Grange Road to Tramore Valley Park Pedestrian / Cycle Link (Inc. N40 Overbridge)

Route Selection Report

November 2016

Grange Road to Tramore Valley (incorporating N40 Overbridge) – Preliminary Design

Route Selection Report

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1 INTRODUCTION

1.1 GENERAL INFORMATION

RPS was commissioned by Cork County Council to undertake the preliminary design for a cycle/pedestrian link between Grange Road and the Tramore Valley Park. (Refer to **Figure 1.1 and 1.2**).

The Tramore Valley Park is located to the north of the study area. The Tramore Valley Park is an existing site which facilities multi-use events, BMX tracks and woodland trails etc. It is bounded by the N40 South Ring Road (SRR) to the south, Douglas to the east and north and the N27 South Link Road to the west. The R851 Grange Road is a regional road serving the populated areas of Grange, Frankfield and Douglas.

The study area between Grange Road and Tramore Valley Park is currently made of a woodland area. There is an existing trail located within the woodland area which commences to the west of Amberley Heights terminates to the west of Alden Grove. This study will extend the trail to connect with Grange Road to the south and also the Tramore Valley Park to the north via an overbridge over the N40 SRR.

Cork County Council developed a masterplan for this scheme which identified two proposed routes. These routes were referred to as 'the proposed route' and the 'western variant'.

This report looks at the proposed route options and identifies the existing constraints for both options. An evaluation of both routes has been undertaken and a preferred route developed.

