competitiveness and productivity and a choice of investment locations. The Strategy advocates the development of a number of key strategic, integrated and specialised employment centres, which provide different types of functions to each other. This Strategy is presented in Table 4.2 of the County Development Plan. Ratoath is identified as a District Employment Centre with the sectors identified to be encouraged in Ratoath being manufacturing, equine industry and possibly office based industry using its highly qualified resident labour force. Objective ED OBJ 1 of the County Development Plan seeks the identification of areas for different types of employment generating uses consistent with Table 4.2 and the application of the land use zoning objectives contained in Section 2.9.4 which are repeated in the Local Area Plan.

Section 4.3 (Employment Sectors) of the County Development Plan recognises the importance of the equine sector to the future development of Ratoath. A local objective supporting the continued development and expansion of equine related activities in Ratoath is included in the County Development Plan as follows:

"To support and provide for enhancement and diversification of existing equine and related industry in Ratoath centred around Fairyhouse Racecourse and Tattersalls".

The purpose of such local zoning objectives within a broad zoning category allows the Council to seek to achieve a special objective specific to an area. Their application is limited to a handful of incidences. Lands for general enterprise and employment use have been identified on the Fairyhouse Road. It is envisaged that a mix of employment uses would be provided on these lands.

Economic Objectives Nos. 2 & 3 stipulate the following:

- **ECON DEV OBJ 2:** To support the Fairyhouse Racecourse complex as a key contributor to the economic sector in Ratoath and to facilitate and support its continued expansion and diversification;
- **ECON DEV OBJ 3:** To support the Tattersall's complex as a key contributor to the economic sector in Ratoath and to facilitate and support its continued expansion and diversification.

Tourism Objectives Nos, 2, 3 & 4 state the following:

- **TOU OBJ 2:** To support the Tattersalls complex as a key contributor to the tourism sector in Ratoath;
- **TOU OBJ 3:** To support the Fairyhouse Racecourse complex as a key contributor to the tourism sector in Ratoath;
- **TOU OBJ 4:** To promote the development of high quality hotel and ancillary facilities, especially those facilities which provide conference and leisure facilities on lands at Newtown to the south of Ratoath.

Transportation

In Chapter 7, *Infrastructure*, the LAP notes the location of Ratoath at the junction of the R155 and R125 regional roads and the increasing use of this road network as an outer orbital route for Dublin City has resulted in significantly increased traffic and particular HGV traffic passing through the centre of the town. In line with trends for increasing car ownership and economic development, it is anticipated that these levels will rise. In addition, increasing traffic levels between the R155 and Ashbourne using the Ballybin Road and connecting Ratoath with Ashbourne has recently created a new traffic "desire line". The growth in population, and especially the increase in the number of vehicles on the roads, are resulting in pressure on road infrastructure. The pivotal location of Ratoath within the County and its proximity to Dublin means that improvements to the existing road network are of critical importance to the economic development of Ratoath and the quality of life for its inhabitants.

The traffic patterns outlined in the LAP have resulted in significant volumes of vehicles passing unnecessarily through the town. This has a negative impact on the attractiveness of the town centre and the degree to which it is pedestrian and cycle friendly. It is an objective of the Planning Authority to put in place mechanisms which will relieve the historic central area of Ratoath from these pressures.

There are a number of objectives in the LAP to improve the local road network in Ratoath. These include to reserve and protect from development the bypass corridor from the R155 Fairyhouse Road to the R125 Ashbourne Road, with the aim of securing a southern by-pass of the town between these roads. It is intended that this road will be developer driven, constructed in tandem with development occurring in the vicinity.

Infrastructure Objective 2 states as follows:

- **INF OBJ 2:** To reserve and protect from development the bypass corridor from the R155 Fairyhouse Road to the R125 Ashbourne Road.

It is evident then, from all of the foregoing, that the development of a Ratoath Outer Relief Road, between the R125 Ratoath – Ashbourne Road and the R155 Fairyhouse Road, is a strategic objective of the Ratoath LAP. Indeed, the Council sourced LIHAF funding to support the construction of the northern section of the route. The 2009 – 2015 LAP shows an indicative alignment for the route of the Outer Relief Road and this alignment forms the eastern boundary of the development boundary for the northern section of the town of Ratoath. Crucially however, this alignment leaves the Economic and Tourism objective lands at Fairyhouse and Tattersalls isolated and separated from the town proper.

Meath County Council Draft Development Plan 2020 – 2026

It is interesting to compare current thinking in respect to Ratoath's development with that of the 2009 – 2015 LAP. The written statement for Ratoath from the draft CDP website contains the following:

- *Ratoath is currently the fourth largest town in County Meath. The key planning challenge for Ratoath is to facilitate a plan led transition from an unsustainable*

commuter settlement to a sustainable settlement based on the 'live work' community model championed by the Economic Strategy for County Meath 2014-2022;

- *The town has experienced substantial growth in recent years with little corresponding growth in employment generating uses other than small scale retail provision. The Regional Economic and Spatial Strategy identifies Ratoath as a town where over half of all trips to work or education are to Dublin's urban core. Thus, the priority of this plan is to encourage and support a more balanced approach to development of the town with the promotion of significant expansion of the existing limited employment base;*
- *The International equestrian facilities in the town are a key attracter and employment generator and will be targeted as a future key growth sector for Ratoath. The bloodstock industry is one of the prime economic assets in County Meath. The existence of these facilities at a strategic location relative to the town centre means that the future development of the town is well placed to benefit from their expansion and diversification including an expanded employment base;*
- *The lands between the existing build up area of Ratoath and Fairyhouse/Tattersalls Equestrian complex, identified for the creation of an equestrian based employment hub, have been designated as strategic employment site to facilitate an approach to the marketing of the sites which was adopted with the original five strategic employment sites designated in the Economic Development Strategy for County Meath. This focus is required to stimulate development on these lands.*

The addition of the final two statements above, in respect of the potential of the bloodstock industry to provide for an expanded employment base in Ratoath, and the designation of lands between the existing build up area of Ratoath and Fairyhouse/Tattersalls demonstrates the strategic importance of the Ratoath Outer Relief Road in not only providing an alternative route for undesirable traffic using the town centre, but also and rather acting as a transport thread to link the current town of Ratoath with the economic and tourism engine that is Fairyhouse and Tattersalls.

Opportunities

The draft CDP offers the following specific opportunities for Ratoath:

- The availability of a highly skilled and educated work force currently resident within the town.
- *Proximity of Fairyhouse and Tattersalls, which can develop an internationally significant Equine Hub.*
- *Implementation of the Ratoath Pedestrian and Cycle Scheme will improve permeability throughout the town.*
- *Completion of the Outer Relief Road will reduce congestion.*
- High quality town centre development/redevelopment that will contribute towards the enhanced provision of local services, an improved town centre environment, and the creation of improved amenities.

It is contended that an appropriate alignment design of a revised Ratoath Outer Relief Road and the provision of a dedicated greenway pedestrian and cycle route, to link the current build up area of Ratoath with the lands at Fairyhouse and Tattersalls will deliver on each of the opportunities set out in italics above.

Draft Meath CDP 2020 – 2026 Land Use Zoning in Ratoath

The proposed Land Use Zoning for the draft CDP 2020 – 2026 is shown in Figure 6. What is striking between this map and the equivalent 2009 – 2015 LAP (Figure 5 earlier) is the demonstrable connectivity in the current map between the Fairyhouse/Tattersalls lands and the town of Ratoath compared to the demonstrable isolation in the previous version.

It is evident that the current Draft CDP does not identify a specific alignment for the remaining section of the Ratoath Outer Relief Road. This may be a tacit admission that the line shown in the 2009 – 2015 LAP is no longer fit for purpose or it may just be a realisation that, the southwards shift in focus, and in centre of gravity of Ratoath, brings with it is a concomitant requirement for a southwards shift in the RORR alignment to accommodate the new development realities.

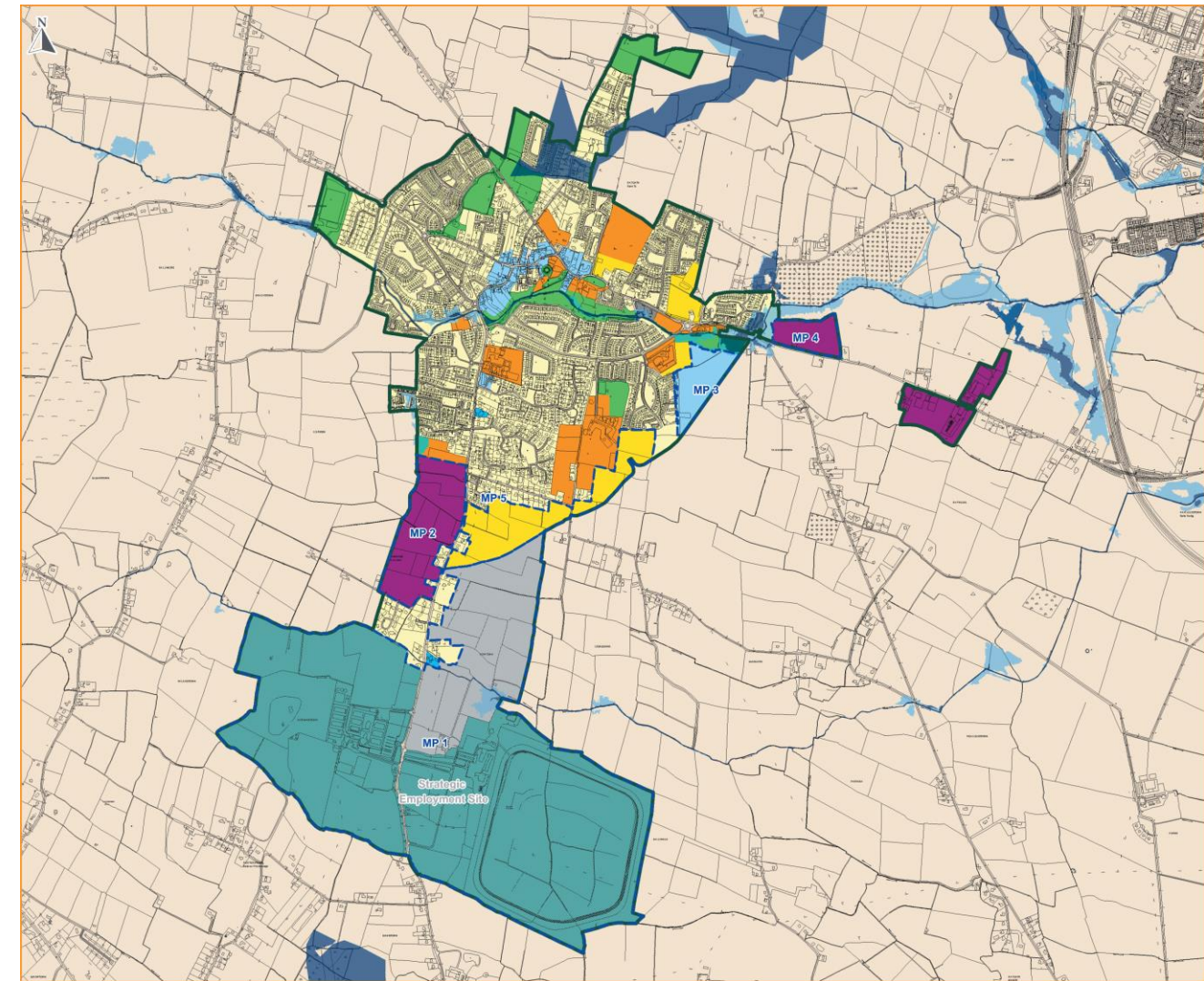


Figure No. 6: Ratoath Land Use Zoning Map

4. REVIEW OF CONSTRAINTS

4.1. Available Mapping & Photography

The Review of Constraints has been prepared using a mixture of Ordnance Survey (O. S.) digital vector and raster mapping along with available aerial imagery and up to date digital topographical data. The O. S. mapping used is as follows:

- 1: 50,000 Scale O. S. Discovery Series raster mapping;
- 1:1,000 and 2,500 Scale O. S. vector mapping;
- Digital orthophotography.

The 1:50,000 Discovery Series raster imagery for the Study Area is shown in Figure 7 below with the 1:1,000 & 1:2,500 vector mapping shown in Figure 8 opposite.



Figure 7: O. S. Discovery Series Mapping

In addition to the background O. S. mapping OCSC availed of aerial photography, drone footage and detailed local topographical survey information.

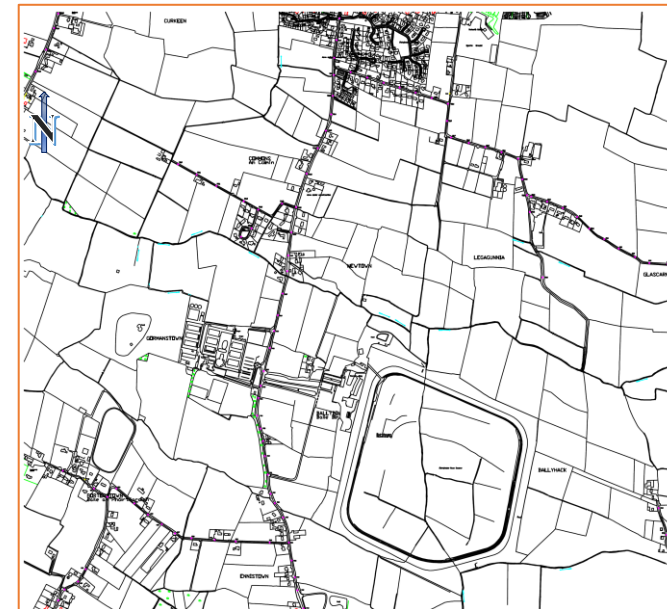


Figure 8: Background O. S. Mapping of Study Area

A copy of the aerial photography and the drone survey data used in the Constraints Study are shown in Figure 9.



Figure 9: Aerial Photography of Ratoath

4.2. Extents of Study Area

There is a balance to be struck in defining any Study Area between the need to gather as much information as possible, so as to best select all suitable Route Options, and the need to adopt a considered approach which identifies clear boundaries to what would be a reasonable area. Prior to defining a specific Study Area for this report, it is worth looking at an extended view of Ratoath. As was noted in Section 2, *Introduction* to this report, the lands between the existing built up area of Ratoath and Fairyhouse/Tattersalls Equestrian complex, have been designated as strategic employment site to facilitate an approach to the marketing of the sites which was adopted with the original five strategic employment sites designated in the *Economic Development Strategy for County Meath*. It is evident then that the alignment selection for the remainder of the RORR must be carried out in the context of this new economic and development reality. It is further evident that the Study Area should not significantly exceed the boundaries of the town or of the equestrian facilities – Figure 10.

In the above context, the Study Area shown below has been defined – Figure 11.

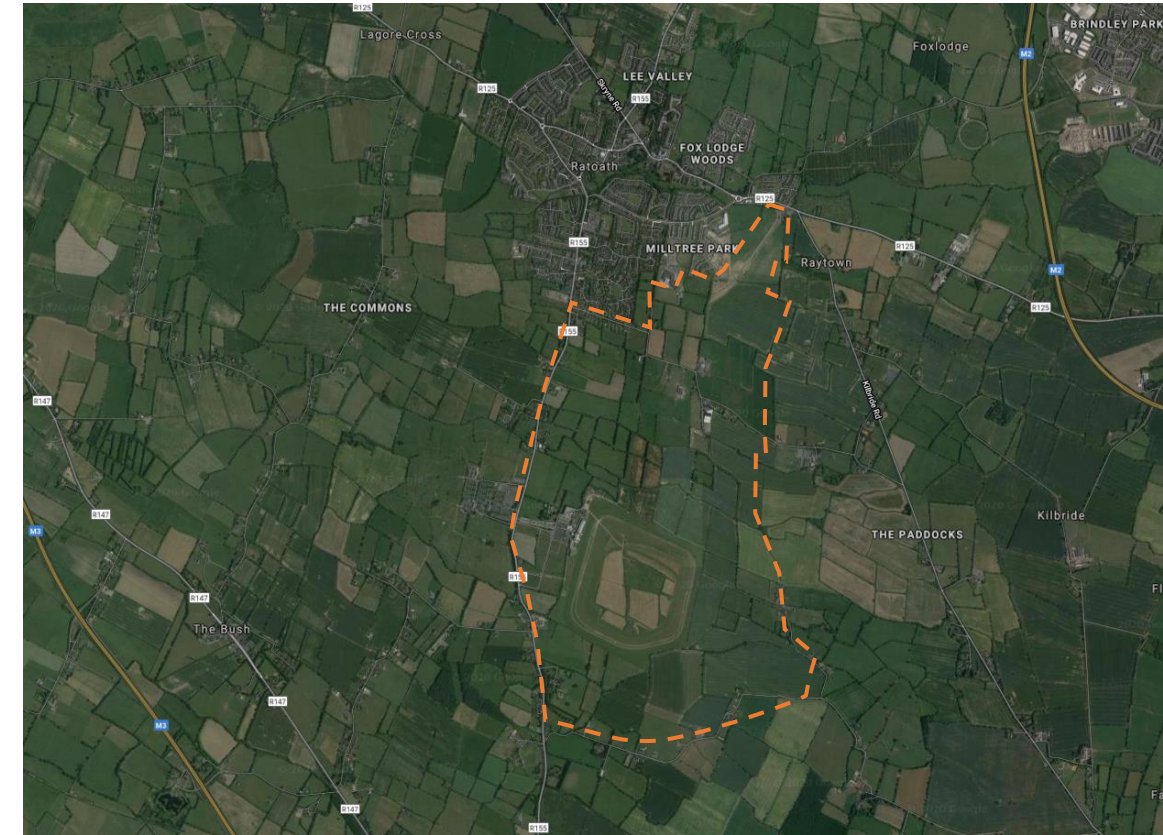


Figure 11: Outline of Study Area

The Study Area is bound to the north by the R125 and incorporates the northern section of the RORR which is currently under construction. The northwestern boundary of the Study Area skirts the perimeter of the existing built up area of the town before turning westward towards the R155 Regional Route. Thereafter it turns southwards, with the western boundary of the Study Area defined by the R155 Regional Route and runs south along the road to a point south of Fairyhouse Racecourse and Tattersalls. The Study Area then turns eastwards across open fields before turning north to the east of Fairyhouse Racecourse, and continuing northwards to the west of the Kilbride Road back to the R125.

The fields within the Study Area are bounded with mature hedgerows, streams and some wet ditches. The wet ditches extend along and across the site and feed into two streams. The stream to the north of the racecourse (the Fairyhouse Stream) runs from west to east and further east it feeds into Broad Meadow River, while the stream to the south of



Figure 10: Ratoath & Wider Equestrian Facilities Context

the racecourse runs roughly south and feeds into Ward River. The topography of the site varies, with a largely flat area in the centre and north-east, surrounded by undulating lands and rolling hills. The land elevation ranges from 74–94m AOD (see Section 4.8).

4.3. Windshield Surveys

The information garnered from the above digital data sources was augmented and verified on the ground by local knowledge and through further information collected during a number of windshield surveys and site walkovers and drive overs. These surveys and walkovers were carried out over an extended period between December 2019 and February 2020. The visits and walkovers were by OCSC personnel. Appendix A contains a number of photographs of the Study Area.

4.4. Land Ownership

OCSC interrogated online Land Registry files and obtained local knowledge with regard to land ownership within the Study Area. Figure 12 shows the Beo Properties Limited land ownership while Figure 13 is an extract from www.Landdirect.ie.