Figure 1-1: Site Location Map

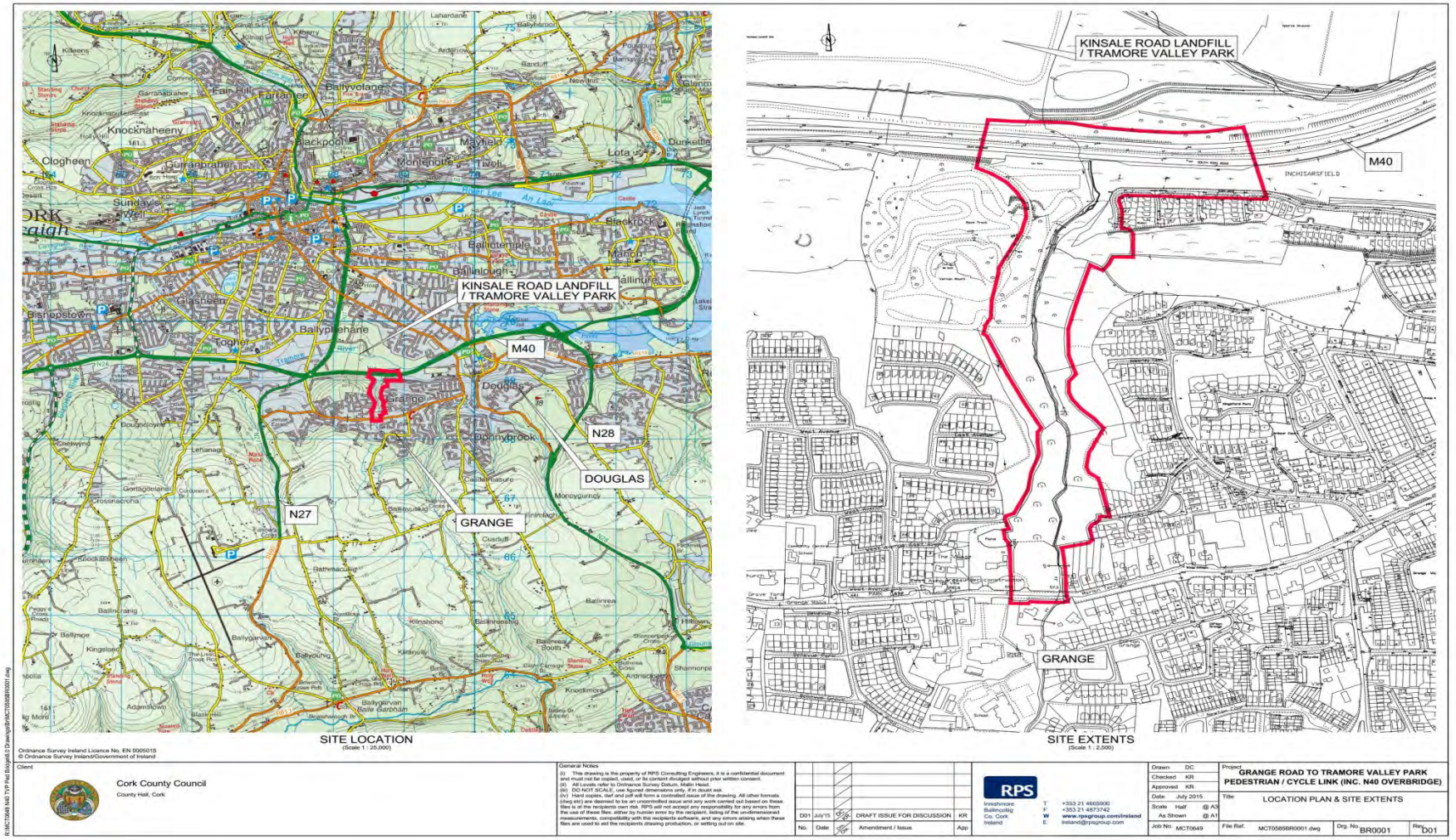


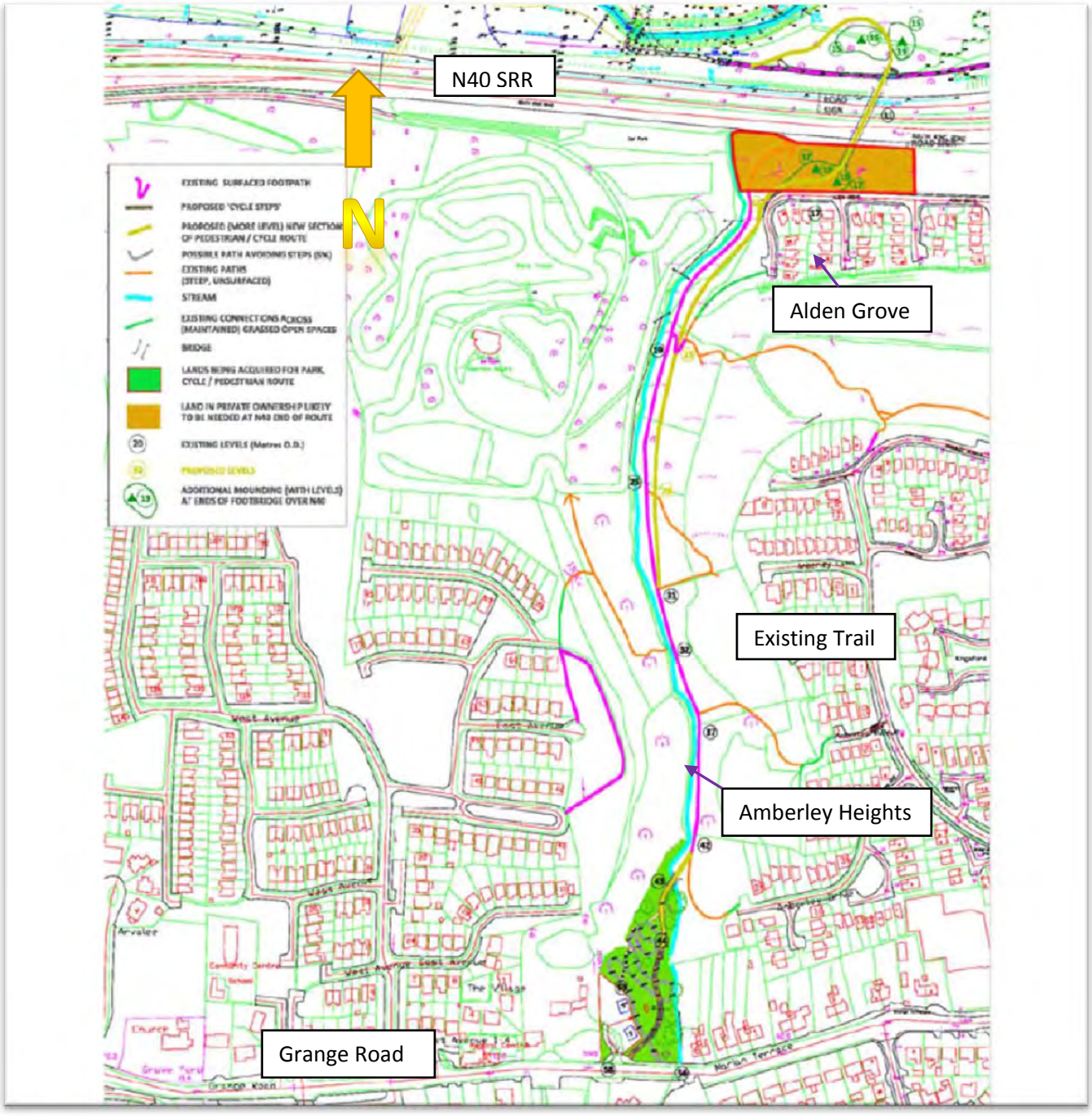
Figure 1-2: Site Location Map

2 OVERVIEW OF PROPOSED ROUTE OPTIONS

2.1 EXISTING ROUTE DESCRIPTION

The existing trail is located to the east of the stream commencing in the vicinity of Amberley Heights and terminating to the west of Alden Grove as shown in Figure 2-1 below.

Figure 2-1: Existing Trail



The existing trail varies in levels with levels of circa 59m OD to the south to levels of circa 12m OD to the north of the existing trail. The existing topography will pose some difficulties for cyclists and pedestrians.

There is an existing stream located to the west of the existing trail and existing trees and vegetation located to the east (Refer to Figure 2-2 to Figure 2-4).

Figure 2-2: Existing Trail with stream shown to the west of the trail

Figure 2-3: Existing Trail (northbound)

Figure 2-4: Existing Trail (northern section of trail)

The existing trail terminates to the west of Alton Grove as shown in Figure 2.1.

2.2 PROPOSED ROUTE AS SET OUT IN THE MASTERPLAN

The proposed route crosses through a deep valley where the average gradient is approximately 4% (1 in 25) for the first 0.7km south of the planned bridge over the N40, the gradient of the final 100m up to Grange Road is approximately 13% (1 in 8)[1].

For design purposes the route is divided into 3 separate sections comprising of:

a) The Southern Section: Cycle Steps and Pedestrian Routes through Parkland;
b) The Central (Woodland) Section;
c) The Northern Section.

A. The Southern Section

The proposed route commences on Grange Road to the south where typical levels are 55-58mOD. This section is an existing field which is located to the southwest of the study area (refer to Figure 2-5).

[1] *Source: Grange Road to Tramore Valley Park Pedestrian/Cycle Link Masterplan -CCC*