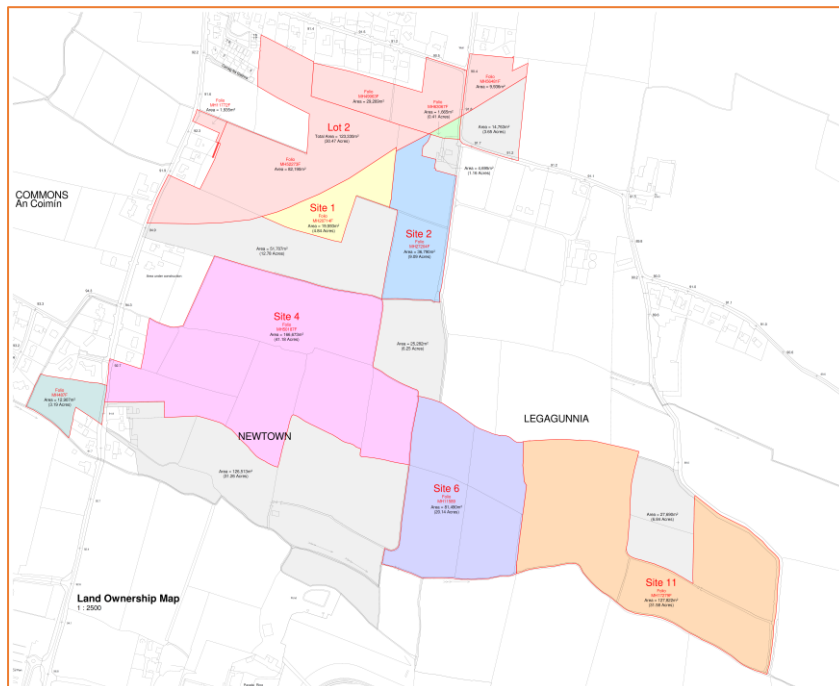


Figure 12: Beo Properties Limited's Land Ownership

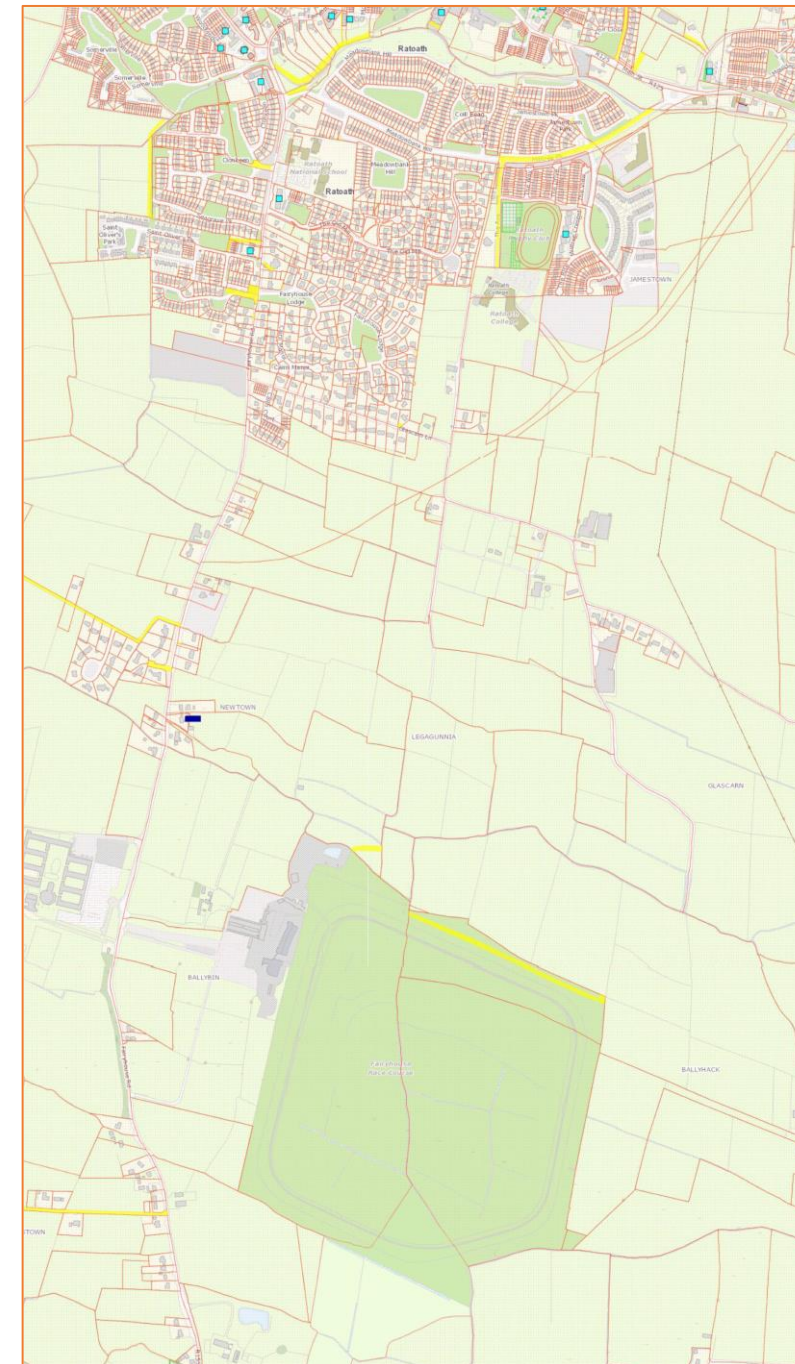


Figure 13: Land Direct Website Ownership Mapping

Fairyhouse Racecourse is a large ownership locally as is Tattersalls. The main landowner in the northern part of the Study Area is Beo Properties Limited which has acquired significant holdings locally as shown in Figure 12.

4.5. Granted & Pending Planning Permissions

As part of the constraints assessment of the Study Area, Future Analytic Consultants (FAC) undertook a review of granted and pending planning applications. This work was carried out by interrogating the National Planning Applications Database (NPAD). The database shows current and historic planning applications thematically according to decision type i.e.

- Granted;
- Refused;
- Invalid;
- Withdrawn.

The search shows that there are no applications granted or pending on the Study Area lands. There are some applications close to the northern boundary of the Study Area (including the recent Jamestown SHD). For a wider context, Dunshaughlin and Ashbourne are showed in Figure 14 below. A closer view of the Study Area including planning history is shown in Figure 15 adjacent.

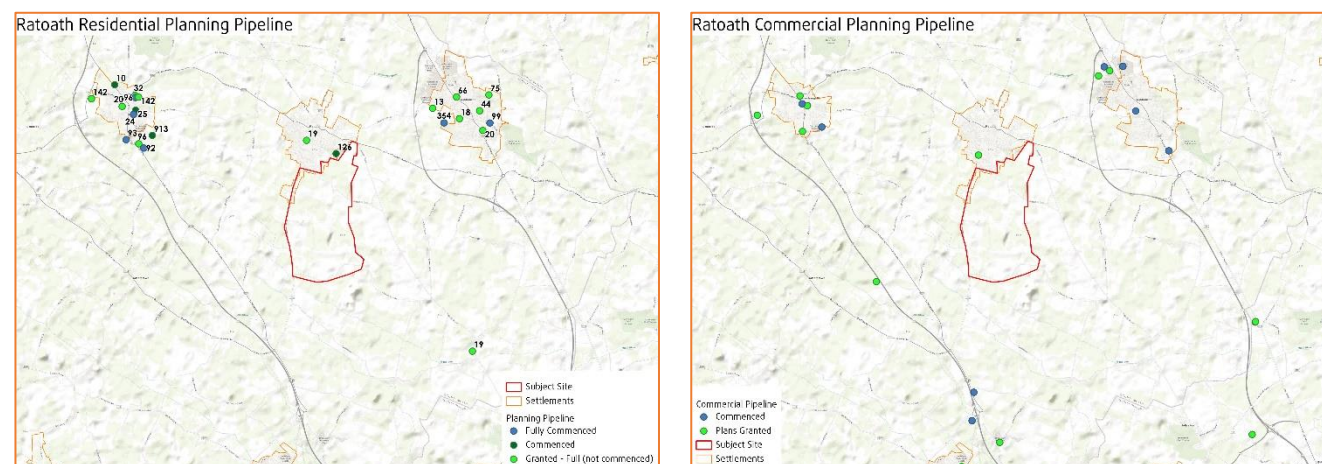


Figure 14: Pending Residential & Commercial Planning Applications

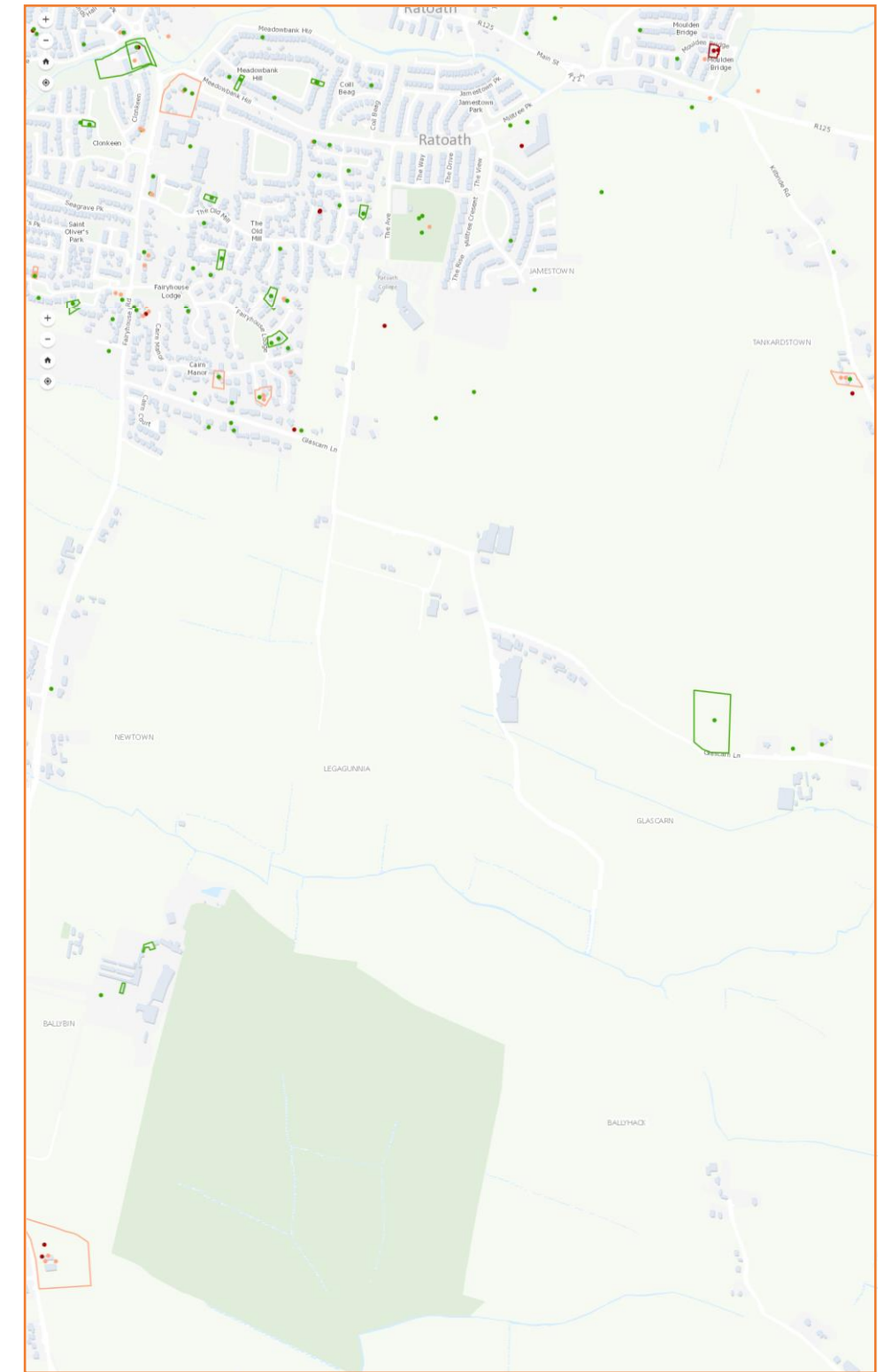


Figure 15: Granted & Pending Planning Permissions

4.6. Archaeology

An Archaeological Assessment of the Study Area has been carried out by the Archaeological Consultancy Services Unit (ACS). This assessment is available under separate with the main findings of same set out hereunder.

Study Area

The Study Area extends across c. 535 hectares within the townlands of Jamestown, Commons, Newtown, Legagunna, Glascarn, Ballybin, Ballyhack, Mullina, Ennistown and Killester, all within the Barony of Ratoath, and the Civil Parish of Ratoath with the exception of Ennistown and Killester, which are located in the Civil Parish of Rathbeggan. The area comprises agricultural and pastureland extending southwards from the southern edge of Ratoath town. The western boundary is mainly defined by the Fairyhouse Road (R155), extending southwards as far as local road L50211 (Killester Road). The southern boundary extends roughly along Killester Road, albeit slightly to the south of it in places. The eastern boundary is defined by a cul de sac lane extending northwards from Killester Road into the townland of Ballyhack and then further northwards along various field boundaries; firstly, dividing Glascarn townland in half, and then extending roughly along the townland boundary between Jamestown and Tankardstown, as far as Main Street (R125). Fairyhouse Racecourse is located within the southern half of the Study Area and there are also a number of residential houses and agricultural buildings.

Non-Technical Summary of Findings

The area contains three recorded monuments listed within the Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR). These comprise an enclosure (ME045-064; AHC 4), a ring-ditch (ME044-043; AHC 9) and a second enclosure (ME044-025; AHC 10) with previously identified human remains associated with it. These monuments suggest evidence of a prehistoric presence within the Study Area and the wider landscape. The enclosure (ME045-064) and ring-ditch (ME044-043) have no above ground presence recorded but are clearly visible on aerial photographs as cropmarks. The site contains no protected structures, as listed in the Meath County Development

Plan 2013–2019, nor does it contain any sites listed in the National Inventory of Architectural Heritage (NIAH). The nearest such structure is The Manor House (RPS MH044310, NIAH Reg. No. 14336002), located c.0.75 km to north-west, while Fox Lodge (NIAH Reg. No. 14336001) is located 0.55 km to the west-north-west of the Study Area and is included in the NIAH. Neither will be directly impacted by the proposed development.

Only one previous archaeological investigation took place within the Study Area. In 2008, archaeological monitoring, under licence 18E0136, was undertaken in relation to the construction of Ratoath Outer Relief Road. Nothing of archaeological significance was noted. A geophysical survey is currently ongoing in the north-western part of the Study Area, under licence 20R0026 by Ian Russell of Archaeological Consultancy Services Unit Ltd (ACSU). This impact assessment has identified six potential cropmarks on aerial photography within and directly adjacent the Study Area. These may indicate the presence of archaeological sites where the above ground remains may be largely or completely destroyed, and those identified comprise a number of cropmark anomalies within one of the fields (AHC 2), four possible enclosures (AHC 1, 3, 5 and 6) and two possible ring-ditches (AHC 3 and 8).

Overall, an examination of the recorded monuments located within the Study Area and the surrounding townlands, as well as a review of previous archaeological assessments and excavations undertaken in the environs, and available cartographic and aerial photographic records showing possible monuments in the form of cropmarks, suggests that the overall landscape of the Study Area has high archaeological potential. It is therefore recommended that any proposed groundworks are archaeologically assessed in advance of any future development. This includes undertaking geophysical survey in the areas to be impacted, followed by target archaeological test trenching of any identified anomalies. The site contains no protected structures, as listed in the Meath County Development Plan 2013–2019, nor does it contain any sites listed in the National Inventory of Architectural Heritage (NIAH).

Archaeological Assessment

An examination of the Placenames Database of Ireland (www.logainm.ie) can reveal important information about the natural and cultural heritage of an area. For example, Commons townland (An Coimín) was first mentioned in 1654 as the 'Comons of Ratooth', and can be translated as commonage, common land; little hollow, glen. Glascarn (Glascharn) was first mentioned as Glaskarne in 1400. Ballyhack (Baile Hac) can be translated as the Townland of Hack (Hack being a surname, f.ex. Hake, Hackett) and was first noted in 1540 as Lands in Hakketiston al. Ballyhack. Ballybin (Baile Bin) and Mullina (Mul Laighnen) were noted by John O'Donovan in 1836 (Ordnance Survey Parish Namebooks). The former translates to 'town of the stock of cattle' and the latter as 'Lynam's hill or summit'. Similarly, he recorded Legagunnia as Lag a' ghainimh, meaning 'hollow of the sand' and Killester as 'Ester's back (of a hill)'.

O'Donovan referred to Ennistown as Magennis's Town, with this family (Mac Aonghusa) allied to the Earldom of Ulster, which was an Anglo-Norman lordship created after the Norman invasion of Ulster.

Ratoath gives its name to a town, a townland, a parish and to a barony. The derivation or meaning of the word is, however, uncertain. Gaelicised forms of the name are Rat-tógh and Rath-tachatacta. These placenames occur in Irish manuscripts and scholars say that the writers were referring to Ratoath. Evidently, they were trying to give a phonetic rendering of a name that was unfamiliar to them. Mruigtuaith occurs in the Book of Armagh as the name of one of these places in Meath where St Patrick founded a church and Eoin MacNeill identifies it as Ratoath. If this correct it would seem that the second portion of the word comes from the Gaelic word 'tuath', which means a territory belonging to a family or sept. 'Mruig' means a grazing plain. The first part of the word 'Ratoath' may be derived from the Gaelic word 'Rath', which means a fort or fortification, but this is unlikely, as the place name probably existed before the Normans erected the 'moat', unless they built it on top of a rath already in existence (Orpen 1921).



Figure 16: Aerial View showing Known & Identified Constraints

Prehistoric Period

The Study Area and wider environs is well represented in the archaeological record, containing evidence for some prehistoric, early medieval and medieval remains. For example, a ring-ditch (SMR No. ME044-043) identified as a cropmark on a 2018 aerial image lies within the south-eastern part of the Study Area, with further examples just outside the Study Area to the east (ME045-013), south-west (ME044-041) and north (Licence no. 03E1781). In 2002, in advance of the gas pipeline works from North Dublin to Limerick, ring-ditches/barrows were excavated at Flemingtown, Co. Meath, Dalystown 1, Co. Westmeath, Knockuregare, Co. Limerick and Rath, Co. Dublin (Grogan et al. 2007). All of these sites had substantial ditches, the largest having an external diameter of 38.75m. The excavations provide evidence for this type of funerary site occurring throughout the Bronze Age (2450–800 BC) and highlighted the significance of liminal space for death and burial in the form of ceremonial enclosures. McGarry (2009) states that of all the barrows excavated in Ireland, about half of them have produced the remains of a single person, most commonly found under the mound and central to the barrow. Almost all sites, however, produce cremated human remains spread throughout the fill of the barrow ditches; as can be seen at sites such as Ballybeen, Co. Antrim (Mallory 1984) and Ballydribbeen, Co. Kerry (Dunne 2003). Another interesting feature of barrows is the presence or absence of an 'entrance' or break in the ditch, which provides a causeway into the monument. Entrances are present in a number of ring-ditches and ring-barrows and although the entrance may be orientated in any direction there is a clear preference for them facing either east or south-east. It must be noted, however, that there are also many instances where entrances are not present, such as Donacarney, Co. Meath (Stirland 2017). In 2003, two ring-ditches excavated to the north of the Study Area in advance of a large-scale residential development were set c. 5.5m apart, with one measuring 15m in internal diameter and the other 6m (Licence no. 03E1781; Wallace 2003a). The fragmentary remains of one cremation burial was identified in the fill of one ditch, but the other did not contain any burial evidence.

Some burnt pits and spreads/fulachtaí fia located to the west and north-west of the Study Area were also discovered as a result of archaeological assessments (Licence nos 03E1300, 03E1632, 03E1781). Fulachtaí fia comprise the most commonly discovered evidence for prehistoric settlement across Ireland and represent the use of pyrolithic

technology to boil water, with those noted in close proximity to a trough generally interpreted as cooking/industrial sites (Hawkes 2018). These sites generally consist of a low mound of charcoal-enriched soil mixed with an abundance of heat-shattered stones, commonly forming a horseshoe shape in proximity to a trough and are found in low-lying marshy areas or close to streams. Often these sites have been ploughed out and survive as a spread of heat-shattered stones in charcoal-rich soil with no surface expression. Field systems are also recorded in the environs of the Study Area, such as that in Warrenstown to the south-west (ME044-024) and these features can also date from Neolithic times onwards, although they are more likely to be early medieval or medieval in date. Artefacts recorded by the National Museum of Ireland also demonstrate prehistoric occupation of the area, such as a fragment of a stone axehead (E551:1294) found in Grange townland, which probably represents Neolithic activity, and an unusual funerary vessel (NMI X192), described as a double 'sepulchral vessel', found in 1864 in a cist during the excavation of a ditch in Ratoath and most likely dating to the Bronze Age (Waddell 1974; 1990, 129).

Early Medieval Period

The landscape of the area under study also contains a high distribution of early medieval settlement (c. AD 400–1100), as indicated by the presence of enclosures, ringforts and agricultural features including field systems and cultivation ridges. This was a time when settlement occurred as dispersed defended homesteads on lakes and across the wider landscape (O'Sullivan et al. 2013). Souterrains dating from the same period are often found in association with settlements such as ringforts. The term 'souterrain' derives from the French *sous terrain*, meaning 'underground'. In archaeological terms, souterrains are artificial underground structures cut into bedrock or, more commonly, built into dug-out trenches with drystone walling and large stone lintels. The primary function of souterrains seems to have been food storage as they maintain constant temperatures (c.10°C). The less well defined 'enclosures' are also generally accepted as being from the same period and may be the remnants of destroyed ringforts or similar associated sites, although the possibility of prehistoric origins cannot be ruled out. Two enclosures are present within the development area, RMP No. ME044-025 in the south-western corner and SMR No. ME045-064 in the central eastern area.

ME044-025 was marked as a 'Fort' on the first edition Ordnance Survey (OS) 6-inch map, while ME045-064 was identified in the form of a cropmark via aerial imagery from 2018. Furthermore, previous disturbance of enclosure ME044-025 produced human remains, suggesting the area is highly archaeologically sensitive and has significant potential for further human remains. To the east of Ratoath town, in advance of the M2 Finglas-Ashbourne road scheme, a number of important archaeological discoveries were made. Most significant was a large and multi-phased early medieval archaeological complex that was excavated at Raystown (Licence 03E1229) and which comprised enclosures, souterrains, a cemetery, kilns, mills and a mill race complex (Seaver 2005; 2016). A number of excavations have also taken place in recent years in relation to residential developments in the environs, mostly concentrated within the northern and north-western part of Ratoath town.

Medieval Period

The archaeological remains at Ratoath would suggest that the area was settled sometime during the medieval period. The arrival of the Anglo-Normans in Meath in c. 1170 changed the social and political structures in this area. The area of Ratoath was incorporated into Ratoath manor that was part of the de Lacy Lordship and it retained as a signorial manor of the Earl after the subinfeudation of Meath in the late 12th century (Graham 1975). The most predominant feature at the centre of the town is the motte and bailey (ME044-034001), which is of Anglo-Norman construction. A timber and earthen castle/motte was constructed at Ratoath in the late 12/early 13th century. The motte consists of a flat-topped earthen mound with a diameter of 20m. The base is much wider and measures 62m in diameter, with the mound itself measuring 11m in height. Remains of a fosse are evident, and a rectangular bailey is visible to the south-east. Ratoath was incorporated as a borough most likely in the early 13th century as is mentioned in the inquisition of 1333, and was the site of a manor court and a hundred court (Orpen 1921). Within the town, there is the site of an early church, on which now stands the remains of a 19th-century church. Reference to the early church is made in Bishop Dopping's Visitation Book of 1682-85 (Ellison 1971, 37-8). A late 13th or early 14th-century effigy (Hunt 1974, 213) and a 17th-century cross are to be found in the present graveyard attached to the Church of Ireland, build in 1818. The original medieval church was among the possessions of St Thomas' Augustinian abbey in Dublin, but no

traces of it remains within the graveyard, apart from some dressed pieces of windows suggesting a 16th century date. A graveslab of knight with Lombardic letters dates that slab to the 13th or early 14th century (Hunt 1974). Ratoath was classed among the borough towns of County Meath during the reign of Henry VI (15th century).