Figure 2-5: Southwest Section of Study Area

This section of the route is approximately 100m in length with a gradient of approximately 13%. The recommended gradient is 4% (1 in 25).

One possible solution along this section is the introduction of cycle steps. These are used quite widely internationally. Advantages are that they allow cycle routes to remain reasonably level, with level differences concentrated in short stepped sections with adjacent slopes or gutters, along which the bike can be wheeled.

In the masterplan/feasibility report a possible layout for this section is illustrated in **Figure 2-6.**

This layout could involve up to three possible layouts:

1. The cycle steps would start from the existing entrance splay on the Grange Road. Advantage is that users coming from the road would see them immediately, and those coming up the steps would remount their bicycles to ride along or across the road in one operation. The steps are shown broken up into flights with not more than 1.5m rise between 'landings'.
2. To provide for universal access, including access for those with prams or pushchairs a secondary pedestrian route is suggested. This would start in the southeast corner of the field and running down the field in a series of loops. In the layout shown this route has a 1 in 20 gradients with level sections at 9m intervals.
3. Pedestrians with unconstrained mobility could share the upper part of the route (no. 2) and then use steps and steeper paths connecting the NW ends of the loops on the lower part, to achieve a shorter and more direct route. This would allow separation of pedestrians from cyclists on (1) in this initial steep section.

Figure 2-6: Possible Options for Southwest section of Scheme

At the lower, northern end of this section route 1-3 would reunite. The lower part of the stream is separated from the stream by a field bank with some trees on it, which should be retained.

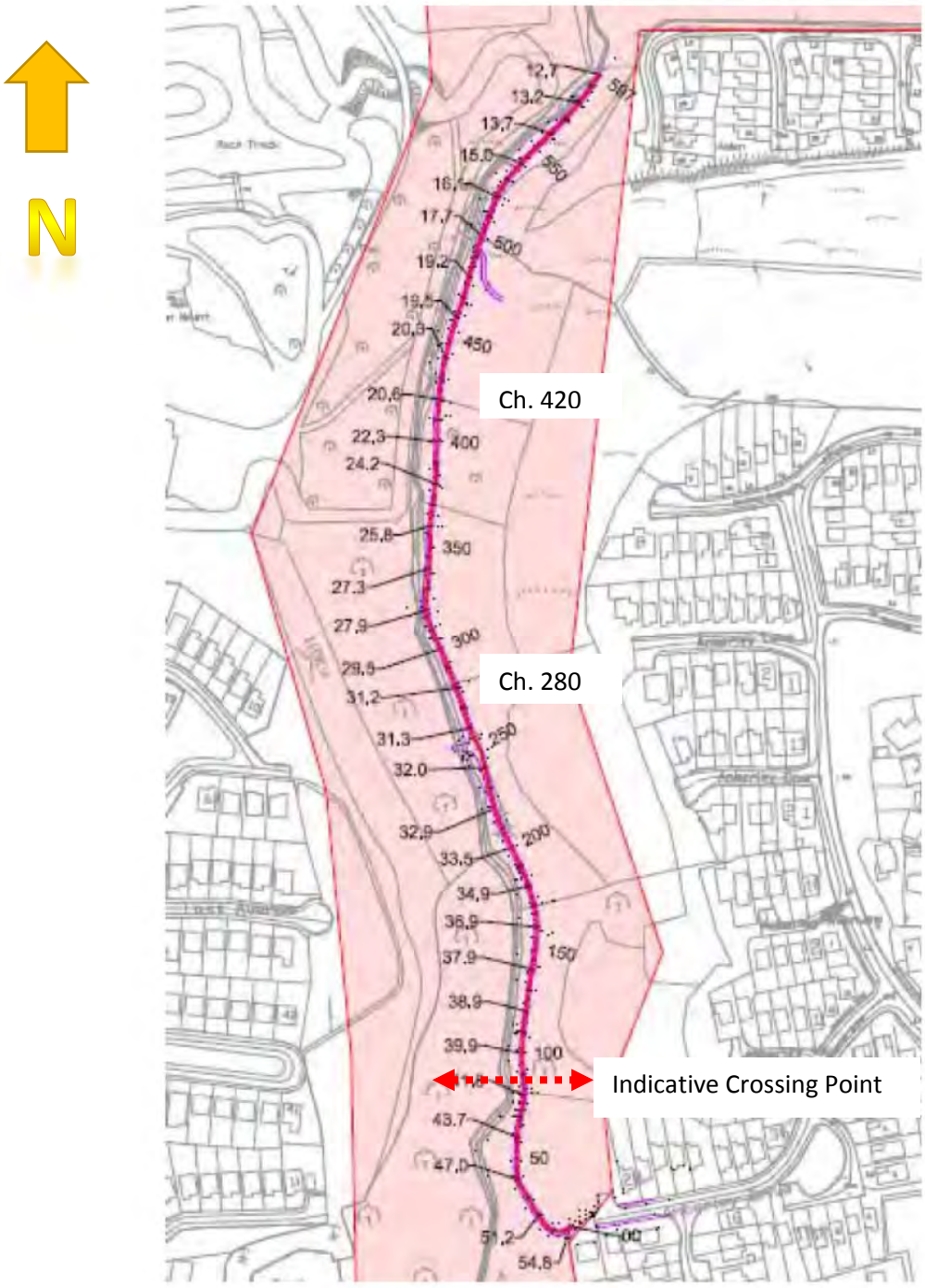
There are a number of mature trees in and on the edge of this section. A few of these would need to be removed to facilitate the proposed paths and the proposed houses.