In 1795, a turn pike road was built between Curragha and Ratoath (Andrews 1964). A suitable infrastructure was needed, and introduction of toll roads was the result of economic prosperity under the Protestant Anglo-Irish. These toll roads are easily recognised as they run in straight lines. Lewis (1837) mentions an abbey dedicated to St Mary Magdalene in Ratoath. He also notes manufacture of sacking and the weaving of linen carried out on a small extent. He also remarks that the land is profitable cultivation and stone of good quality quarried. Corballis Esq had his principal seat at the Manor House in town, which is an example of a Protected Structure (Ref. MH044310), as listed in the Meath County Development Plan 2013-2019 (see Section 3.7).

Fairyhouse Racecourse, located within the Study Area, is noted for the first time on the third edition OS 25-inch map, where a Grandstand, Pavilion and Flagstaff are all depicted. The first race at Fairyhouse Racecourse was held in 1848, with the Irish Grand National steeplechase held since 1870.

Record of Monuments and Places

The Study Area incorporates three Recorded Monuments listed within the Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR). These comprise an enclosure (ME045-064), a ring-ditch (ME044-043) and an enclosure (ME044-025) with previously identified human remains associated with it. The surrounding landscape is also rich in recorded monuments, ranging in date from the prehistoric period to post-medieval times. Table 1 over is a list of the recorded monuments within the proposed development site. These descriptions are derived from the published Archaeological Inventory of County Meath (Moore 1987). In certain instances, the entries have been revised and updated in the light of recent research and are available in the National Monuments Service Archaeological Survey Database (<http://webgis.archaeology.ie/historicenvironment/>).

RMP No./ SMR No.	Class/Site Type	Townland	Description
ME045-064----	Enclosure	Glascarn	Located on a fairly level landscape. The cropmark of a subrectangular enclosure (dims c. 55m NE-SW: c. 50-55m NW-SE) defined by fosse or drain features is visible on Google Earth (07/05/2017; 24/06/2018). It is bisected by the cropmark of a N-S drain, and was first reported by Jean-Charles Caillère.
ME044-043----	Ring-ditch	Mullinam	Situated on a slight NW-facing slope in a fairly level landscape. The cropmark of a small circular feature (diam. c. 8m) defined by a single continuous ditch feature is visible on Google Earth (24/06/2019). It is also visible on Digital Globe (2017). It was first reported by Jean-Charles Caillère.
ME044-025----	Enclosure	Ennistown (Ratoath By.)	Oval area defined by field fence on E and S. Bank on N and W destroyed exposing human bones (dims. c. 73m NW-SE, c. 30m NE-SW).
ME044-041----	Ring-ditch	Warrenstown (Ratoath By.)	Situated on a fairly level landscape. The cropmark of a small circular enclosure (int. diam. c. 7m) defined by a single continuous fosse feature is visible on Google Earth (24/06/2018). It was first reported by Anthony Murphy.
ME045-013----	Ring-ditch	Glascarn	Cropmark ring (diam. c. 20m) (Cambridge University Collection of Aerial Photographs Ref.: AVF 41). It is also visible on Ordnance Survey Ireland Aerial Photographs (2005).
ME044-024----	Field system	Warrenstown (Ratoath By.)	Rectangular fields, defined by scarps (dims. up to 30m by 20m) covering c. 8 acres.
ME045-011----	Enclosure	Tankardstown (Ratoath By.)	Circular area defined by fosse (diam. c. 60m).

RMP No./ SMR No.	Class/Site Type	Townland	Description
ME044-034----	Historic town	Ratoath	Incorporates 18 recorded monuments, including a motte and bailey (ME044-034001-); a font (ME044-034002-); a church (ME044-034003-); architectural fragments (ME044-034004- & 007-), an effigial tomb (ME044-034005-); a churchyard cross (ME044-034006-); a market cross (ME044-034008-), a cistern (ME044-034011-); cultivation ridges (ME044-034015-); a graveyard (ME044-034017-); and miscellaneous sites uncovered as a result of excavations (ME044-034009-, 010-, 012-, 013-, 014-, 016 & 018-).

Table 1: Recorded Monuments in the environs of the Study Area

Previous Archaeological Investigations

One archaeological investigation was previously carried out within the northern part of the Study Area. This comprised archaeological monitoring (Licence no. 18E0136) of the Ratoath Outer Relief Road. There have also been a number of archaeological investigations carried out within Ratoath town, as well as some in the surrounding townlands in the environs of the Study Area.

Listed over (Table 2) are the investigations located in the environs of the Study Area that further demonstrate the overall archaeological potential of the site and its surrounding townlands. The details are derived from the *Summary Accounts of Archaeological Excavations in Ireland* (www.excavations.ie). While there was a number of archaeological assessments carried out within and in the environs of the Study Area, no archaeological remains were identified. Investigations within and surrounding Ratoath town, however, have uncovered numerous archaeological sites, including medieval ditches and two 19th-century buildings on Main Street (Licence no. 01E0248) and on the Kentstown Road, a late medieval open drain and associated laneway surface, a later area of rough cobbling,

a cistern-type structure, a substantial ditch possibly representing the town boundary, a small V-shaped ditch, an 18th/19th-century wall foundation and a further ditch of unknown date (Licence no. 01E1173). On the western fringe of the town, a 18ha residential development led to the discovery of two ring-ditches, burnt pits, cereal-drying kilns, a possible metalworking area, an early medieval cemetery enclosure and a possible field system (Licence no. 03E1781; Wallace 2003a; 2004), as well as a burnt spread and pits, including a possible trough (Licence no. 03E1632; Wallace 2003b).

Site	Licence No.	RMP/SMR No.	Director(s)	Site Type	Investigation Type
Tankardstown	99E0581	SMR ME045-011	Finola O'Carroll	No archaeological significance	Archaeological monitoring
Jamestown	11E062	N/A	Robert Lynch	No archaeological significance	Archaeological testing and monitoring
Ratoath Outer Relief Road, Jamestown	18E0136	N/A	Niall Roycroft	No archaeological significance	Archaeological monitoring

Table 2: Previous Archaeological Investigations in the Environs of the Study Area

At present, a geophysical survey (Licence no. 20R0026) is being undertaken within the north-western part of the Study Area by Ian Russell of ACSU. Preliminary results from the areas undertaken to date indicate that many of the field boundaries visible on the OS mapping have been detected, as well as an anomaly that may represent an old trackway or 'boreen', or possibly the remnants of ridge and furrow ploughing, as is also visible extending east-west across the northern half of the large field in the centre. Additional possible anomalies may represent areas of burning or pits.

Stray Archaeological Finds

No stray archaeological finds are recorded in the topographical files of the National Museum for the townlands within the Study Area. Two objects are, however, recorded from townlands in the environs. These relate to and reflect archaeological activity in the wider area.

NMI Reg	Location	Find	Circumstances
NMI X192	Ratoath	Bones and one or two unusual funerary vessels, one described as a double 'sepulchral vessel without internal communication' (Waddell 1974; 1990, 129).	Found in a stone cist during excavation of ditch in 1864.
E551:1294	Grange	A 3.9cm long fragment of a sandstone axe.	Discovered during field walking.

Table 3: Stray Archaeological finds in the Environs of the Study Area

Cartographic Review

An examination of pre-Ordnance Survey mapping in the form of the 'Barony of Rattoth' in the Down Survey of 1654-56, illustrates that the Study Area is named as 'Ratooth'. It also depicts 'Newtown', 'Minor Ballibin Berford', 'Big Glasscarne', 'Ballykuck' and 'Mullinam'. Minor Ballibin Berford, Ballykauck and Big Glasscarne have buildings depicted within the townlands that are now part of the Study Area, therefore, there is a chance of encountering remains/foundations of these structures. Taylor and Skinner's Maps of the Roads of Ireland (1777) offers little insight to the Study Area, although Ratoath town is depicted, as is Fairyhouse Road with a row of mature trees on its eastern side.

Ordnance Survey (OS) maps of the area were also examined in order to identify any possible archaeological features and to trace the development of the site during the 19th and early 20th centuries. These are far more detailed than the earlier maps. A number of buildings are depicted within the Study Area on the first edition OS map (surveyed 1835, published 1837), including settlements at Ballybin, Mullinam and Ballyhack. In the south-western corner an oval-shaped enclosure is labelled 'fort' (enclosure ME044-025) and on the north-eastern boundary 'Moulden Bridge' is depicted where Main Street crossed a stream. Overall, it appears as if the nature of the lands has not changed

significantly since this time, with the Study Area still comprising large fields primarily used for tillage and pasture.

By the time of the third edition OS 25-inch map (surveyed 1909, published 1911), the biggest change by far is the addition of the Fairyhouse Racecourse. On the western edge of the Fairyhouse Racecourse, a Grandstand, Pavilion and Flagstaff are also depicted and labelled. By this time, a substantial number of fields within the Study Area also appear to have been divided into smaller fields and only the Ballybin and Mullinam settlements are depicted by name. The oval-shaped enclosure ME044-025 is still depicted but it is no longer labelled 'fort'. The fields are illustrated as bound by hedges, stone walls, streams and some wet ditches. The wet ditches extend along and across the Study Area and feed into two streams. The stream to the north of the racecourse runs from west to east and further east it feeds into the Broad Meadow River, while the stream to the south of the racecourse runs roughly south and feeds into the Ward River. An examination of the Cassini edition of the 6-inch map (1958) shows little difference within the Study Area from the 25-inch map.

Aerial Photography Review

In addition to examining the various editions of the OS maps, aerial photographs from the Geological Survey of Ireland, dating from between 1995 and 2013, and the google aerial imagery dating between 1995 and 2019 were consulted. Ten Archaeological Heritage Constraints (AHC) can be observed within and adjacent to the Study Area.

One of the main areas of interest was in the vicinity of enclosure ME044-025, in the townland of Ennistown. At some time in the past, certainly post-dating the 25-inch map surveyed in 1909, the north and west bank was destroyed, and this exposed human remains. The area in the vicinity contains curving boundaries and usual field systems that might relate to the 'Fort' marked on the 6-inch map surveyed in 1835. Surface traces of the associated banks also survive. The other two recorded monuments within the Study Area, enclosure ME045-064 and ring-ditch ME044-043, were identified as cropmarks and both can be clearly seen on google maps aerial imagery from 24 June 2018. Another ring-ditch ME045-013 just outside the eastern boundary of the Study Area was similarly identified as a cropmark ring measuring 20m in diameter.

Six additional potential cropmarks were noted on google maps aerial photography within and directly adjacent the Study Area. These may indicate the presence of archaeological sites where the above ground remains may be largely or completely destroyed, however, some of these are very faint and may equally represent geomorphological anomalies. A potential cropmark identified as a result of examination of the aerial imagery from 21 April 2019 indicates a possible multi-ditched enclosure just outside the north-eastern corner of the Study Area. The outer enclosures measures over 70m east-west by 60m north-south, while the inner enclosure measures c. 40m in diameter.

In the northern part of the Study Area, an aerial photograph dated 7 May 2017 includes a number of cropmark anomalies located within one field. This could represent conjoined enclosures and/or field systems or may be geological in origin. On the same imagery to the south there are two conjoined circular enclosures. The larger, eastern enclosure measures c. 32m in diameter, while adjacent the north-western side is the smaller feature, measuring c. 9m in diameter, perhaps suggesting the presence of a ring-ditch. On imagery from 24 June 2018, a possible enclosure can be seen in a field at the eastern edge of the Study Area. It is represented by a faint darker-coloured sub-circular ring of similar size, c. 35m east-west by 30m north-south. Another possible enclosure can be seen on the same imagery in one of the fields adjacent to the northern side of the Fairyhouse Racecourse, as a faint darker-coloured sub-circular ring, approximately 37m in diameter. In the field directly north of the recorded ring-ditch (ME044-043; AHC 9) within the Study Area is another possible ring-ditch of similar size.

Protected Structures and National Inventory of Architectural Heritage (NIAH)

There are several structures listed within the National Inventory of Architectural Heritage (NIAH) located in the town of Ratoath, several of which are also Protected Structures as listed in the Meath County Development Plan 2013-2019. The Study Area, however, does not contain any such sites, with the nearest example consisting of The Manor House (RPS MH044310; NIAH Reg. No. 14336002), which is located c. 0.75 km to the north-west. Table 4 is a description of nearby architectural heritage sites as listed within the NIAH.

Name	Townland	NIAH ID	RPS ID	Description
The Manor House (former)	Ratoath	143360 02	MH044310	Though many original features and materials have been replaced, the former Manor House retains interesting architectural detailing, such as the segmental-arched window openings on the ground floor and the bow to the rear. The carved timber doorcase adds artistic interest to the former seat of J.I Corballis.
Fox Lodge	Ratoath	143360 01	N/A	Though many original features and materials have been removed, the house retains its symmetrical form which is enlivened by the tooled limestone block-and-start surrounds. The fine doorcase also survives, though it is obscured by the porch addition. The setting of the building is enhanced by the pair of cast-iron entrance gates.
Holy Trinity Roman Catholic Church	Ratoath	143360 06		Though this church was commenced in the early nineteenth century by Rev. Richard Carolan, it was completed in 1874, and retains many features from the latter phase of construction. The imposing entrance elevation is executed in well finished ashlar and carved limestone, which was clearly executed by skilled craftsmen. The survival of many interesting interior features and materials, such as the stained-glass windows and chancel mosaics add artistic interest to the building. This church is located in the centre of Ratoath village on a site containing a motte and bailey. It was from these two earthwork features that the village derived its name.
Holy Trinity Parochial House	Ratoath	143360 07		This parochial house was designed by William Hague for the Rev. Fr. Fulham. This house is enhanced by the retention of many original features and materials, such as the timber sash windows, red brick dressings, slate roof and ridge cresting. The house and related church were built on an archaeological site in the centre of Ratoath village which contains a motte and bailey.
Holy Trinity Parochial House Outbuildings	Ratoath	143360 08		The simple form of this outbuilding is enhanced by the retention of many colourful original materials, such as the purple slate roof, grey stone, yellow brick dressings and painted timber windows and doors. This outbuilding and the related parochial house are located on the site of a motte and bailey, which add archaeological interest to the site.
House, Ratoath town	Ratoath	143360 14	N/A	The modest form and scale of this, is enhanced by the retention of many interesting features and materials, such as the timber sash windows and the corrugated fibre cement roof. The house makes a positive contribution to the streetscape in Ratoath, due the scale and form of the building

Table 4: List of Protected Structures and National Inventory of Architectural Heritage (NIAH) sites in the environs of the Study Area

Ratoath Outer Relief Road Assessment General

It is most desirable that Route Options are devised that will have as little impact as possible on the archaeological and cultural heritage resources of the area. In order to facilitate the planning and road design process, this report identifies known and potential

sites of archaeological and cultural heritage value within the Study Area. Further recommended testing will consist of archaeological geophysical survey on a preferred route and pre-construction archaeological testing on a selected route. The selection in terms of archaeology and cultural heritage will be based not only on the number of possible impacts but also on the types of sites involved and the degree of impact to each site. Under such a system, the route option with the least number of apparent impacts is not necessarily selected as the preferred option. An option with a seemingly low number of known constraints along it could impact more significantly on those constraints than other routes, which would not make it a favourable choice.

The cultural heritage constraints study was carried out of all known archaeological or cultural heritage value sites in the environs of the proposed development. Each site identified as a possible archaeological and cultural heritage constraint is listed and described. A number of additional sites were added, represented mostly by cropmarks. A small number of the items listed are sites and structures of potential rather than of definite significance and were identified from an examination of aerial photographs. It should be an objective of the planning process that significant cultural heritage constraints identified in this report and verified as such in future fieldwork be avoided where possible, although this requirement should be balanced in relation to potential impacts in other disciplines, such as socio-economic and property impacts. When this is not possible and the development would result in an impact, appropriate mitigation must be adopted to reduce or avoid that impact, complying with current policies for planning and development and heritage protection. Such appropriate mitigation would generally embody the principle of preservation by record.

It is recommended that geophysical survey of the entire preferred access route corridor be undertaken. Once completed, subsequent archaeological assessment is also recommended, in the form of targeted test trenching of anomalies where present. In the case of archaeological remains being encountered, these will be directly impacted upon, in this case preservation in situ is not feasible. Mitigation in the form of preservation by record will be required.

4.7. Ecology

An Ecological Assessment of the Study Area (Figure 17) has been carried out by Altemar Marine & Environmental Consultancy Limited (AMEC). This assessment is available under separate with the main findings of same set out hereunder.

Introduction

AMEC was retained to undertake a preliminary ecological appraisal report to assess the environmental considerations for a proposed Ratoath Outer Relief route. The Ratoath Town Statement includes the following objective: RAT OBJ 7: 'To facilitate the development of the Ratoath Outer Relief route in tandem with development'. AMEC was commissioned to provide a preliminary ecological report (Ecological Appraisal) for the site area in question. This report includes a high-level ecological assessment of a wide indicative area, in which the route/s will be proposed at a later stage. No particular routes are initially proposed, and the scope of the Preliminary Ecological Appraisal is to evaluate the area as a whole and not to assess potential route options, rather the ecological assessment is to inform the route selection process. The report provides a preliminary site ecological assessment for the proposed development site and follows the guidelines for Preliminary Ecological Appraisal outlined by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2013).

Scope of Study

This review included:

- 2 no. site visits (23rd August 2019 and 20th February 2020);
- Review available desktop data;
- Identify any important environmental issues associated with the area;
- For identified issues, identify the potential risks or impact on the project in terms of consents and licenses, potential timings, need for avoidance, mitigation, restrictions etc.;
- As outlined by the CIEEM (Preliminary Ecological Appraisal):

- is to establish baseline conditions and determine the importance of ecological features present (or those that could be present) within the specified area, as far as is possible;
- is to establish any requirements for detailed/further surveys;
- is to identify key constraints to the project and make recommendations for design options;
- is to avoid significant effects on important ecological features/resources at an early stage;
- is to identify the mitigation measures as far as possible, including those that will be required, and those that may be required (based on results of further surveys or final scheme design); and
- is to identify enhancement opportunities.



Figure 17: Ecological Assessment Study Area

Results of Ecological Assessment

Field Survey

Sufficient habitats were identified during the survey to provide an understanding of the site and the potential implications this may have on the proposal. However, as both terrestrial and aquatic, flora and fauna are not always obvious, and as the survey involved a preliminary walkovers where access to all areas was not possible, Altamar accepts no liability for the presence of any protected species or habitats present that were not recorded during the survey. Some areas, particularly fields with no road access, drainage ditches, houses (for bats) were not accessible due to the lack of landowner permissions. The following report is a preliminary ecological appraisal and does not aim to replace extensive surveys that are carried out as part of an EIAR.

Survey Findings and Evaluation

Desk Study

Designated sites and watercourses

The site is not proximate to designated sites including Natura 2000 sites of international importance (Figure 18). Malahide Estuary (SAC and SPA) is 15.2 km downstream of the survey area and there is a direct hydrological connection to this SAC and SPA via the Fairyhouse Stream, which is a tributary of the Broadmeadow River. The only SAC within 15km is the Rye Water valley / Carton SAC. No SPA's are within 15km. The nearest Natural Heritage Area is 23.4km (Skerries Islands NHA) and the nearest proposed Natural Heritage area is the Royal Canal at 9.3km. Watercourses in the vicinity of the site are seen in Figure 19 over and the main watercourse in the Study Area is the Fairyhouse Stream which is a tributary of the Broadmeadow River. There is a hydrological pathway to Natura 2000 sites, and it is likely that in stream works will be required with potential downstream impacts.

Based on a data search of NPWS rare and protected species for the site there are no protected species recorded on site at a fine resolution. However, West European Hedgehog (*Erinaceus europaeus*) has been recorded in Dunboyne. Data from the

National Biodiversity Data Centre was interrogated, and no species of conservation value have been recorded within the Study Area. However, the area is noted as a moderately important (39-47 on 'habitat suitability' index) for Common pipistrelle (Bat Landscapes NBDC).

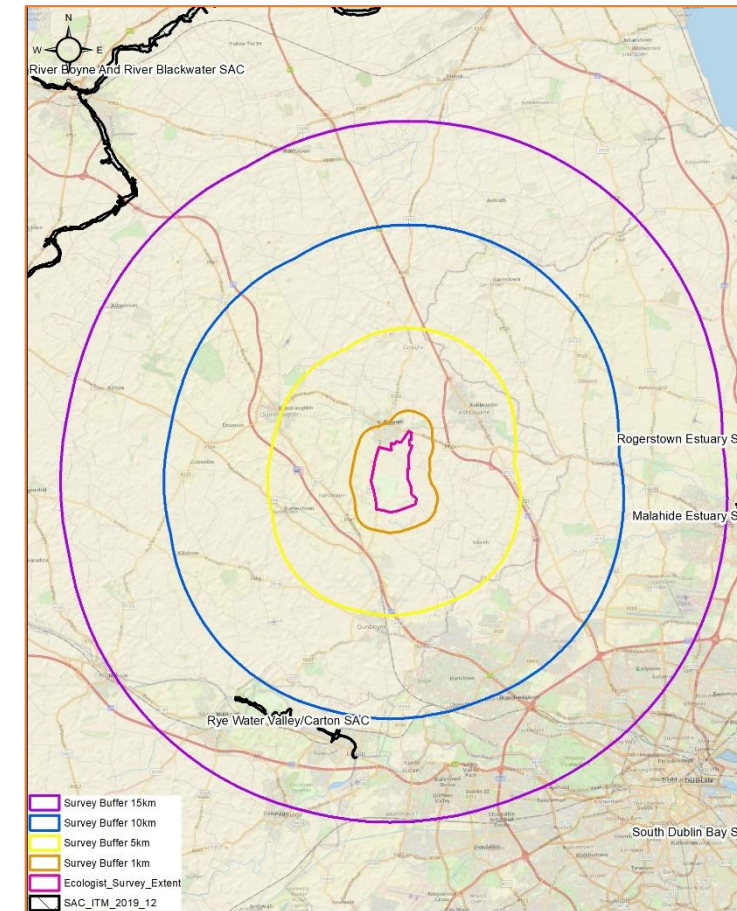


Figure 18: Designated Sites

Field Study

A walkover assessment was carried out on the 23rd August 2019 and 19th February 2020. This involved a walkover of the site where accessible. A significant portion of the land is in private ownership and was not accessed. There are numerous watercourses and deep drainage ditches on site, including those along existing roads, and the detailed assessments would be required to fully assess the extent of these areas and the ecological importance of these areas.