(B) The Central (Woodland) Section

From the northern end of the field, the route would cross the stream into woodland on the far side. At the proposed crossing points, there is a pronounced meander in the stream, which has left a level dry area on the inside of the bend. A raised route which runs across this area is suggested.

It would connect to the existing path at the point as indicated on Figure 2.7 below, which is where it crosses an old field boundary north of the houses in Amberley Drive.

Figure 2-7: Survey Levels through Woodland Area



From this section onwards the gradients vary on the existing path running northbound. Average gradients calculated for sections of the path are as follows:

- Between Ch. 80 – Ch. 280 (as shown in Figure 2-7) this 200m long section of the path has an average gradient of 5.3% (1 in 19);
- Between Ch. 280-420, this 140m long section has an average gradient of 7.3% (1 in 13);
- Between Ch. 420- 500, this 80m long section has a gradient of 3.6%.

According to SUSTRANS (Table 6.7) gradient criteria:

Gradient		Criteria
3%	1 in 33	Preferred maximum
5%	1 in 20	Normal maximum – up to 100m
7%	1 in 14	Limiting gradient – up to 30m, when there is no practical alternative
>7%	Steeper than 1 in 14	For short lengths

Therefore, section Ch. 280 - Ch. 420 which has a gradient of 7.3% will exceed the recommended limits. A proposed solution is to create a new section of path primarily for cyclists, to run parallel to the existing one, but higher up the slope. This new path would have a gradient of around 4% (1 in 25). This would result in the felling of tress and possible construction of retaining structure if the cross slope required it.

Parallel to this, the existing path beside the stream would remain in place, for use by pedestrians. As it would not be intended for use by cyclists, the existing gravel surface could remain as is.

The section of path south of Ch. 280 (as shown on Figure 2.7) would be dual purpose, and serve cyclists and pedestrians. This part of the route needs to be upgraded to shared cycleway/pedestrian standards. This would include for a tarmac surface and the following measures which might include one or more of the following:

- A width in excess of the normal 3m minimum for such routes;
- Use of a central white line with directional arrows, to encourage pedestrians to keep on the left hand side of the path, and establish that cyclists should overtake them on the right;
- A 1-1.5m raised footpath with a kerb on the western side, where it could provide pedestrians with a refuse from faster downhill cycle movements;
- A protective railing or stone flanking wall where the path is close to ground sloping down to the stream

(C) The Northern Section (Footbridge over the N40 and connecting paths)

The new cycle path could cross the existing stepped path which runs east to Alden Grove and Amberley Heights from the existing woodland path beside the stream (at chainage 490) and continue at approximately the same gradient towards the southern end of the proposed footbridge over the N40.

This is preferable to reconnecting with the existing path beside the stream as the northern part of this existing path descends well below the level of the proposed footbridge over the N40, and would result in cyclists losing height and then climbing again. It is therefore suggested that a new level section of cycle path which curves around the NW corner of Alden Grove estate be constructed. This would involve some levelling and retaining structure on some cross – slopes.

The position of the footbridge will need to be agreed with the NRA. The indicative location in the feasibility study takes account of:

- Avoids interfering with signs on the N40, being 40m behind the overhead sign on the eastbound carriageway and the roadside sign on the westbound one;
- Facilitates descent from footbridge deck level (c. 17m OD) to the paved path on the north side of the N40 (c. 10m OD), in an area where there is sufficient space between the N40 and the Tramore River to accommodate a 170m long looped path, with a gradient of around 4%.

Management of the Route:

The proposed pedestrian/cycle route south of the footbridge over the N40 could be designed to operate:

(a) In daylight hours only, or
(b) For a longer period which extended an hour or two beyond daylight hours in winter (so as to accommodate most journeys to work) or
(c) On a 24 hour basis

Options (a) and (b) would require control of access at the northern and southern ends and arrangements for opening and closing gates there. Options (b) and (c) would require lighting.

For design purposes, option (b) could be assumed, with the other two being treated as possible fall back options, or possible first stages which would be superseded subsequently by (b).