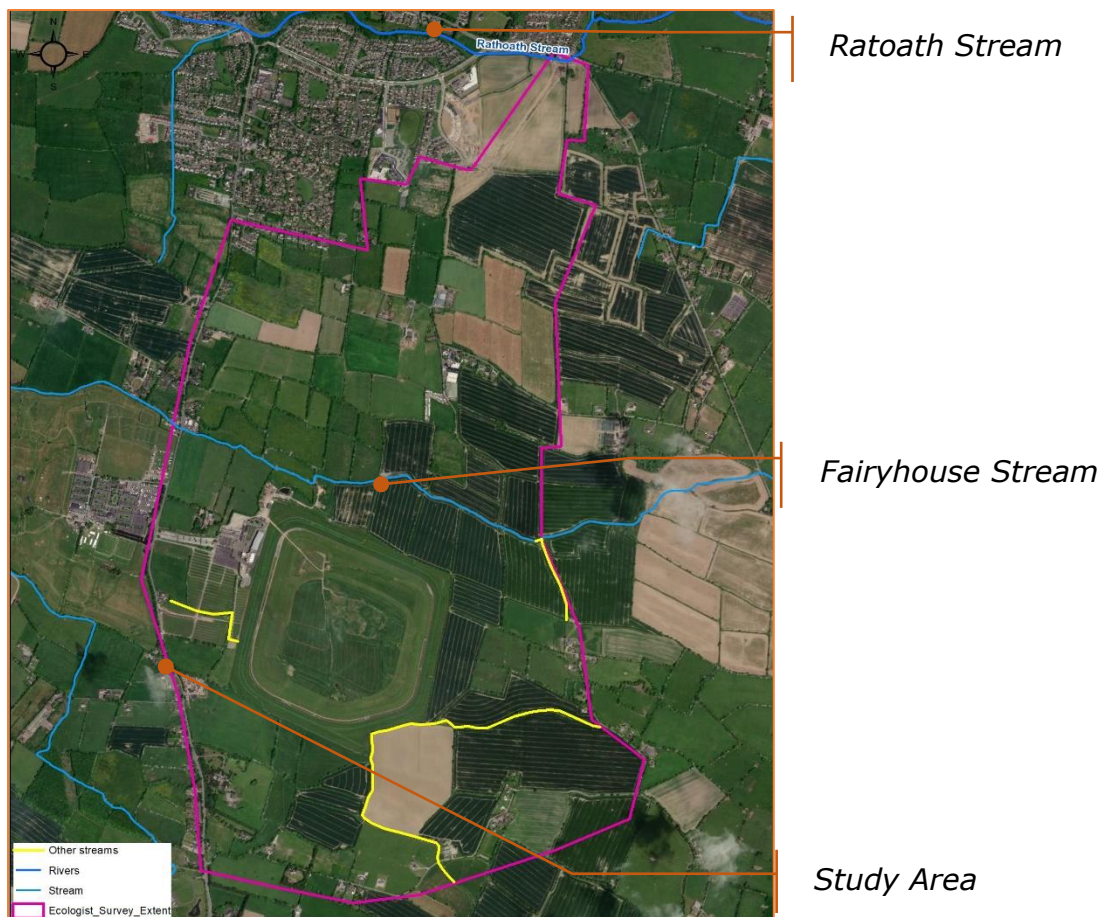


Figure 19: Watercourses in the Vicinity of the Site

more important than hedgerows due to their larger landscape and biodiversity value;

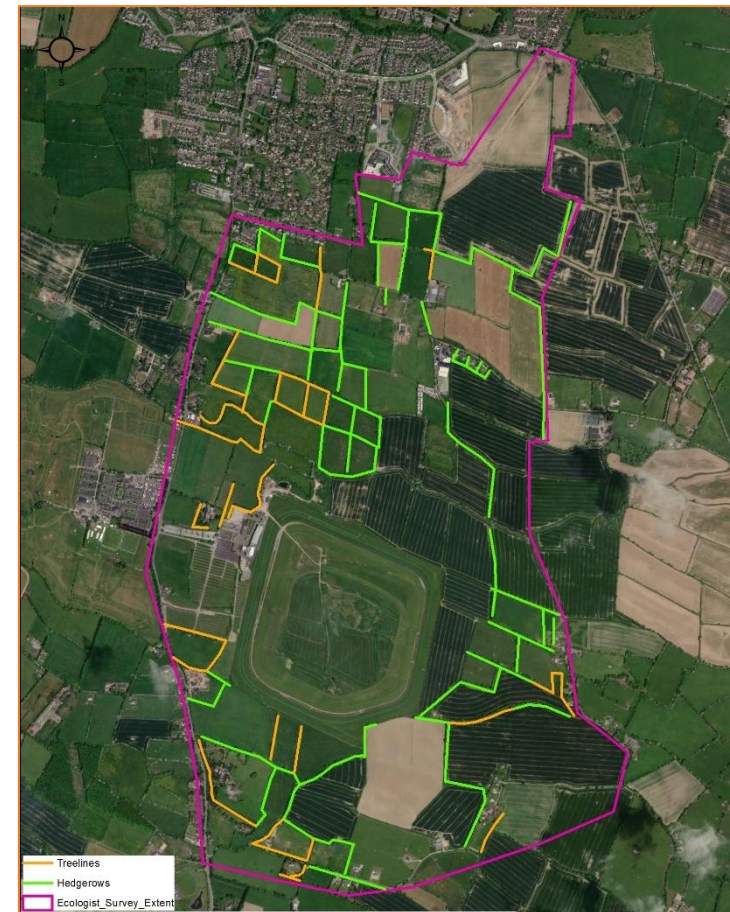


Figure 20: Hedgerows & Treelines

Treelines and hedgerows were mapped (Figure 20). Many of the treelines are hedgerows that have not been maintained. These potentially would form bat foraging corridors on site and roosting habitats for a small number of individual bats. It is expected that there may not be significant bat roosts on site due to the open nature of the fields and limited roosting potential in buildings. The majority of the land is agricultural with the area being a mixture of arable and grazing (sheep and cattle). In addition, the following is noted:

- Habitats and species of conservation importance are possibly located within the site. The hedgerow and treeline areas may have terrestrial mammals (over winter survey needed) flora and bats (survey during summer months optimal). The removal of existing treelines and hedgerows areas will result in a loss of biodiversity to the site and trees should be retained where possible. Bats may roost in these trees many of the trees or dwellings on site may contain potential roosting areas so an ecologist would need to assess each tree that is to be removed. Bats also forage along the larger treelines. Treelines would be slightly

- No species of conservation importance were noted. However, two buzzards (*Buteo buteo*) were noted on the eastern boundary of the site.
- The Fairyhouse Stream is seen in Figure 19 and additional deep drainage ditches on site have the potential to hold protected amphibians. In addition, there also appears to be a large pond within Bridle House Farm, that may be of ecological importance;
- No significant industrial developments are present within the Study Area. However, Fairyhouse Motors is located beside the Fairyhouse Stream and there is potential pollution/contamination risk associated with works in this area, with Natura 2000 sites being present downstream. Kwik RC Frames is also located along the R155 and an onsite assessment would be required in relation to pollution/contamination.

Recommendations

- Based on recent legal cases and hydrological link to Natura 2000 sites an AA screening may not be sufficient for the proposed project. A Natura Impact Statement may be required. For example, there is a hydrological link to the SAC and SPA in Malahide Estuary and it is likely that instream works, and culverts will be required, not only for the Fairyhouse Stream but also for the numerous smaller streams and drainage ditches on site.
- The tree loss will potentially be high so the options should try to avoid areas of substantial treelines. There will be a loss in biodiversity directly so mitigation measures will be needed to offset the loss e. g. bird/bat boxes etc.
- The following surveys are recommended:
 - Terrestrial mammal survey (over winter when vegetation has died back);
 - Nesting bird survey (March-June);
 - Habitat and Flora survey (April-September);
 - Bat surveys (April to August) including buildings if these are to be demolished.
- Careful consideration is made to the full hydrology of the site including the mapping of all streams and drainage ditches. This is particularly important in relation to the Fairyhouse Stream and the Ward catchment which is to the south of the Study Area.

Conclusions

Based on the provisional site assessment many of the potential biodiversity issues noted on site can be mitigated and would not impact on the proposed development of the site. There are no designated sites or in the immediate area. However, there is a direct hydrological pathway to the Malahide Estuary SAC & SPA via the Fairyhouse stream and Broadmeadow River. If mammals, including bats, were found within the treelines/hedgerows it is likely that derogation licences would be granted, and this would not inhibit or significantly delay the construction of the proposed development. There are no specific records of protected flora or fauna on site. However, detailed surveys will be required.

4.8. Topography

As part of the constraints assessment a detailed topographic survey was undertaken of the northern portion of the Study Area. A copy of the survey data is shown in Figure 21 hereunder.

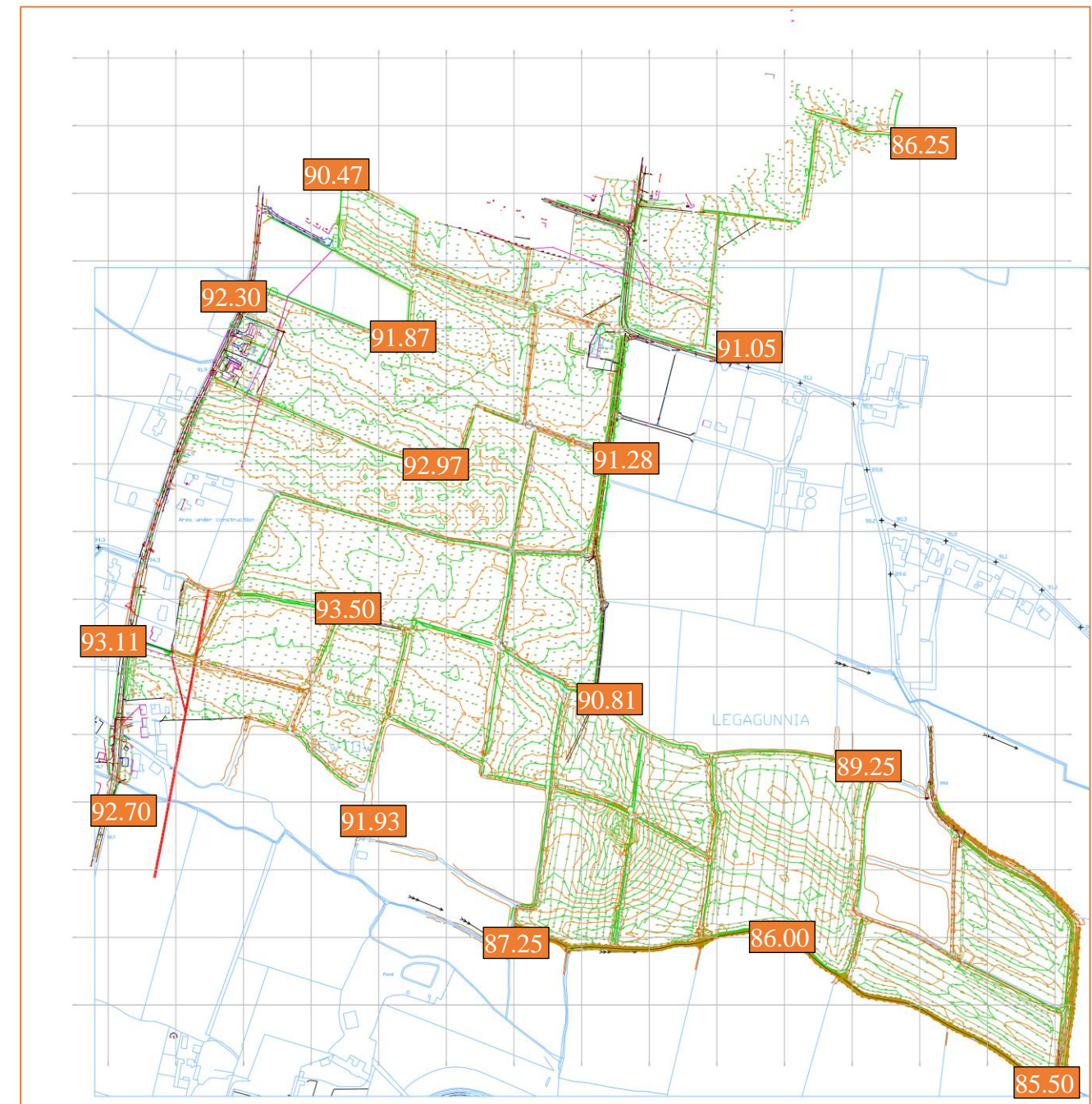


Figure 21: Topographic Survey

The Study Area is relatively flat and falls from west to east in the direction of flow of the local watercourses. In the extreme north east corner, the level is 86.25 m AOD and levels rise as one moves south along the eastern boundary of the surveyed area, to 91.05 m on Glascarn Lane east and then to 91.28 m as one continues southwards. The Fairyhouse Stream runs west to east along the southern boundary of the surveyed area and bed levels in the stream fall from 87.50 m to 85.50 m at the south eastern extreme of the area. This is the overall low point of the surveyed area.

Levels on the R155 Fairyhouse Road vary from 92.30 m at the northern end of the site to a local high of 93.11m at the Commons Lane junction before falling southwards again towards the M3.

There is a local high point of 92.97 m in the centre of the site with levels falling away from this point to both the north and the south. In a general context the surveyed area drains into two separate catchments. The southern half drains southwards into the Fairyhouse Stream whilst the northern corner drains northwards towards the Ratoath Stream as shown earlier in Figure 19.

4.9. Soils & Geology

OCSC reviewed the Geological Survey of Ireland (GSI) database in respect of the underlying geology in the vicinity of the Study Area – Figure 22, 23 & 24 following.

Bedrock

The Study Area is underlain by the Lucan Formation which is approximately equivalent to the Calp of Marchant and Sevastopulo (1980). The formation comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar – Figure 22.

The beds are predominantly fine-grained distal turbidites in the north Dublin Basin. The formation is intermittently exposed on the coast between Rush and Drumanagh Head. The formation ranges from 300m to 800 m in thickness.

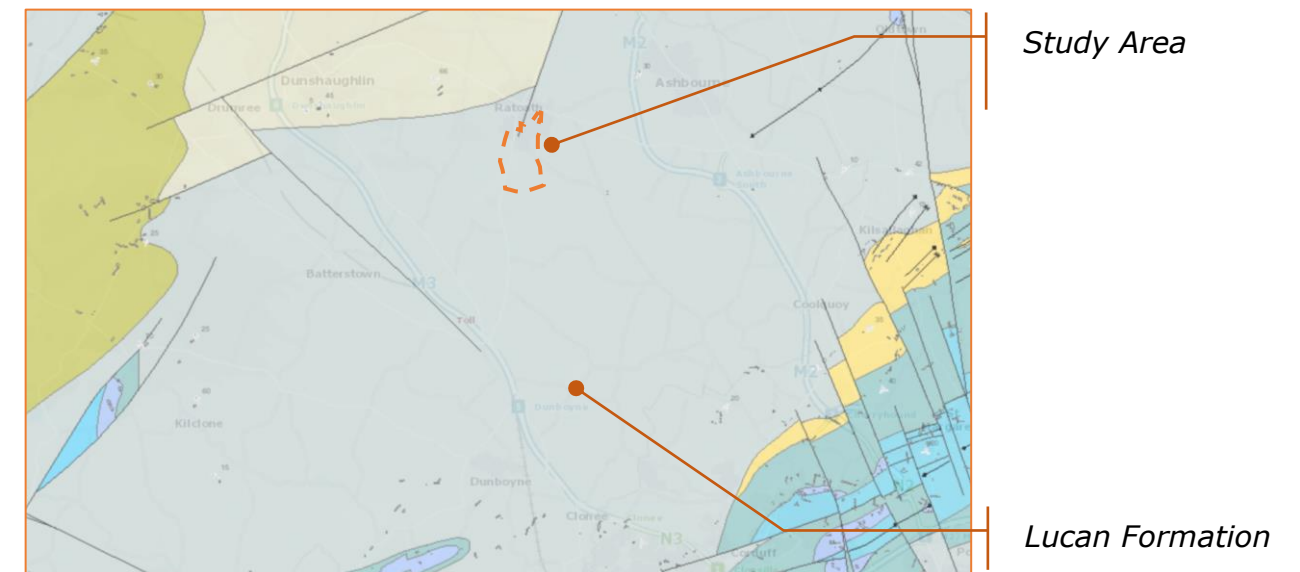


Figure 22: Bedrock Geology (Source: GSI)

Quaternary Deposits

The quaternary deposits in the Study Area comprise mainly Till derived from Limestone. However, there are linear streams of Alluvium to both the north and west of the Study Area, associated with the main watercourses in the Ratoath Area – see Figure 23 over.

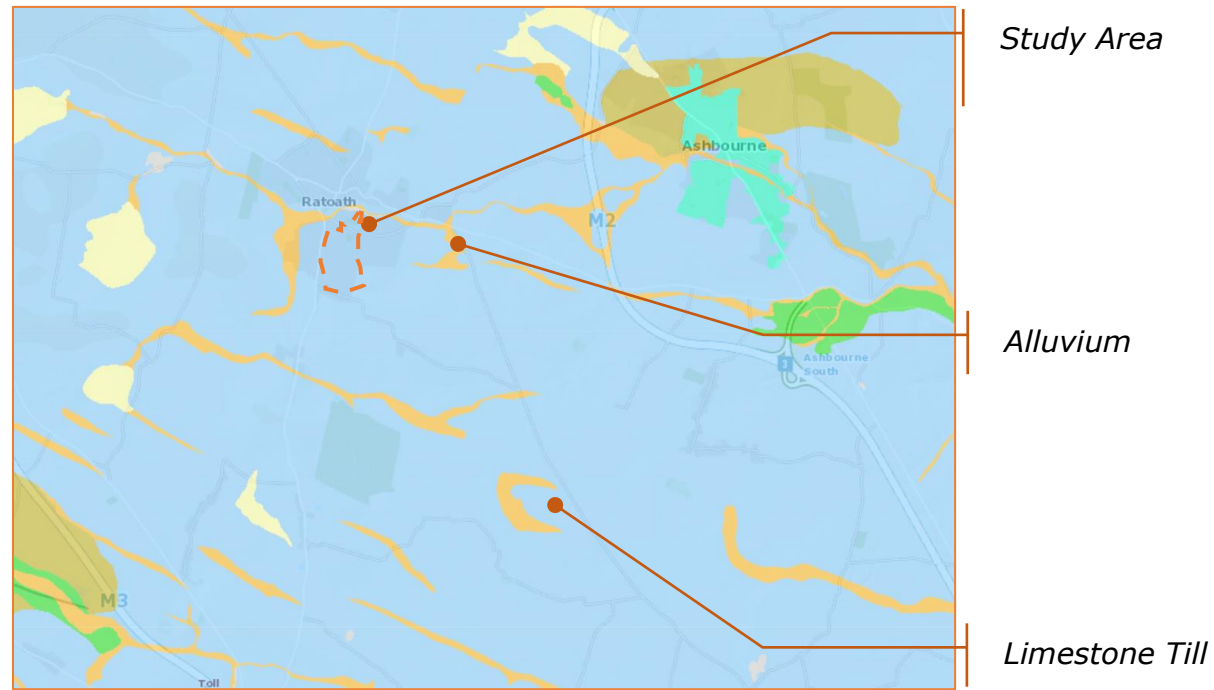


Figure 23: Quaternary Deposits (Source: GSI)

Groundwater Vulnerability

The bulk of the Study Area is classified as a 'L' or low groundwater vulnerability area. However, there is an area classified as 'E' extreme vulnerability to the north – Figure 24.

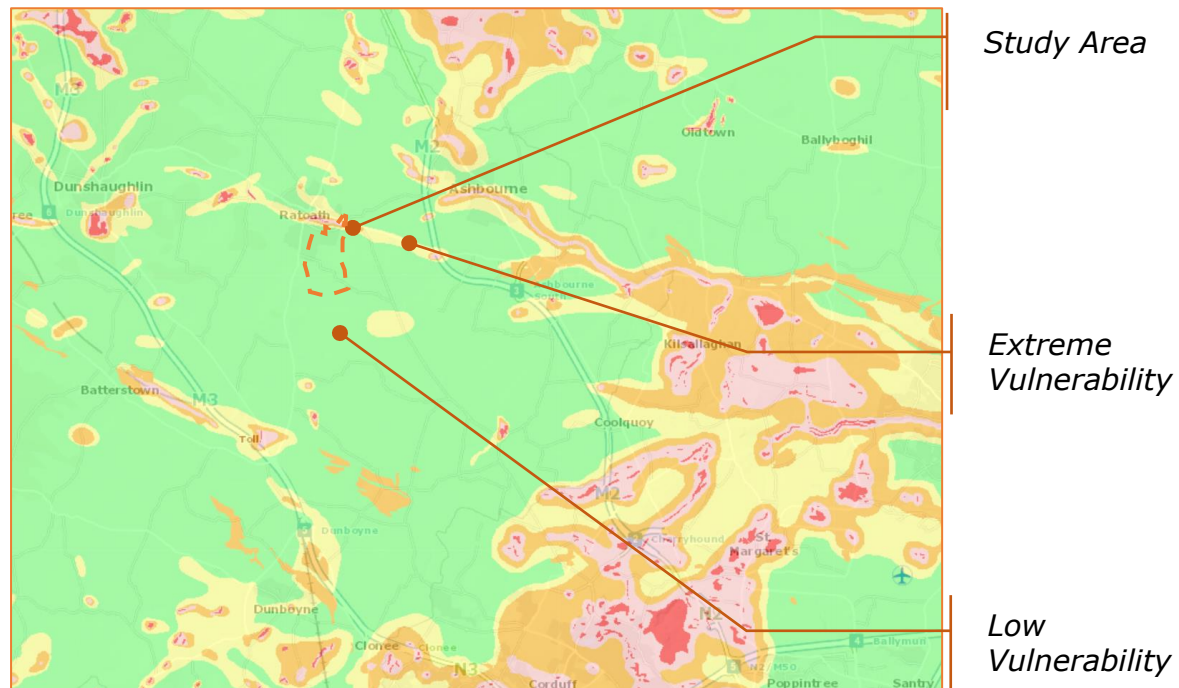


Figure 24: Groundwater Vulnerability (Source: GSI)

4.10. Site Investigation

No detailed Site Investigation has been undertaken in the Study Area as yet. Given the extended size of the Study Area (circa 535 hectares) such a detailed investigation would be economically prohibitive.

There are proposals however to procure such an investigation in the near future on a more defined area subject to route selection and the results of same will feed into the preliminary design process for the Emerging Preferred Route.

Notwithstanding the foregoing, some information is available on site investigation in the area. The GSI website identifies a Site Investigation undertaken by IGSL on behalf of Tattersalls in an area which lies immediately adjacent the western boundary of the Study Area – Figure 25.

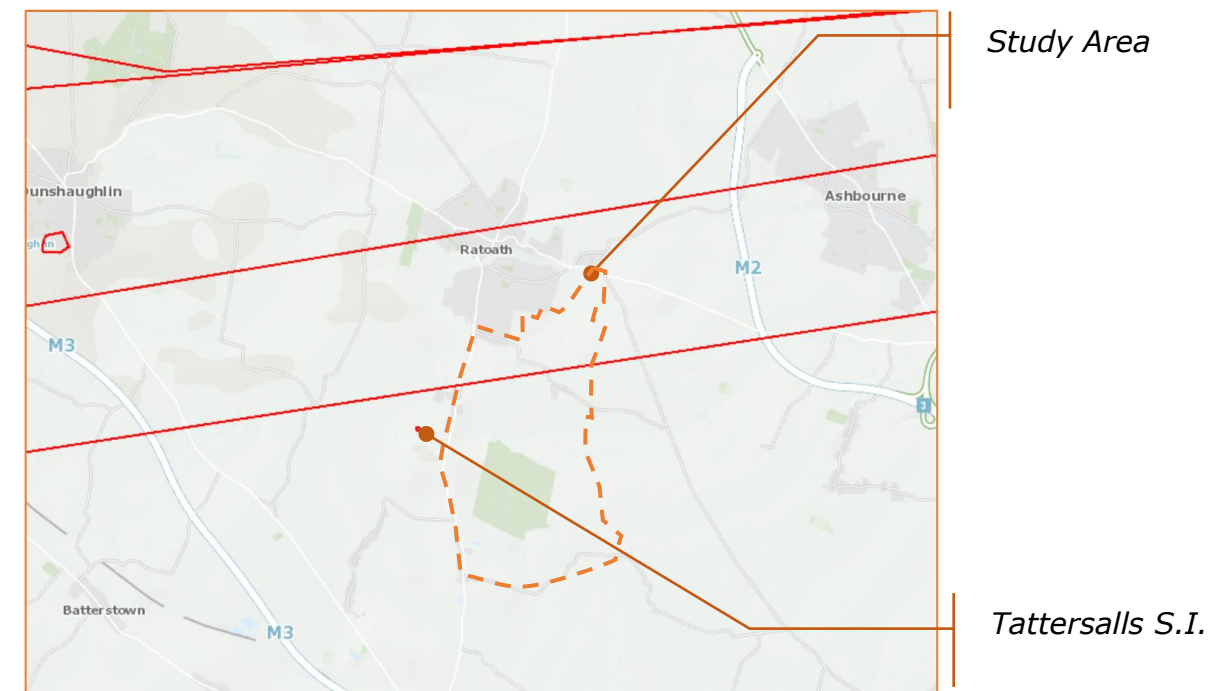


Figure 25: External Site Investigation (Source: GSI)

OCSC have examined the results of the Tattersalls site investigation and the borehole logs associated therewith.

Boreholes

Boreholes were constructed in four locations on the site. The descriptions and depths of the various soils encountered are shown on the boring records enclosed in the S. I. Factual Report. Also shown on these records are the depths at which samples were recovered, the results of in-situ Standard Penetration Tests, and the groundwater conditions observed during the course of boring operations.

The boreholes revealed soft upper clay, presumably infill, although there were no indications of extraneous matter. The deepest deposits are towards the south where boreholes revealed depths of 2.4 metres and 2.1 metres respectively. Towards the north-western corner one borehole encountered soft clay to a depth of 1.3 metres while no soft soils were noted in the north-eastern corner. In all locations these upper deposits directly overlie stiff gravelly clay which becomes very stiff to hard with depth. The boreholes were terminated on obstructions at nine to ten metres depth. Groundwater ingress was noted as seepages near the horizon of the stiff gravelly clay.

Testing

In-situ Tests

In-situ SPT tests were carried out during boring and are presented as N-values. These are a measure of the number of drop-hammer blows required to drive the test cone through a measured 300 mm penetration. N-values of less than ten are a reflection of the soft condition of the upper soils. In the majority of tests in the lower deposits, the required penetration could not be achieved. In these instances, the results are expressed as refusals or in terms of the number of drop-hammer blows required to achieve a limited penetration. The soils encountered can generally be classed as good from a construction perspective.

Laboratory Tests

Particle Size Distributions

Grading curves for representative samples of the lower deposits indicate that they are well-graded with over 40% fines.

Classification Tests

The results of plastic and liquid limit tests indicate that the sub-soils are clays of low plasticity.

Chemical Tests

Samples of the sub-soils exhibited very low concentrations of soluble sulphates and near-neutral pH values.

4.11. Traffic

The authors have reviewed the recent Strategic Housing Development (SHD) application in respect of the proposed development at Jamestown, Ratoath. This development is located on the west side of the northern section of the Ratoath Outer Relief Road immediately north of the Study Area. The application was supported by a Traffic Impact Assessment (TIA) undertaken by Kilgallen & Partners Consulting Engineers.

Table 4.1, page 6 of the TIA shows the results of traffic counts which were carried out on the R155 Fairyhouse Road and on the R125 Ashbourne Road. The counts identified vehicles passing through a cordon on both roads and this was used as an identifier of the quantum of traffic that would divert from either road onto the Outer Relief Road. The table is replicated as Table 5 hereunder.

	AADT	Assigning to RORR (N)		Assigning to RORR (S)	
	PCU	PCU	%	PCU	%
R155 North	4,677	2,118	45%	N A	N A
R125 West	6,404	N A	N A	2,559	40%


Table 5: Flow Assignment to RORR (Source: Kilgallen & Partners)

The table shows over 40% of traffic diverts to the RORR from the Town Centre. This equates to 4,677 pcu's per day at current levels. This is a significant quantum of vehicles to consider later in the context of the proposed termination point of the RORR on the R155 and the impact of same on existing dwellings in that immediate area.

5. RELIEF ROAD DESIGN STANDARDS

Introduction & DMURS Road Classification

The Design Standards to be adopted for the Ratoath Outer Relief Road will be the Design Manual for Urban Roads and Streets (DMURS). The adoption of DMURS reflects the urban nature of the scheme which will link the current built section of the Outer Relief Road at Ratoath College to the R155 – Fairyhouse Road and could also include a link to the Fairyhouse Racecourse Complex. The proposed Ratoath Outer Relief Road will be classified in accordance with Table 3.1 of DMURS as an Arterial Road – Figure 26.

DMURS Description	Roads Act/NRA DMRB	Traffic Management Guidelines	National Cycle Manual
Arterial 	National	Primary Distributor Roads	Distributor
Link	Regional (see note 1)	District Distributor Local Collector (see Notes 1 and 2)	Local Collector
Local	Local	Access	Access

Notes

Note 1: Larger Regional/District Distributors may fall into the category of *Arterial* where they are the main links between major centres (i.e. towns) or have an orbital function.

Note 2: Local Distributors may fall into the category of *Local* street where they are relatively short in length and simply link a neighbourhood to the broader street network.

Table 3.1: Terminology used within this Manual compared with other key publications.

Figure 26: DMURS Classification

Road Design Speed

The proposed Ratoath Outer Relief Road will have a Design Speed of 50kph. This Design Speed is consistent with the urban nature of the road and in compliance with Table 4.1 of DMURS as shown in Figure 27.


		PEDESTRIAN PRIORITY		VEHICLE PRIORITY		
FUNCTION	ARTERIAL	30-40 KM/H	40-50 KM/H	40-50 KM/H 	50-60 KM/H	60-80 KM/H
	LINK	30 KM/H	30-50 KM/H	30-50 KM/H	50-60 KM/H	60-80 KM/H
	LOCAL	10-30 KM/H	10-30 KM/H	10-30 KM/H	30-50 KM/H	60 KM/H
		CENTRE	N'HOOD	SUBURBAN	BUSINESS/ INDUSTRIAL	RURAL FRINGE
		CONTEXT				

Table 4.1: Design speed selection matrix indicating the links between place, movement and speed that need to be taken into account in order to achieve effective and balanced design solutions.

Figure 27: Design Speed

Road Cross Sections

The carriageway cross-section will be 7.00m (DMURS 4.4.1) as the Ratoath Outer Relief Road will be classified as an Arterial Road with frequent large vehicle use and a low to moderate Design Speed. This carriageway width is illustrated and selected from Figure 4.55 of DMURS – Figure 28 over.

The width of the footpaths is determined by reference to DMURS Section 4.3.1. where a minimum width of 1.80m is required. The road is defined as suburban in character and as such a larger footpath width is justified therefore a 2.50m wide footpath will be provided to cater for the expected high pedestrian volumes associated with future residential developments. The width of cycle facilities will be determined on the basis of the National Cycle Manual (June 2011) and is dealt with later.

The width of the road verges will be wide enough to cater for the proposed road signage and traffic lights and in some cases will be defined by the drainage and associated SuDS systems. In the design of the Ratoath Outer Relief Road two grass verges will be provided, on the residential side a 1.50m verge will be used and on the opposite side a 3.00m verge will be provided.

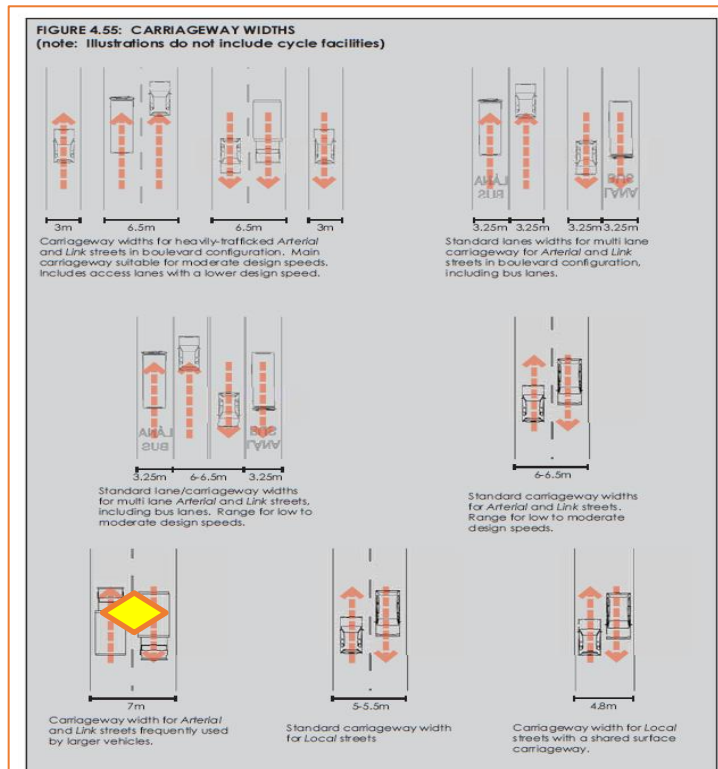


Figure 28: Cross Section

Horizontal and Vertical Geometry

The alignment of the Ratoath Outer Relief Road will be designed so that the various geometric elements including horizontal and vertical curvature, super elevation and sight distance will have at least the minimum values consistent with the 50kph Design Speed. It is important that these geometric elements are not exceeded as this can lead to operating speeds greater than the intended Design Speed.

The relevant horizontal and vertical geometric design values are illustrated in DMURS Table 4.3 as shown in Figure 29 adjacent. A standard carriageway cross fall of 2.50% will be adopted throughout with super elevation applied if necessary noting that adverse camber is allowable under DMURS designs in accordance with Table 4.3. A cross fall of 2.5% will be used for footpaths and cycle facilities.

HORIZONTAL CURVATURE						
Design Speed (km/h)	10	20	30	40	50	60
Minimum Radius with adverse camber of 2.5%	-	11	26	56	104	178
Minimum Radius with superelevation of 2.5%	-	-	-	46	82	136

VERTICAL CURVATURE						
Design Speed (km/h)	10	20	30	40	50	60
Crest Curve K Value	N/A	N/A	N/A	2.6	4.7	8.2
Sag Curve K Value	N/A	N/A	2.3	4.1	6.4	9.2

Table 4.3: Carriageway geometry parameters for horizontal and vertical curvature.

Figure 29: Horizontal & Vertical Curvature

Junction Philosophy

The primary principle in the design of junctions along the route will be to provide junctions that are safe and consistent with existing layouts in order to present a uniformity of approach to drivers. In addition, junctions will have sufficient capacity to accommodate design year peak traffic flows therefore optimising network capacity. The primary junction strategy objectives will be:

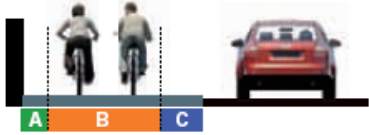
- To optimise road safety by ensuring adequate visibility and consistency;
- To ensure capacity for the design year;
- To function as traffic calming measures;
- To provide safe crossing facilities for pedestrians and cyclists;
- To provide an economic solution, so that the cost of implementing the design will be, to the maximum possible extent, offset by the economic benefits derived;
- To optimise road construction costs;
- To minimise environmental impacts, such as air pollution and engine noise, by minimising fuel consumption through reductions in the number of speed changes and the number of stop/starts required.

In the case of the Ratoath Outer Relief Road it is envisaged that the primary junctions along the route will be designed as controlled junctions with full pedestrian and cycle crossing facilities. This is in keeping with the existing northern section of the route under

construction and will therefore ensure a homogeneous design philosophy throughout the scheme. All signalised junctions will be designed in order to achieve the requirements of the National Cycle Manual. Intermediate junctions will be created at points along the road appropriate to future developments. In accordance with DMURS 4.4.1 these roads will have widths ranging from 5.5m to 6.0m. Given the local access nature of these spur roads, and in the interest of predictability of junction type, these junctions will form simple crossroads or priority T-junctions as appropriate. All priority T Junctions and Side Road will be designed in order to achieve the requirements of the National Cycle Manual.

Cycle Standards

Cycle lanes and crossings will be designed in accordance with the National Cycle Manual. All cycle facilities along the Relief Road will be off-road and segregated. Based on the Cycle Width Calculator in the National Cycle Manual indicated below, the width of the optimum cycle path will be 3.0m which will give generous space for two-way cycling.



A Inside Edge	B Cycling Regime	C Outside Edge	D Additional Features
Kerb 0.25m	Single File 0.75m	30kph, 3.0m wide lane 0.50m	Uphill 0.25m Sharp bends 0.25m
Channel Gully 0.25m	Single File + Overtaking, Partially using next lane 1.25m	50kph, 3.0m wide lane 0.75m	Cyclist stacking, Stopping and starting 0.50m
Wall, Fence or Crash Barrier 0.65m	Basic Two-Way 1.75m	Raised kerb, dropped kerb or physical barrier 0.50m	Around primary schools, Interchanges, or for larger tourist bikes 0.25m
Poles or Bollards 0.50m	Single File + Overtaking, Partially using next lane 2.00m	Kerb to vegetation etc. (i.e. cycleway) 0.25m	Taxi ranks, loading, line of parked cars (min 0.8m) 1.00m
	2 Abraxas + overtaking tracks and cycleways 2.50m		Turning pocket cyclists 0.50m

Example:
To determine required cycle width, select the appropriate Inside Edge, Cycling Regime, Outside Edge and any Additional Features

Channel Gully 0.25m	Single File + Overtaking, Partially using next lane 1.25m	50kph, 3.0m wide lane 0.75m	Around primary schools, Interchanges, or for larger tourist bikes 0.25m
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0.25m
+ 1.25m
+ 0.75m
+ 0.25m
Required width = 2.50m Note: This is the maximum width for an on road cycle lane. Cycle tracks can be wider.

Figure 30: Cycle Standards

This cycle facility will be located on the residential side of the Ratoath Outer Relief Road which is the optimal location for such a facility. In addition to the two-way cycle facility the Outer Relief Road will also be designed to include for a Cycle Way. This Cycle Way will be 5.00m wide and will link the Fairyhouse Racecourse to Ratoath Village via Ratoath College. This facility will be fully segregated from the other cycling and walking facilities and will be integrated into future residential developments west of the Outer Relief Road.

Drainage Philosophy and Design

The general principals behind the drainage design will be as follows

- The proposed road will cross existing watercourses. These crossings will be designed so as not to interfere with the surface water drainage regime of the area through which the road passes;
- Existing overland flows which the proposed road crosses and may block, will be intercepted and discharged to a suitable outfall;
- The drainage of the proposed road will be designed such that surface water drainage and sub-grade drainage will be provided for the mainline carriageway and all new sections of minor roads. This discharge will be directed to an existing watercourse and discharged appropriately;
- The maintenance or improvement to the quality of the existing drainage network;
- The application of Sustainable Urban Drainage Systems (SuDS) to the surface water drainage system where possible in-line with Meath County Council's SuDS standards;
- Rainfall intensities to be factored up by 20% to take into account climate change.

The road drainage for the scheme will be designed in accordance with the Greater Dublin Strategic Drainage Study (GSDSDS). The elements of the drainage to be constructed will be constructed in accordance with the GD *Code of Practice for Drainage Works*. Any SuDS elements incorporated into the scheme will be designed in accordance with The SuDS Manual (published by CIRIA, 2007). All water courses that receive road discharge will be protected by measures to minimise the risk of pollution as recommended by the Inland Fisheries Board. The recommendations of the Department of the Marine & Natural Resources publication *Fishery Guidelines for Local Authority Work* will be adopted in the

design of outfalls. In particular Section 8.2 which suggests that soakaways or settlement ponds be installed on drains accepting runoff from heavily trafficked roads. In line with these recommendations and in order to minimise impact on receiving environment from road surface runoff, pollution control is proposed at all planned outfalls. Many factors affect the selection of appropriate pollution control facilities including soil characteristics, traffic flows and characteristics, the sensitivity of the receiving environment and the expected constituents of the runoff. Pollution control facilities that are not required to provide flow attenuation are sized based on the runoff from the first 10mm of rainfall event, often described as the 'First Flush' effect of storm. This allows for any build-up of pollutants on the roadway, which is washed off in the early part of the storm, to be treated.

Surface water attenuation will be used to control surface water runoff from all hard surfaces in accordance with the GSDSDS. The rate of discharge from the storage facility will be controlled by means of a flow restricting device at the outfall. The level of discharge will be restricted to that of the natural catchment and the remainder of the flow will be attenuated upstream of the flow restriction. The size and volume of storage facilities will in general be based on the 1 in 30-year storm event. For flows in excess of the 1-in-30-year storm event up to the 1-in-100-year storm event, attenuated runoff will be retained within the site of the road. Where feasible, this will be stored in areas such as landscaped areas and carriageway surfaces and returned to the drainage system to be discharged through the flow control device following the storm event. Where storage of this volume in surface areas is not feasible, the attenuation facility will be increased in size to accommodate the 1-in-100-year storm event. For larger events (i.e. in excess of the 1-in-100-year storm event), excess runoff will be directed overland to receiving watercourses via designated routes that will be determined during detailed geometric design of the road.

Where the road crosses existing drainage ditches, culverts will be provided in the form of pipe culverts, box culverts or other culvert sections. Where the road crosses a minor ditch which is normally dry, then the minimum pipe culvert will be 900mm diameter. If the stream is more significant, where the water flow is permanent, then the minimum pipe culvert will be 1200 mm diameter.

Culverts to existing water courses will normally be sized to cater for the 1 in 100 storm event. Design flow in water courses will be assessed using appropriate methods set out in the *Flood Studies Report (1975)* and *Supplementary Reports*, including analysis of recorded hydrometric data where available. Where culverts are provided along watercourses that have been identified as being important from a fisheries point of view then low flow channels will be provided at the base. Such channels will have a minimum effective depth of below the invert of the culvert as specified by Inland Fisheries.

Geotechnical Philosophy and Earthworks Design

The geotechnical processes and ground risk management for the scheme development will be assessed in accordance with the general principles of HD 22/08: '*Managing Geotechnical Risk*' of the UK DMRB. The earthworks design of the new road will be developed in accordance with the general principles of earthworks design and preparation of contract documents as outlined in TII DMRB. The earthworks design will ensure the stability of the embankments and cuttings, including rock cuttings, for a design period of 60 years. Earthworks in the design will follow the guidance contained in BS6031:2009.

The finished sloped surfaces of all embankments and cuttings (with the exception of cuttings through rock) will have a maximum gradient of 1 vertical to 2 horizontal. The design will ensure that areas of existing road pavement which shall be top soiled or which shall eventually be buried and incorporated in the Works below embankments shall be broken up to render the construction free draining. Strengthened earthworks design will be in accordance with BS8006-1:2010 *Code of Practice for Strengthened Reinforced Soils and Other Fills*.

The earthworks design will ensure that all necessary measures shall be taken to mitigate any adverse effects on the surrounding area and to prevent flooding, pollution and vibration. The design shall assume that topsoil shall be removed where covered by embankment fill of less than 3 metres in height. The design shall consider the implications on embankment stability and settlement where topsoil shall be left in place beneath embankments as part of the earthworks design.