3 WESTERN VARIANT ON PROPOSED ROUTE

For the northern half of the route, there is a possible western variant on the previous route in section 2.0. This would involve the following:

i. Following the same route as is shown in section 2 from the Grange Road northwards to a point due west of Amberley Lawn.
ii. The combined cycle/pedestrian route would then continue c. 70m northwards along the existing path beside the stream, but with the level of the path raised slightly to moderate the gradient.
iii. The cycle route would then cross over to the western side of the stream at the south eastern corner of the grounds of Vernon Mount house. It would then follow the section of existing motorcycle racing track which runs parallel to the stream, which would then be converted to a cycleway, and this will facilitate modifying its level as necessary to achieve a suitable gradient for cyclists.
iv. The pedestrian route would continue along the existing path to a point east of the Alden Grove housing estate, where it would also cross over to the western side of the stream. The cycle and pedestrian routes would reunite and run north of the N40, adapting levels on tracks at the north eastern corner of the existing motorcycle racetrack and on the eastern end of two existing carparks as necessary
v. The combined routes would then cross the N40 on a footbridge, some 140m further west than the footbridge location discussed in section 2. On the northern side of the N40, a westward loop is suggested to allow cyclists to descend to the level of the path connecting north towards Turners Cross, and pedestrian stairs and a lower level path being used to connect to the existing paved path which runs parallel to the N40 and will enter Douglas Village from the north west.

4 CONSTRAINTS

4.1 PHYSICAL/ NATURAL CONSTRAINTS

There is an existing stream which runs through the study area. It is located to the west of the existing trail path. When dealing with the stream crossing, the impact on the stream and surrounding area will need to assessed by an aquatic ecologist and will be assessed as part on the environmental assessment.

There are existing trees including mature trees where felling should be possibly avoided. This is subject to a detailed environmental assessment.

4.2 EXTERNAL PARAMETERS

4.2.1 Design Parameters

The preferred maximum gradient for the cycleway is 5% (1 in 20) and normal maximum is 3% (1 in 33). The existing topography in sections will exceed this gradient, with a gradient of approximately 13% in the southern section of the scheme.

4.2.2 Construction Phase

During the period of construction, it is not anticipated that there be a disruption to the existing N40 South Ring Road due to the construction of the proposed pedestrian/cycle link. Construction should be staged to ensure that disruption to Grange Road is kept to a minimum. Possible staging would be the construction of the pedestrian/cycle link after the N40 overbridge is in place. This would permit construction traffic to access the site via the Tramore Valley Park as opposed to via Grange Road.

4.2.3 Third Party Land

As can be seen from Figure 4-1 below (Refer to LH0001 in Appendix A), there are a number of different landowners within the study area. The parcel of land comprising the existing trail is owned by Anglo-Eire Property Company Ltd.