The design will include for cut-off drainage at the limits of earthworks where the adjacent ground slopes towards the earthworks. Any such cut-off ditches will have stable side slopes and, where required, such ditches shall be treated to prevent erosion. Geosynthetics / Geotextiles in the design will have a minimum operational life span of 120 years. The design will ensure that particular measures for dealing with peat and organic soils liable to significant secondary settlement effects shall be limited to:

- Soil Removal – excavation and replace all existing susceptible soils; or
- Supported Embankments – where the soft foundation soils are not subject to imposed loadings; or
- Soil Modification – in situ modification of soil stiffness and secondary compression characteristics by means of an appropriate methodology. (Drainage and surcharge methods will only be examined for soils that do not exhibit significant secondary settlement effects.)

The design will pay due regard to the effects of settlement; including all settlement effects associated with the presence of peats and organic soft soils to ensure that settlement of embankments is prevented or otherwise provided for in the design. Design solutions are intended to ensure that the effects of primary consolidation and secondary compression, if not otherwise prevented, shall be substantially complete before the road pavement construction commences.

Road Pavement Design

The pavement of the new road will be designed in accordance with the *Structural Assessment and Maintenance Method* as outlined in the TII DMRB. It is noted that DMURS is silent on the structural design of pavements. The pavement shall be one of the following options depending on cost effectiveness:

- Fully Flexible Construction for either 20 or 40 year Design Life;
- Flexible Composite for 40 year Design Life;
- Rigid CRCP Construction for 40 year Design Life.

The design of the Capping Layer and the Sub-Base shall follow the requirements of the TII Standards: Foundations as noted earlier. The design depth of the pavement layers will follow the requirements of TII Standards based on the cumulative number of standard axles over the pavement life. The pavement materials to be used and method of construction will follow the requirements of the TII's *Specification for Road Works*.

Signage and Delineation

Directional and Regulatory Signage for the scheme will be provided in accordance with the Department of Transport '*Traffic Signs Manual 2010*' and the '*Road Traffic (Signs) Regulations, 1997*' and any subsequent amendments to these documents. All Regulatory and Warning signage will be consistent with the Design Speed of the mainline and secondary roads. All directional information signage will be consistent with the classification and Design Speed of the scheme. All advance directional signs and directional signs will be designed using the 'AutoSign' traffic sign design software. Road markings, reflective markings and studs shall be provided in accordance with the Department of Transport '*Traffic Signs Manual*' and in accordance with Series 1200 of the '*Specification for Road Works*' as published by the TII. Temporary traffic signs during construction will comply with Chapter 8 the '*Traffic Signs Manual 2010*' and in accordance with Series 1200 of the '*Specification for Road Works*' as published by the TII.

Public Lighting

Lighting Design will be in accordance with the requirements of BS 5489-1 (2013) Code of Practice for the Design of Public Lighting and ISEN 13201-2 (2015) Road Lighting Part 2, Performance Requirements and Meath County Council Guidelines. The lighting design is proposed to utilise lighting columns whose height is sensitive to the scale of the built and planned environment. Consideration is to be given to providing lower intensity pedestrian lanterns mounted on the same columns as the streetlights. In accordance with DMURS 4.2.5 only white light sources will be considered in the design of street lighting (metal halide, white SON, Cosmopolis and LED). The installation of the lighting network will comply with the requirements of the '*Specification for Road Works*' as published by the TII and in accordance with the recommendations of BS5489 and BS5649. Full cut-off lanterns will be utilised to minimise night-time visual intrusion if required by the Environmental Assessment.

6. ROUTE OPTIONS

6.1. General

A total of five alignment options were considered by the design team as follows:

- A Do Nothing Option;
- A Do Minimum Option;
- A Do Something Alternative I – Red Northern Alignment;
- A Do Something Alternative II – Blue Central Alignment;
- A Do Something Alternative III – Green Southern Alignment.

Each of the above 5 no. options is discussed in turn below with the various benefits and disbenefits of each set out. Thereafter all of the alternatives are considered in a multi-criteria assessment in order to determine an Emerging Preferred Route. A copy of the Horizontal and Vertical alignments of each option is included in Appendix B.

6.2. Do Nothing Option

The Do Nothing option means maintaining the status quo. Thus, part of the Infrastructure Strategy of the Ratoath LAP would not be realised. In addition, the recent LIHAF funded investment in the northern section of the Relief Road would be negated and future development in the Town would be constrained.

In Chapter 7, *Infrastructure*, the LAP notes the location of Ratoath at the junction of the R155 and R125 regional roads and the increasing use of this road network as an outer orbital route for Dublin City has resulted in significantly increased traffic and particular HGV traffic passing through the centre of the town. A Do Nothing strategy would perpetuate this undesirable position.

The LAP further notes that, in addition, increasing traffic levels between the R155 and Ashbourne using the Ballybin Road and connecting Ratoath with Ashbourne has recently created a new traffic “desire line”. The growth in population and especially the increase in the number of vehicles on the roads are resulting in pressure on road infrastructure. The pivotal location of Ratoath within the County and its proximity to Dublin means that improvements to the existing road network are of critical importance to the economic development of Ratoath and the quality of life for its inhabitants. The Do Nothing option would militate against such necessary network improvements.

The traffic patterns outlined in the LAP have resulted in significant volumes of vehicles passing unnecessarily through the town. This has a negative impact on the attractiveness of the Town Centre and the degree to which it is pedestrian and cycle friendly. It is an objective of the Planning Authority to put in place mechanisms which will relieve the historic central area of Ratoath from these pressures. The Do Nothing option would militate against such necessary network improvements.

There are a number of objectives in the LAP to improve the local road network in Ratoath. These include to reserve and protect from development the bypass corridor from the R155 Fairyhouse Road to the R125 Ashbourne Road, with the aim of securing a southern by-pass of the town between these roads. It is intended that this road will be developer driven, constructed in tandem with development occurring in the vicinity.

Infrastructure Objective 2 states as follows:

- **INF OBJ 2:** To reserve and protect from development the bypass corridor from the R155 Fairyhouse Road to the R125 Ashbourne Road.

It is evident then, from all of the foregoing, that the adoption of a Do Nothing option would be unsustainable in the context of the proper planning and development of Ratoath.

In the above context then, the Do Nothing option is not considered to be a viable option particularly when compared with other options set out herein.

6.3. Do Minimum Option

The Do Minimum option means making minimal improvements aimed at improving the overall connectivity including cyclist and pedestrian experiences. Such Do Minimum improvements would be categorised as providing local resurfacing of existing roads or perhaps improving junction control. The Do Minimum Option would certainly not however encompass the completion of the Ratoath Outer Relief Road either in the original context of the 2009 – 2015 LAP or in the extended context of the Draft Meath County Development Plan 2020 – 2026. As with the Do Nothing option, the adoption of the Do Minimum option would mean that part of the Infrastructure Strategy of the Ratoath LAP would not be realised. In addition, as with the Do Nothing option, the recent LIHAF funded investment in the northern section of the Relief Road would be negated and future development in the Town would be constrained.

To repeat, there are a number of objectives in the LAP to improve the local road network in Ratoath. These include to reserve and protect from development the bypass corridor from the R155 Fairyhouse Road to the R125 Ashbourne Road, with the aim of securing a southern by-pass of the town between these roads. It is intended that this road will be developer driven, constructed in tandem with development occurring in the vicinity.

Infrastructure Objective 2 states as follows:

- **INF OBJ 2:** To reserve and protect from development the bypass corridor from the R155 Fairyhouse Road to the R125 Ashbourne Road.

The reality of the Do Minimum option is that it would replicate all of the failings of the Do Nothing option in terms of continuing undesirable Town Centre congestion, negation of previous infrastructure investment, posing a constraint on future development potential and failing to provide for the proper planning and development of Ratoath. In the above regard, and as with the Do Nothing option, the Do Minimum option is not considered to be a viable option particularly when compared with other options set out herein.

6.4. Alternative I: Red Northern Alignment

The Red alignment runs along the northern end of the Study Area as shown below.



Figure 31: Red Northern Alignment

The route commences at the southern end of the northern section of the Ratoath Outer Relief Road which is currently under construction. It continues in a general south-westerly direction passing east of Fairyhouse Lodge and then south of the houses on the southern side of Glascarn Lane. The route then turns westwards and continues to form a tee junction with the R155 Fairyhouse Road.

The horizontal and vertical alignments of the Red Route are shown in Drawings Nos. L308-OCSC-XX-XX-SK-C-0010 S2 Rev. P01 and C-0011 S2 Rev. P01. A copy of same is included in Appendix B with an extract replicated in Figure 32 shown adjacent. The Red Route replicates the alignment of the Ratoath Outer Relief Road as indicated in the 2009 – 2015 Ratoath LAP.

This route has a number of benefits including directness and short length. The route is approximately 1,050 m in length from the R155 to the southern termination of the northern section of the Relief Road currently under construction. It provides ready access to the R155 and it completes the link between the R125 and R155 as set out in the LAP. In that context the route fulfils the transportation objective of the previous LAP and CDP.

The Red Route has a number of disbenefits, however. Its termination point on the R155 is over 1 kilometre north of the Fairyhouse Racecourse and Tattersalls entrances and its horizontal alignment offers little or no possibility of providing a spur access to either of these complexes. In that context the route does nothing to advance the economic and tourism objectives of the Draft County Development Plan 2020 – 2026. In addition to isolating both Fairyhouse and Tattersalls, the northern termination point of the Red Route means that a significant number of existing dwellings, some with direct frontage and access to the R155 remain within the outer heavily trafficked cordon of Ratoath's regional road network – Table 5 earlier. This includes a complex of approximately 25 dwellings in and around the Commons Lane area of the town.

The vertical alignment of the Red Route is shown in the lower viewpoint of Figure 32. The route commences at the R155 Fairyhouse Road at a level of 92.2m above ordnance datum (AOD) and rises gently to a local high of 93.46 m AOD. Thereafter it follows a gently undulating vertical path to a second local high point of 92.88 m at chainage 4+90 m. North-eastwards from this local high point, the route falls continuously northwards at relatively flat gradients of 0.61, 1.34 and 1.13% where it reaches an overall low point of 87.50m AOD at the point where it joins with the southern termination of the northern section of the Ratoath Outer Relief Road. The vertical alignment generally follows the existing ground profile with low levels of cut and/or fill. The maximum level difference between the existing and proposed profile is of the order of 600 mm only.

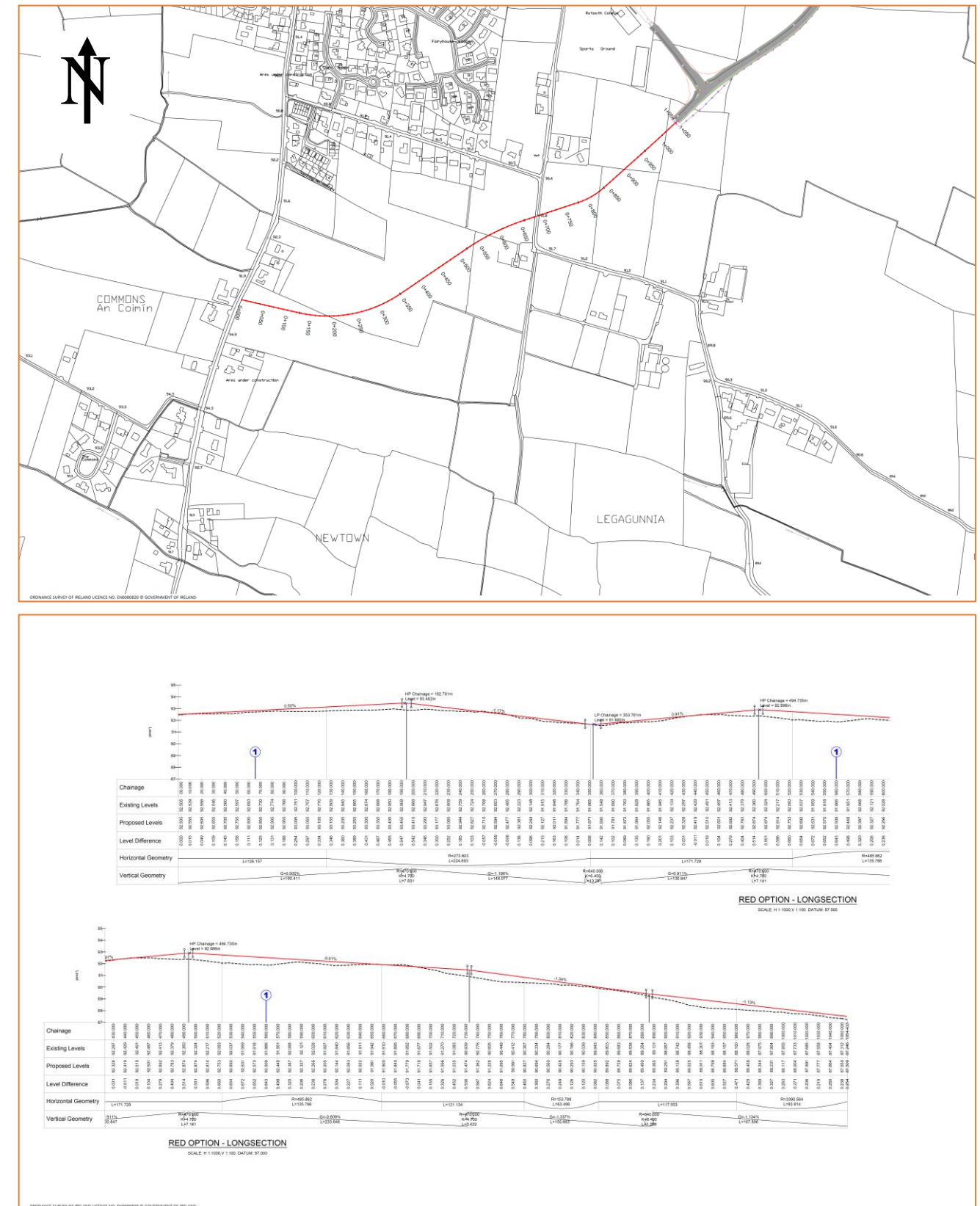


Figure 32: Red Northern Route Horizontal & Vertical Alignment

6.5. Alternative II: Blue Central Alignment

The Blue alignment runs through the centre of the Study Area as shown below.

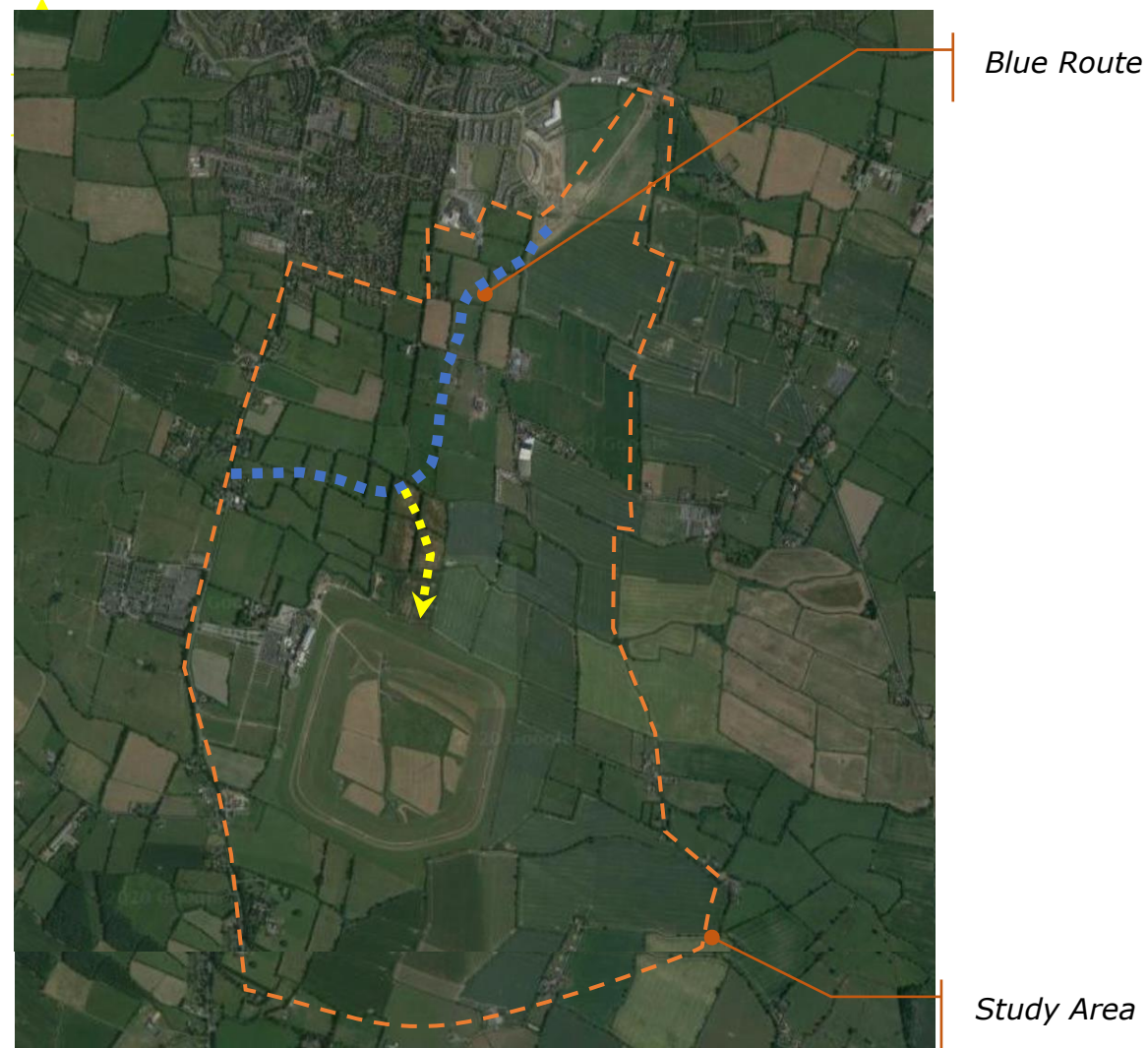


Figure 33: Blue Central Alignment

The route again commences at the southern end of the northern section of the Ratoath Outer Relief Road which is currently under construction. It continues in a general south-westerly direction as with the Red Route, passing east of Fairyhouse Lodge. It then turns almost due south for approximately 500 m running roughly parallel with and east of the R155 Fairyhouse Road. The route then turns due west and continues to form a tee

junction with the R155 Fairyhouse Road. The horizontal and vertical alignments of the Red Route are shown in Drawings Nos. L308 -OCSC-XX-XX-SK-C-0012 S2 Rev. P01 and C-0013 S2 Rev. P01. A copy of same is included in Appendix B with an extract replicated in Figure 34 shown over.

The Blue route has a number of benefits. Albeit it is less direct and longer than the Red Northern Route. It is 1,600 m in length from the R155 to the southern termination of the northern section of the Relief Road currently under construction. It again provides ready access to the R155 and it completes the link between the R125 and R155 as set out in the LAP. In that context the route again fulfils the transportation objective of the previous LAP and CDP. The Blue Route's termination point on the R155 Fairyhouse Road is, at 600 m distance, significantly closer to the Fairyhouse Racecourse and Tattersalls entrances than the Red Northern Route and its horizontal alignment offers the opportunity as shown arrowed yellow in Figure 33, (in and around chainage 6+00) of providing a spur access to the Fairyhouse Racecourse complex. In that context, the route significantly advances the economic and tourism objectives of the Draft County Development Plan 2020 – 2026. In addition to providing for the tourism and economic objectives of the Draft Meath County Development Plan 2020 – 2026 with respect to Fairyhouse and Tattersalls, the R155 termination point of the Blue Route removes the complex of residential properties in and around Commons Lane from the outer, heavily trafficked, cordon of Ratoath's regional road network. At current levels this removes 4,677 pcu's per day from passing these houses and the Commons Lane junction – see Table 5 earlier.

The vertical alignment of the Blue Route is shown in the lower viewport of Figure 34. The route commences at the R155 Fairyhouse Road at a level of 93.2 m above ordnance datum (AOD) and gently undulates as it moves eastwards and then northwards across country. The route reaches a high point of 93.52 m at chainage 3+10 and a second high of 92.65 m at chainage 9+80 before falling continuously northwards at relatively flat gradients of 0.50, 0.82, 1.84 and finally 1.03% where it reaches an overall low point where it joins with the southern termination of the northern section of the Ratoath Outer Relief Road. The vertical alignment generally follows the existing ground profile with low levels of cut and/or fill. The maximum level difference between the existing and proposed profile is 1.066 m of fill at chainage 6+60.

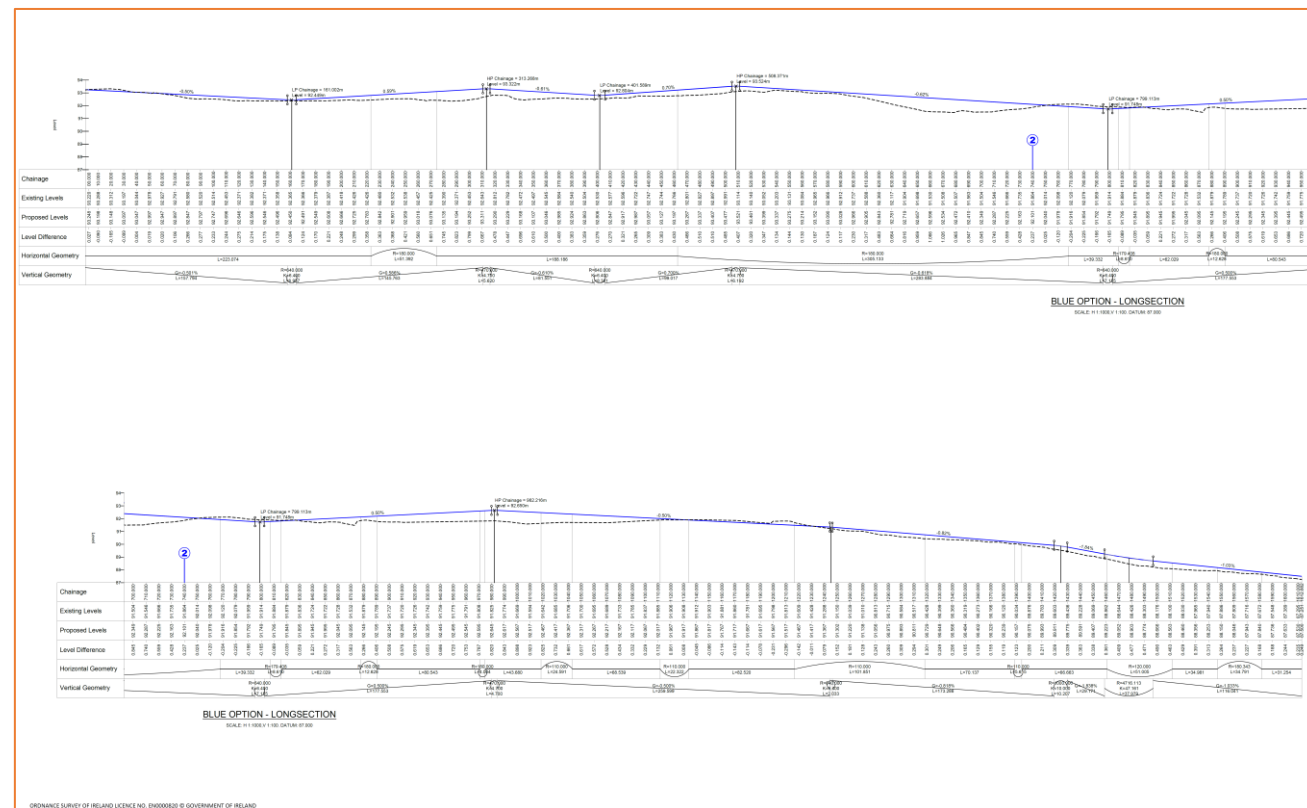
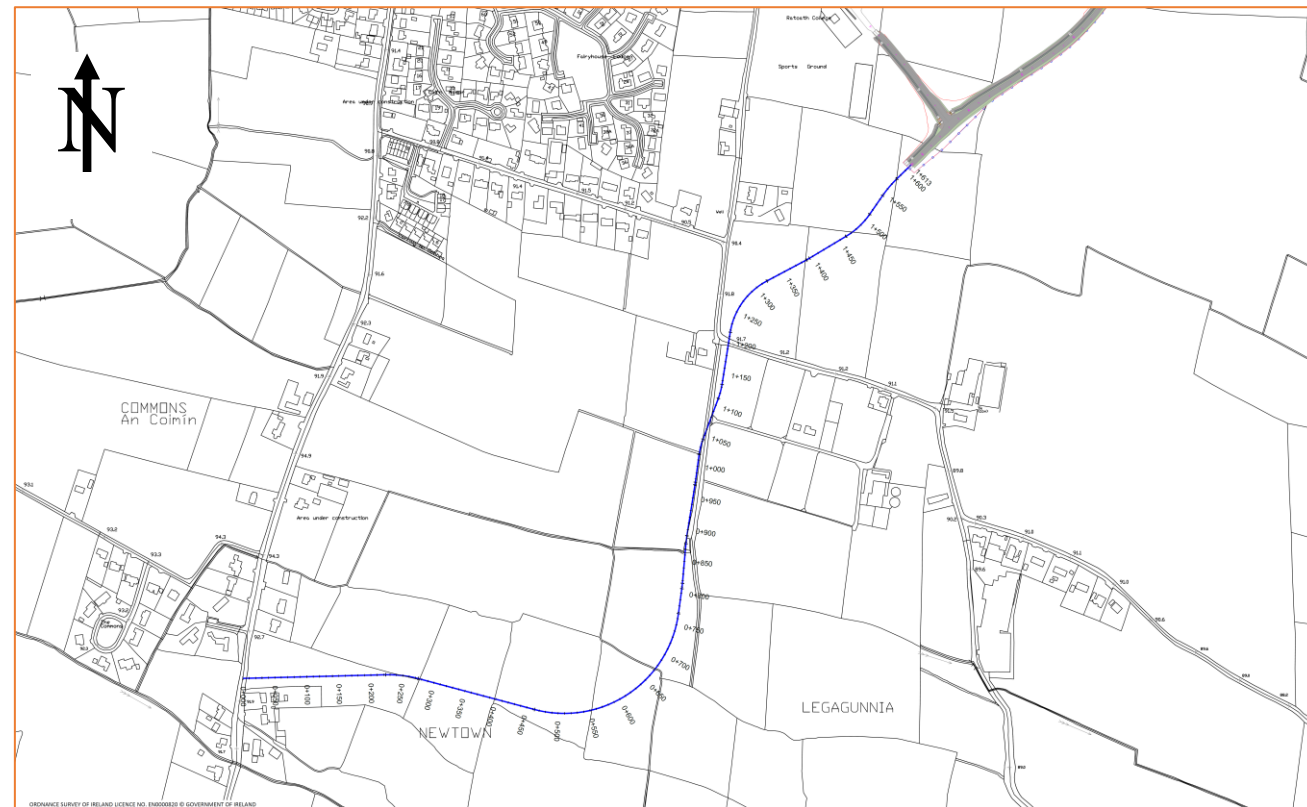


Figure 34: Blue Central Horizontal & Vertical Alignment

6.6. Alternative III: Green Southern Alignment

The Green alignment runs through the south of the Study Area as shown below.



Figure 35: Green Southern Alignment

The route again commences at the southern end of the northern section of the Ratoath Outer Relief Road. It continues in a general south-westerly direction, as with the Red and Blue Routes, passing east of Fairyhouse Lodge. It then turns almost due south as with the Blue Route, this time for approximately 750 m running again roughly parallel with, and east of, the R155 Fairyhouse Road. The route then turns due west and continues to

form a tee junction with the R155 Fairyhouse Road. The horizontal and vertical alignments of the Red Route are shown in Drawings Nos. L308 -OCSC-XX-XX-SK-C-0014 S2 Rev. P01 and C-0015 S2 Rev. P01. A copy of same is included in Appendix B with an extract replicated in Figure 36 adjacent.

The Green route is again less direct and longer than the Red Route. It is approximately 1,850 m in length from the R155 to the northern section of the Relief Road. It again provides access to the R155 and completes the R125 and R155 link. The Green Route's termination point on the R155 Fairyhouse Road is, at 390 m distance, significantly closer to the Fairyhouse Racecourse and Tattersalls entrances than either of the other routes, and its horizontal alignment again offers the opportunity of providing a spur access to the Fairyhouse Racecourse complex. In that context, the route significantly advances the economic and tourism objectives of the Draft County Development Plan 2020 – 2026. The R155 termination point of the Green Route also removes the complex of residential properties in and around Commons Lane from within outer heavily trafficked cordon of Ratoath's regional road network. As noted earlier, this removes 4,677 pcu's per day from passing these houses and the Commons Lane junction(at current traffic levels).

The Green Route has some disbenefits. These include its extended length and cost at no great benefit compared to the Blue Route. In addition, its junction on the R155 may be too close to the current Fairyhouse Racecourse and Tattersalls entrances which may cause congestion issues on event days. The alignment of the route means it has to bridge the Fairyhouse Stream which runs east to west through the south of the Study Area.

The vertical alignment of the Green Route is shown in the lower viewport of Figure 36. The route commences at the R155 Fairyhouse Road at a level of 92.0 m or so above ordnance datum (AOD) and gently undulates as it moves eastwards and then northwards across country. The route reaches a high point of 92.78 m at chainage 13+10 before falling continuously northwards at relatively flat gradients of 0.82 and 1.22% where it reaches an overall low point where it joins with the southern termination of the northern section of the Ratoath Outer Relief Road. The vertical alignment again generally follows the existing ground profile with low levels of cut and/or fill. The maximum level difference between the existing and proposed profile is 1.090 m of fill at chainage 13+10.

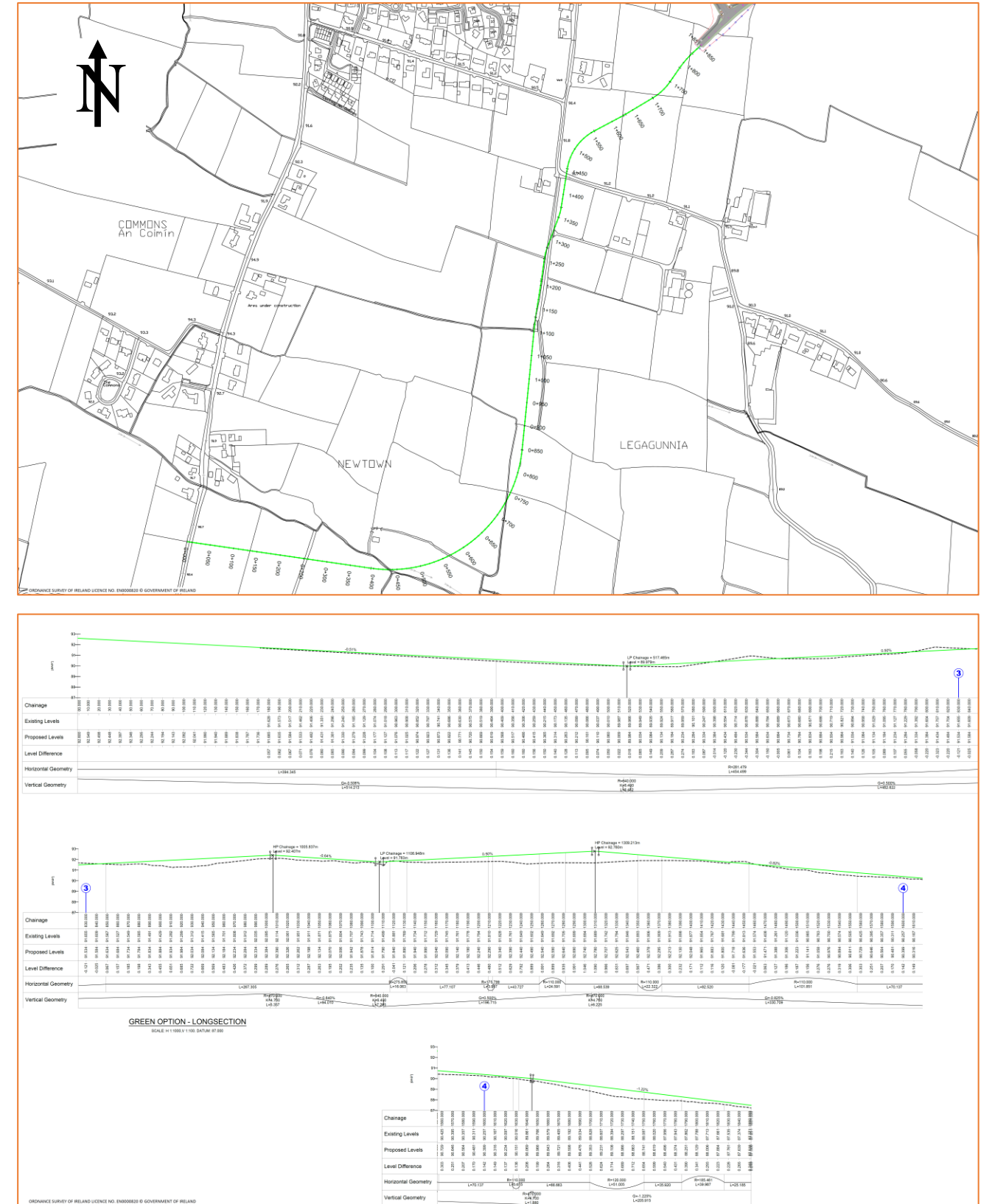


Figure 36: Green Southern Horizontal & Vertical Alignment

7. EMERGING PREFERRED ROUTE

7.1. General

Section 6 has set out and described 5 no. alignment options as follows:

- A Do Nothing Option;
- A Do Minimum Option;
- A Do Something Alternative I – Red Northern Alignment;
- A Do Something Alternative II – Blue Central Alignment;
- A Do Something Alternative III – Green Southern Alignment.

Each of the above has been assessed under a multi-criteria assessment matrix and the assessment results analysed in order to bring forward an Emerging Preferred Route for further design development. Prior to carrying out the assessment it is worth reviewing each of the options in a single figure. In this regard each of the 3 no. Do Something alignments is shown side by side in Figure 37 adjacent.

7.2. Assessment Criteria

The assessment criteria against which each route is being considered are as follows (see Table 6 over):

- Directness and length of alignment;
- Compliance with LAP Objectives;
- Impact on existing dwellings;
- Relationship with Fairyhouse & Tattersalls;
- Cost of construction;
- Buildability;
- Safety;
- Relief of Town Centre Congestion.

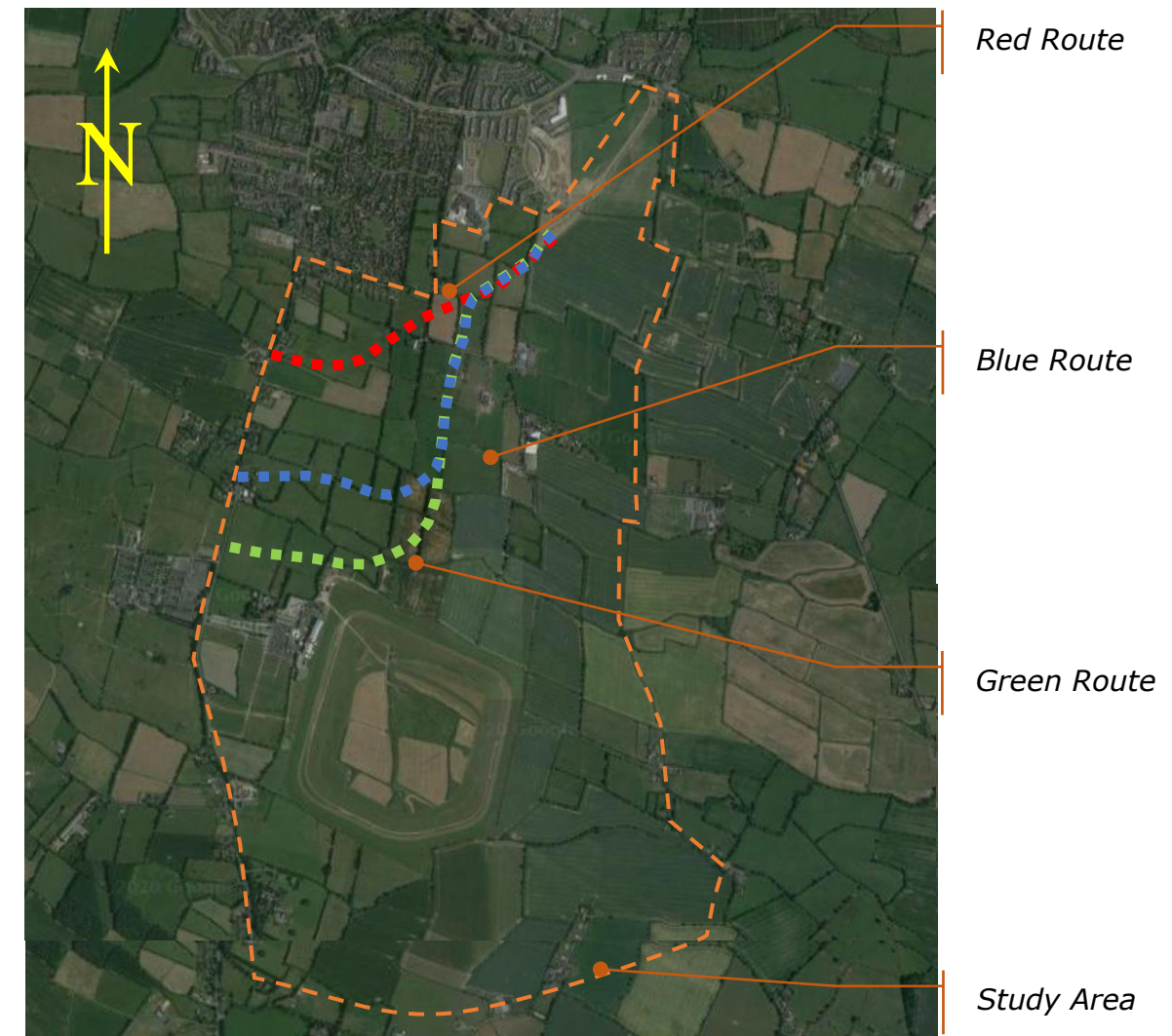


Figure 37: All Do Something Alignments

7.3. Comparisons Against Assessment Criteria

The comparison is being undertaken using a 'traffic light' marking system as follows:

- Red means a Strong or Medium Negative Impact;
- Amber means a Neutral Impact;
- Green means a Strong or Medium Positive Impact.

The results of the impact assessment are shown in Table 6 over.

Route Name	Directness & Length	LAP Compliance	Impact on Existing Dwellings	Fairyhouse & Tattersalls Relationship	Cost of Construction	Buildability	Safety	Relieves Town Centre Congestion
Do Nothing	↔	↔	↔	↔	↗	↗	↔	↔
Do Minimum	↔	↔	↔	↔	↗	↗	↔	↔
Red Route	↗	↗	↔	↔	↘	↘	↗	↗
Blue Route	↗	↗	↗	↗	↔	↘	↗	↗
Green Route	↘	↗	↗	↔	↔	↔	↗	↗

Table 6: Multi-Criteria Assessment Matrix

The table shows the relative rankings of each of the alternative options against the various assessment criteria. The reasoning behind the rankings set out in the table is discussed, for each of the 5 no. alternative routes, in the following section. Thereafter an Emerging Preferred Route is selected for further consideration and design development.

7.4. Discussion

Do Nothing Option:

The Do Nothing option scores badly in terms of both *Directness* and *LAP Compliance* given that no dedicated route is being provided nor will a Ratoath Outer Relief Road be built. This option also scores badly in terms of *Safety* and *Town Centre Congestion* as no dedicated route is provided so that pedestrians and cyclists will have to use existing roads which are substandard in places and through traffic will continue to mix with vulnerable road users in Town Centre locations. Given that the Do Nothing option does not involve any construction, this option has no *Buildability* or *Cost of Construction* issues. The Do Nothing option scores negatively under *Impact on Current Dwellings* and *Relationship with Fairyhouse & Tattersalls* as it perpetuates heavy traffic passing the complex of dwellings in and around Commons Lane and it provides no linkage to the strategically important equine complexes south of the Town Centre.

Do Minimum Option:

The Do Minimum is similar in many ways to the Do Nothing option. It again scores badly in terms of both *Directness* and *LAP Compliance* given that no dedicated route is being provided nor will a Ratoath Outer Relief Road be built. This option also scores badly in terms of *Safety* and *Town Centre Congestion* as no dedicated route is provided so that pedestrians and cyclists will again, have to use existing roads which are substandard in places and through traffic will continue to mix with vulnerable road users in Town Centre locations. Given that the Do Minimum option involves minimal construction, this option has a neutral *Buildability* and *Cost of Construction* rating. The Do Minimum option also scores negatively under *Impact on Current Dwellings* and *Fairyhouse & Tattersalls Relationship* as it perpetuates heavy traffic passing the complex of dwellings in and around Common Lane and it provides no linkage to the equine complexes.

Red Route Option:

The Red Route scores well in terms of *Directness* given that, at just over a kilometre in length, it is the shortest of the 3 no. Do Something options considered. It also scores well in terms of *LAP Compliance* as it follows to the indicative route set out in the 2009

– 2015 LAP. The route scores badly in terms of its *Impact on Existing Dwellings* and on *Fairyhouse & Tattersalls Relationship* as its termination point on the R155 means that it perpetuates heavy traffic passing the complex of dwellings in and around Commons Lane and it further provides no linkage to the equine complexes and little or no option for same. The Red Route scores neutral under *Cost of Construction* and *Buildability* as it is again, the shortest of the Do Something Routes. The Route scores well under *Town Centre Congestion* relief but less well under *Safety* than do either the Blue or Green Routes. This latter rating is based on the perpetuation of heavy through traffic at the Commons Lane residential complex.

Blue Route Option:

The Blue Route scores less well than the Red Route under *Directness* given its somewhat longer length than the Red Route at 1.6 kilometres. However, the Blue Route scores well under both *LAP Compliance* and *Impact on Existing Dwellings* as it provides for a Ratoath Outer Relief Road between the R125 and R155 and it also removes the residential complex of 25 no. dwellings in and around Commons Lane from heavy through traffic movements. The Blue Route scores best of all routes under *Fairyhouse & Tattersalls Relationship* in that it provides for a 'front door' to the Fairyhouse Racecourse lands whilst at the same time having a junction on the R155 sufficiently far from the current Fairyhouse and Tattersalls entrances so as not to impact on either. The route scores neutral under both *Buildability* and *Cost of Construction*. This is solely due to its longer length than the Red Route. Finally, the Blue Route scores highly under both *Safety* and *Town Centre Congestion* as it provides a new, safe route, removes through traffic from Ratoath Town Centre, and takes through traffic away from the Commons Lane area of the R155 Fairyhouse Road.

Green Route Option:

The Green Route scores least well of the Do Something Routes under the *Directness* parameter with a neutral rating given its 1.85 kilometre length which is close to twice the length of the Red Route. The Green Route scores acceptably under *LAP Compliance* as it does provide for a Relief Road albeit an extended version of same. The route also scores well under *Impact on Existing Dwellings* as it removes the residential complex of 25 no. dwellings in and around Commons Lane from heavy through traffic movement, as

does the Blue Route. The Green Route scores neutral under *Fairyhouse & Tattersalls Relationship* in that while it provides for a 'front door' to the Fairyhouse Racecourse lands its alignment runs quite close to the course and could constrain future development there. In addition, the Green Route's junction with the R155 is quite close to the current Fairyhouse and Tattersalls entrances so that junction traffic could impinge on the free operation of either entrance particular on event days. The route scores negatively under both *Buildability* and *Cost of Construction*. This is a factor of the long length and the requirement to provide a bridge crossing of the Fairyhouse Stream. Finally, the Green Route scores highly under both *Safety* and *Town Centre Congestion* as it provides a new, safe route, removes through traffic from Ratoath Town Centre, and takes through traffic away from the Commons Lane area of the R155 Fairyhouse Road.

Emerging Preferred Route:

Neither the Do Nothing or Do Minimum option is considered an appropriate response to the Economic or Transport objectives of the LAP. Neither route alleviates Town Centre Congestion nor provides for Ratoath's Equine Industry. Neither route is therefore recommended for further consideration. Of the Do Something routes, the Green Route is considered to be the poorest response to the LAP requirements given its lack of *Directness* coupled with its *Buildability* and *Cost of Construction* issues. The route also has the potential to impinge on Fairyhouse Racecourse's future development potential given its close proximity to the complex, whilst its junction with the R155 is considered to be too close to the current Fairyhouse and Tattersalls entrances. Of the remaining two routes, the Red Route is considered to be the next least attractive option given its low rating in respect of *Impact on Current Dwellings* and *Relationship with Fairyhouse and Tattersalls*. Whilst the Red Route mimics almost exactly the indicative alignment set out in the 2009 – 2015 Ratoath LAP it has been 'overtaken by events' with the new southwards focus of the Draft Meath County Development Plan 2020 – 2026 and the perceived need to leverage the local Equine Industry to provide much needed local employment in Ratoath. The Blue Route is considered to offer the best overall response to the original LAP and the new Draft County Development Plan in that it provides for an Outer Relief Road, whilst at the same time accommodating potential development of the Equine Industry and safeguarding existing dwellings. The Blue Route is therefore recommended as the Emerging Preferred Route for further design development.

8. SUMMARY & CONCLUSIONS

This report sets out to identify an Emerging Preferred Route for the completion of the southern section of the Ratoath Outer Relief Road linking the R125 Ashbourne – Ratoath Road with the R155 Fairyhouse Road. The completion of the Ratoath Outer Relief Road is an Infrastructure Objective (INF OBJ2) of the Ratoath Local Area Plan 2009 – 2015. The northern section of the route is under construction and has availed of LIHAF funding which provides local infrastructure to support residential development.

This study commences by defining the Planning Context for the provision of a Relief Road – as described immediately above. Thereafter the report establishes all of the currently identifiable constraints, within a defined 535 hectare Study Area, to the design and construction of an appropriate response to the various LAP Objectives. The report notes the changed focus in the Draft Meath County Development Plan 2020 – 2026 in respect of the potential of the bloodstock industry to provide for an expanded employment base in Ratoath and the designation of lands between the existing build up area of Ratoath and Fairyhouse/Tattersalls. This changed focus is interpreted as demonstrating the strategic importance of the Ratoath Outer Relief Road in not only providing an alternative route for undesirable traffic using the town centre, but also and rather acting as a transport thread to link the current town of Ratoath with the economic and tourism engine that is Fairyhouse and Tattersalls. Such a change in focus demands an alignment review response for the Relief Road from that shown in the original LAP.

The first part of this report goes on to set out all of the identifiable constraints to the design and construction of the Ratoath Outer Relief Road. The various constraints considered include planning policy, granted and pending planning applications, archaeology, ecology, topography & site conditions, land ownership and soils & geology. In addition to the foregoing, consideration is also given to cost of construction and buildability issues as well as to the continuing impact on existing dwellings along the R155 of heavy passing through traffic.

The second section of the report identifies a number of potential solutions to the LAP objectives. In total 5 no. alternative alignments have been developed for consideration. These include a Do Nothing and a Do Minimum option as well as a further 3 no. Do Something options. Horizontal and vertical alignments are provided for each of the Do Something options and these are described in some detail in the second section of the report.

Following a description of each route and a consideration of its impacts, both of the Do Nothing options are dismissed as not being an appropriate response to the LAP or the Draft Meath County Development Plan objectives. The Do Something options are each considered in turn against a range of criteria in order to bring forward an Emerging Preferred Route for further design consideration. The Emerging Preferred Route as selected is the Blue Route as described herein.

It is intended that the Emerging Preferred Route will now be further developed by with a view to obtaining planning permission for the scheme later this year and then commencing construction as soon as possible following the receipt of permission.



TONY HORAN
CHARTERED ENGINEER
O'CONNOR SUTTON CRONIN

APPENDIX A: SITE WALKOVER PHOTOGRAPHS



Fairyhous Racecourse R155 Entrance



Tattersalls R155 Entrance



Fairyhous & Tattersalls R155 Entrances



Commons Lane Junction

Ratoath Outer Relief Road Constraints Study & Route Options Report
Photographic Imagery of 24th February 2020



Fairyhous Stream



Ratoath Stream



Northern Section of RORR in Construction



Glascarn Lane East

APPENDIX B: ROUTE OPTIONS DRAWINGS



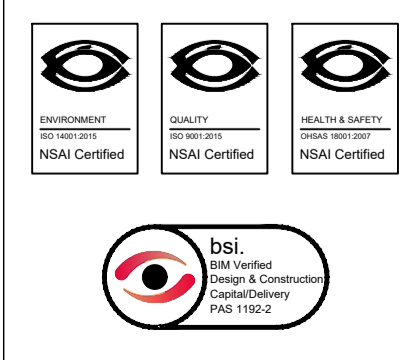
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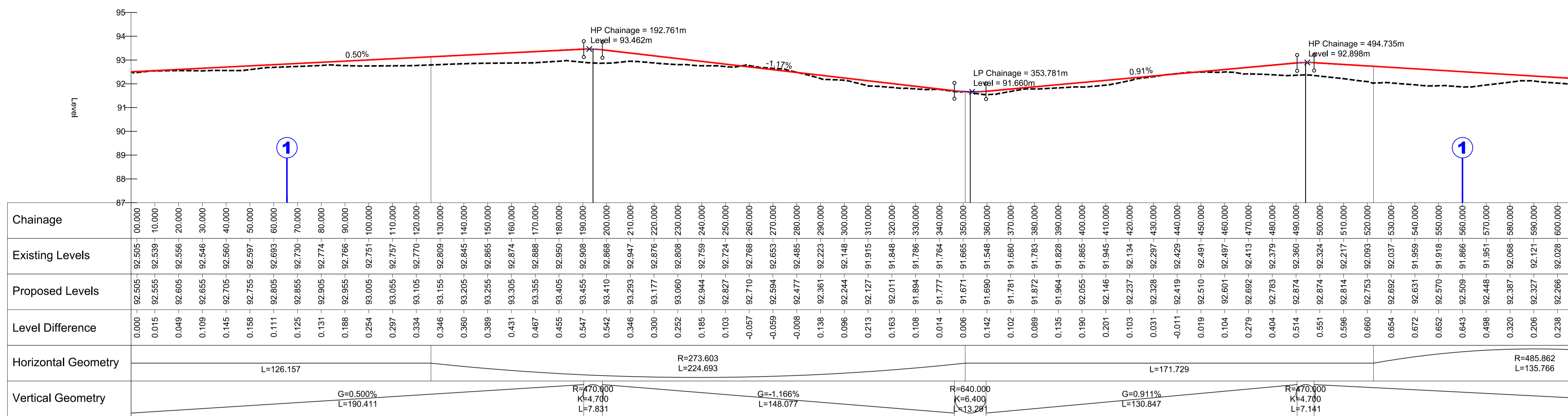
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Client: **BEO PROPERTIES LIMITED**
 Project: **ROAD AND GREENWAY DESIGN**
RATOATH RELIEF ROAD
 Title: **PLAN LAYOUT - RED OPTION**

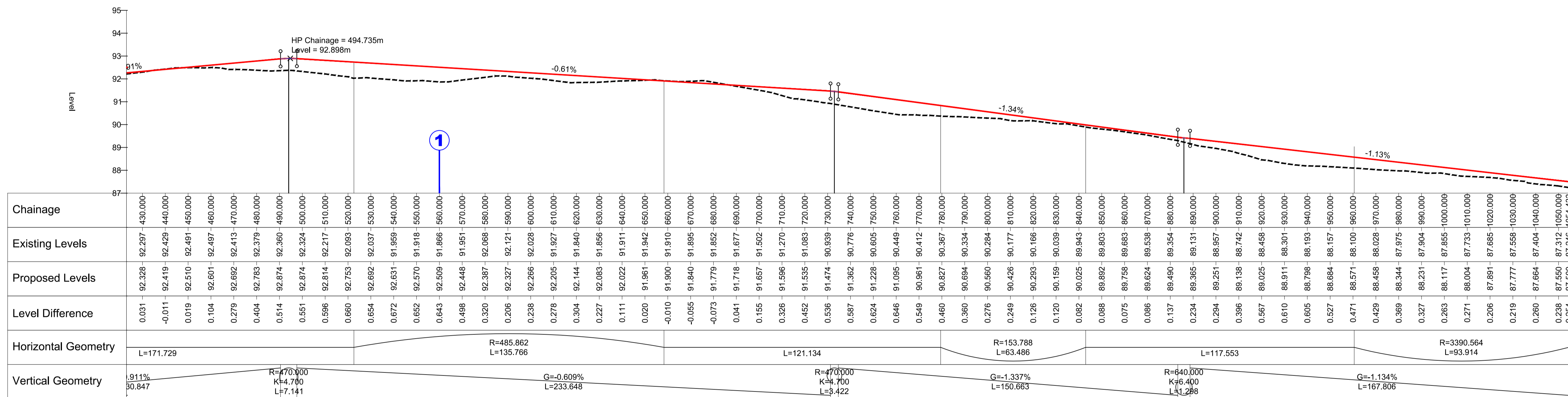
Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
L308	OCSC	XX	XX	SK	C	0010	S2	P01

Date: 20.02.20 Scale: 1:500 @ A1 Drn by: OG Chkd by: PM Aprvd by: TH



RED OPTION - LONGSECTION

SCALE: H 1:1000,V 1:100. DATUM: 87.000



RED OPTION - LONGSECTION

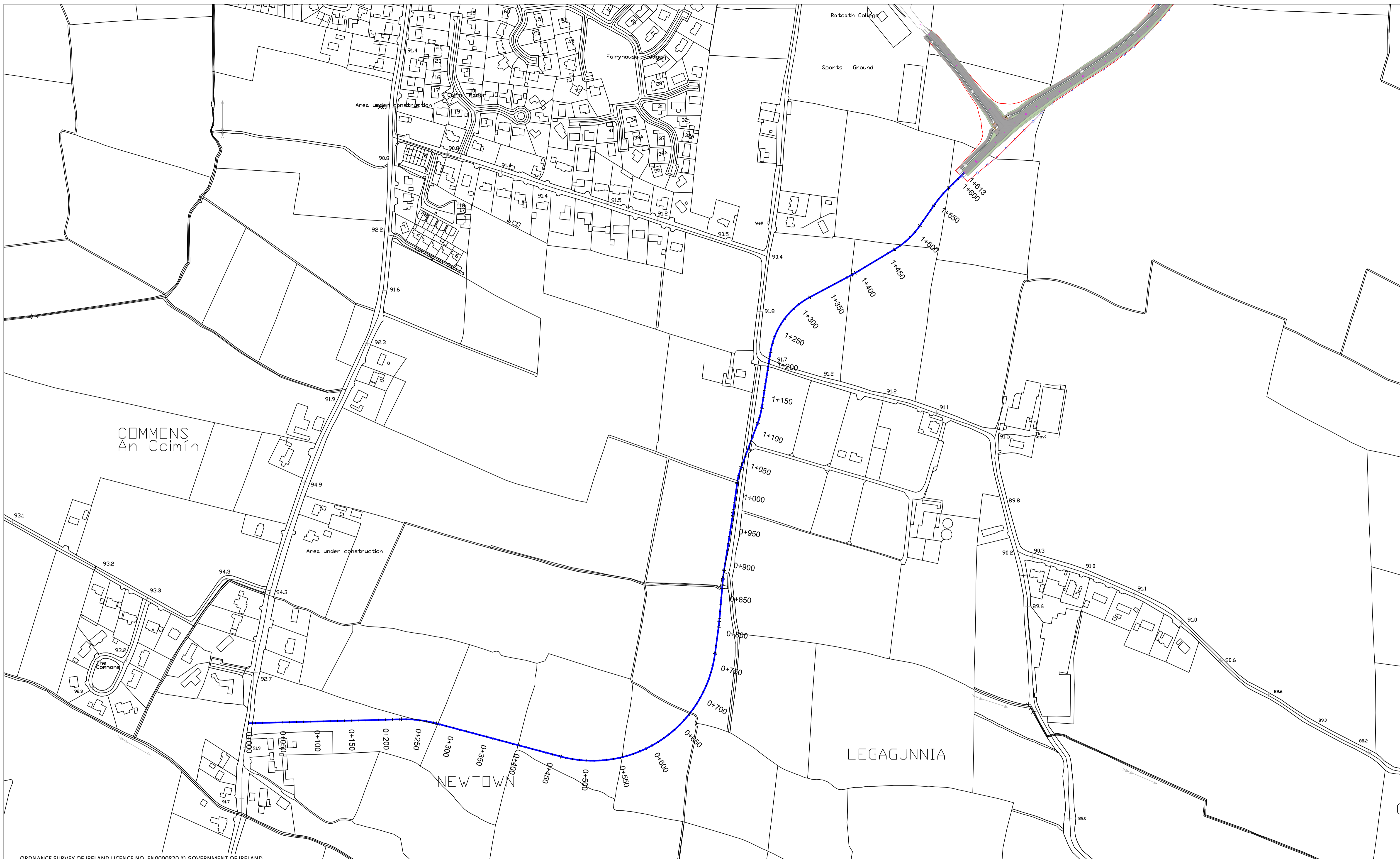
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Rev No.	Date	Revision Note	Drn by	Chkd by
P01	20.02.20	SUITABLE FOR INFORMATION	OG	PM

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Rev No.	Date	Revision Note	Drn by	Chkd by
P01	20.02.20	SUITABLE FOR INFORMATION	OG	PM

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Client:	BEO PROPERTIES LIMITED											
Project:	ROAD AND GREENWAY DESIGN											
	RATOATH RELIEF ROAD											
Title:	PLAN LAYOUT - BLUE OPTION											
Code	Originator	Zone	Level	Type	Role	Number	Status	Revision				
L308	OCSC	XX	XX	SK	C	0012	S2	P01				
Date:	20.02.20		Scale:	1:500		@ A1	Drn by:	OG	Chkd by:	PM	Aprvd by:	TH

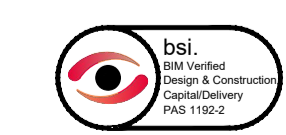


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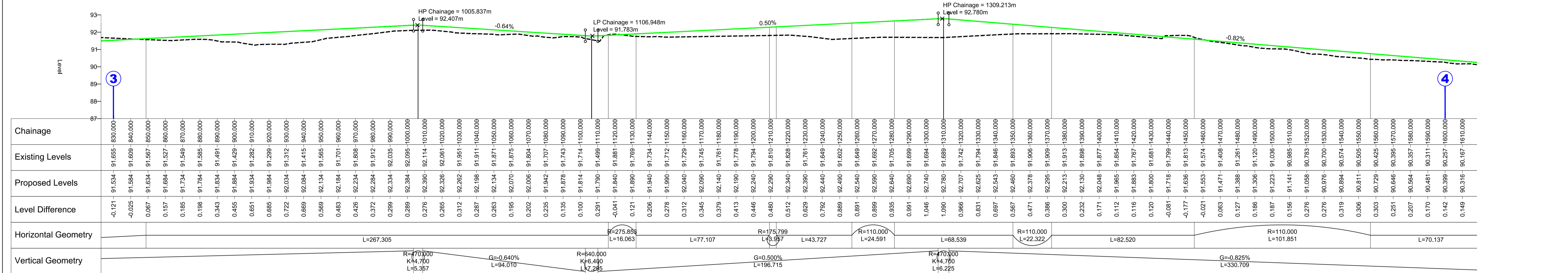
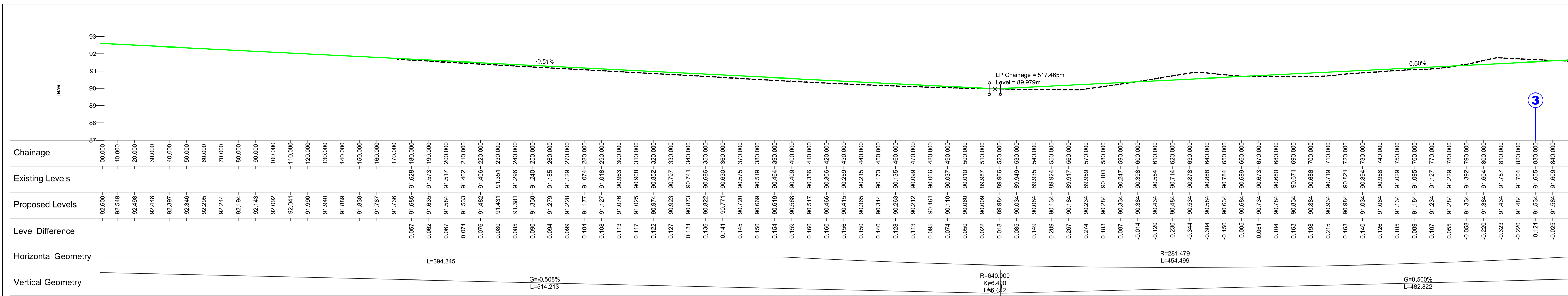


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Client: **BEO PROPERTIES LIMITED**
Project: **ROAD AND GREENWAY DESIGN**
RATOATH RELIEF ROAD
Title: **PLAN LAYOUT - GREEN OPTION**

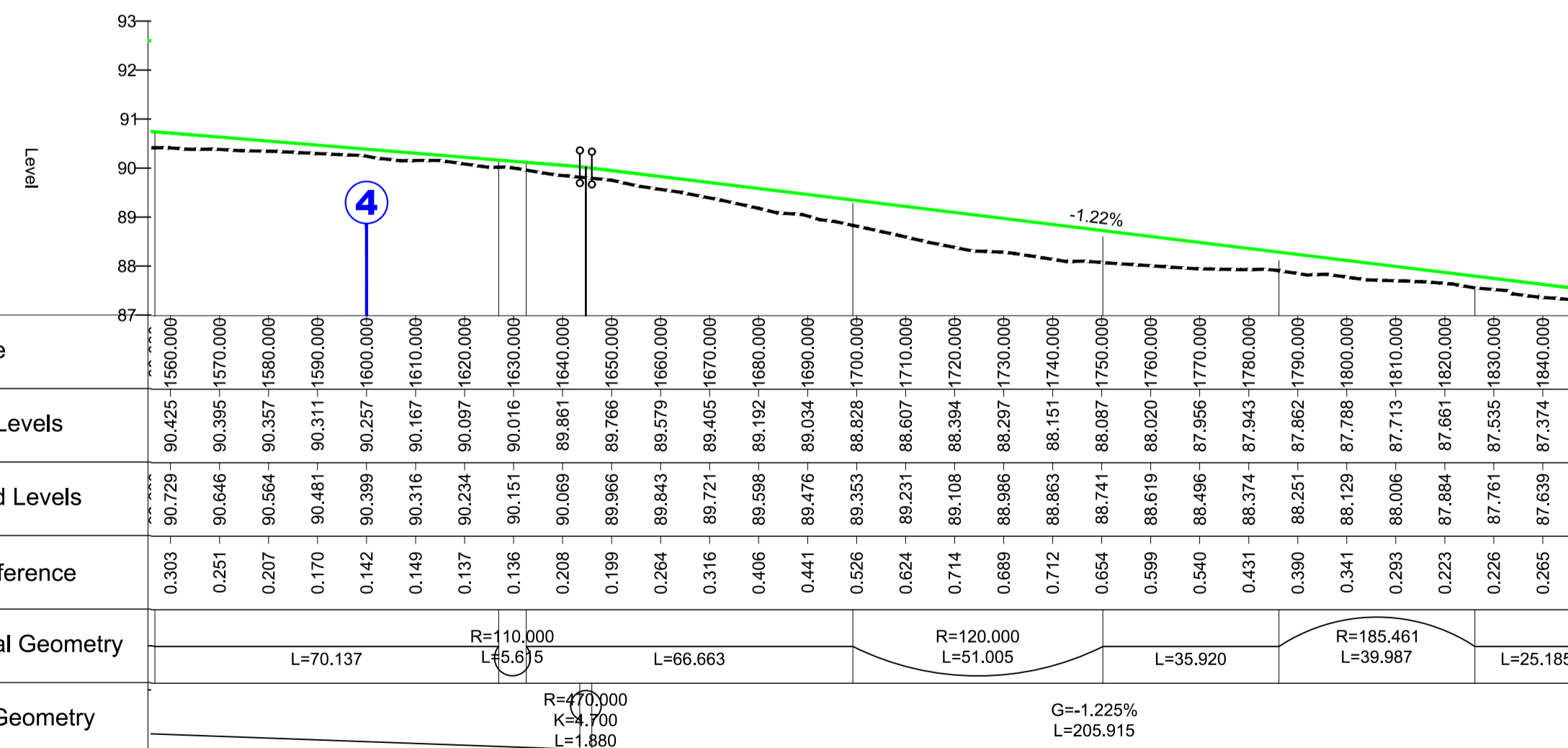
Code	Originator	Zone	Level	Type	Role	Number	Status	Revision
L308	OCSC	XX	XX	SK	C	0014	S2	P01

Date: 20.02.20 Scale: 1:500 @ A1 Drn by:OG Chkd by:PM Aprvd by:TH



GREEN OPTION - LONGSECTION

SCALE: H 1:1000, V 1:100, DATUM: 87.000

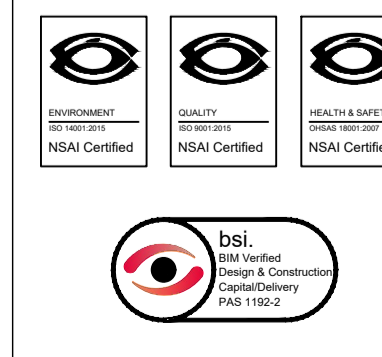


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Client:	BEO PROPERTIES LIMITED										
Project:	ROAD AND GREENWAY DESIGN RATOATH RELIEF ROAD										
Title:	LONGSECTION - GREEN OPTION										
Code	Originator	Zone	Level	Type	Role	Number	Status	Revision			
L308	OCSC	XX	XX	SK	C	0015	S2	P01			
Date:	20.02.20	Scale:	1:500	@	A1	Drn by:	OG	Chkd by:	PM	Aprvd by:	TH



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