4.2.4 Utilities

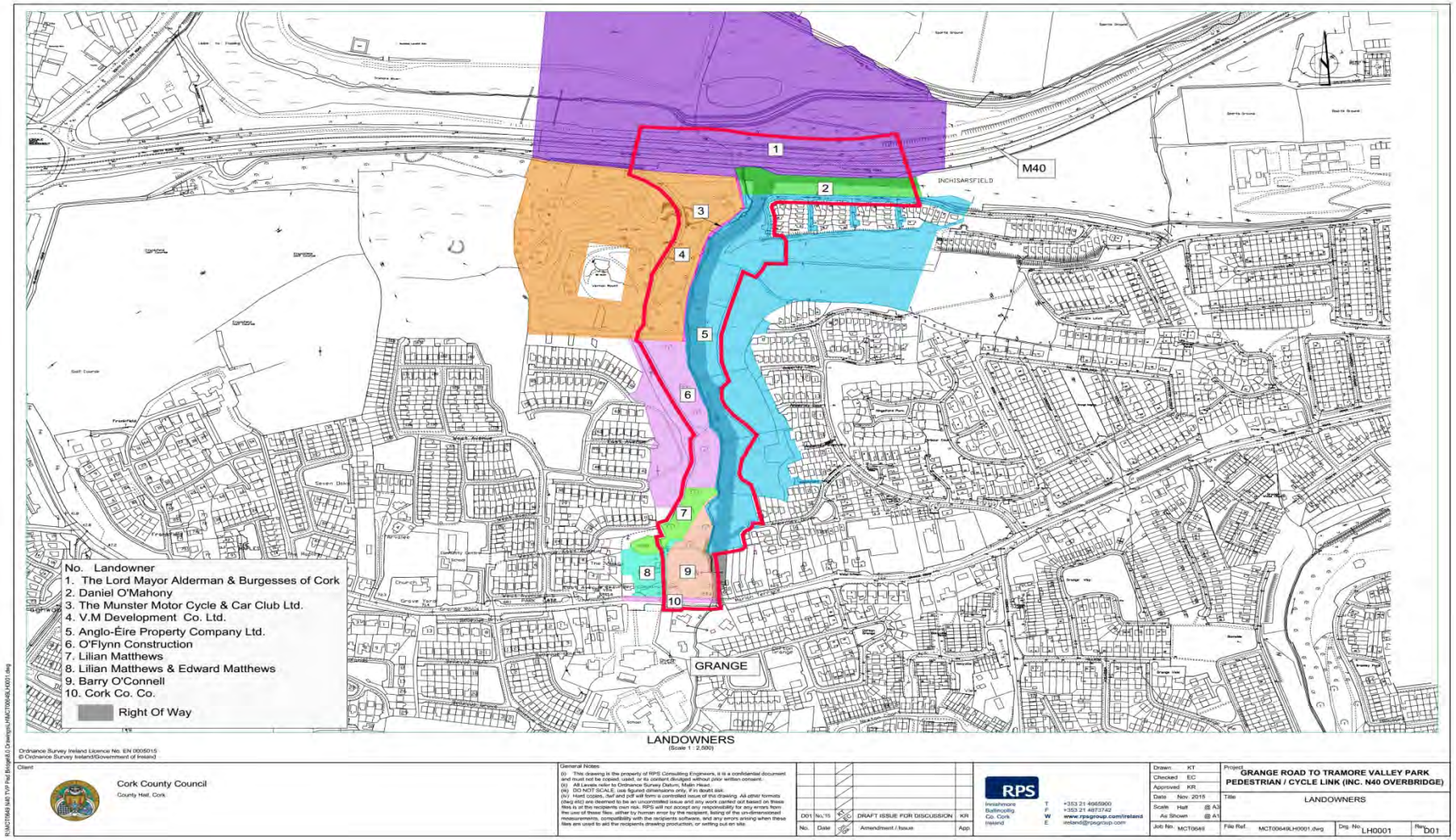
There is an existing overhead MV ESB line located to the south of the N40 on the northern part of the existing woodland area. (Refer to DG0001 in Appendix A).

There is also existing water services (foul and storm) located within the study area, which appear to run through the valley and also across the N40. Only chamber details were picked up in the topographical survey therefore the locations of these services are indicative only and need to be confirmed during detailed design stage. The City and Harbour water main also runs in an east-west direction to the south of the N40. Any works should avoid impacting on the water main.

4.2.5 Road Signs

There is an existing gantry sign located on the N40 to the north east of the study area.

Figure 4-1: Third Party Lands



5 DESCRIPTION OF THE PROPOSED ROUTES

A total of 3 no. options were developed as set out below. For the purpose of assessing and evaluating these options, all options commence at the first stream crossing south of the existing trail. (Refer to Drawings in Appendix B).

All of the options will have the same design to the south e.g. cycle steps and footpath and therefore this element of the route has not been considered in the preliminary assessment of the routes.

The route options are as follows:

Option 1A – Separate cycle link and footpath to the east of the stream;

Option 1B – Combined cycle/pedestrian link to the east of the stream;

Option 2 – Separate cycle link to the west of the stream and separate pedestrian link to the east of the stream.

It is envisaged that all routes will tie into the proposed N40 overbridge to the west of the stream. All options are presented in further detail below.

5.1 PROJECTED LEVEL OF USAGE OF THE SCHEME

The projected level of use was estimated at circa 800 users per day. These are split between 295 pedestrian trips and 523 trips by bicycle as summarised in the table below.

Table 5-1: Projected level of usage [2]

Journeys	Foot	Bicycle
To work/education	27	101
Escort Trips	12	45
Shopping Trips	24	87
Personal Business	20	36
(Total)	**(46)**	**(168)**
Leisure	222	254
Total	**295**	**523**

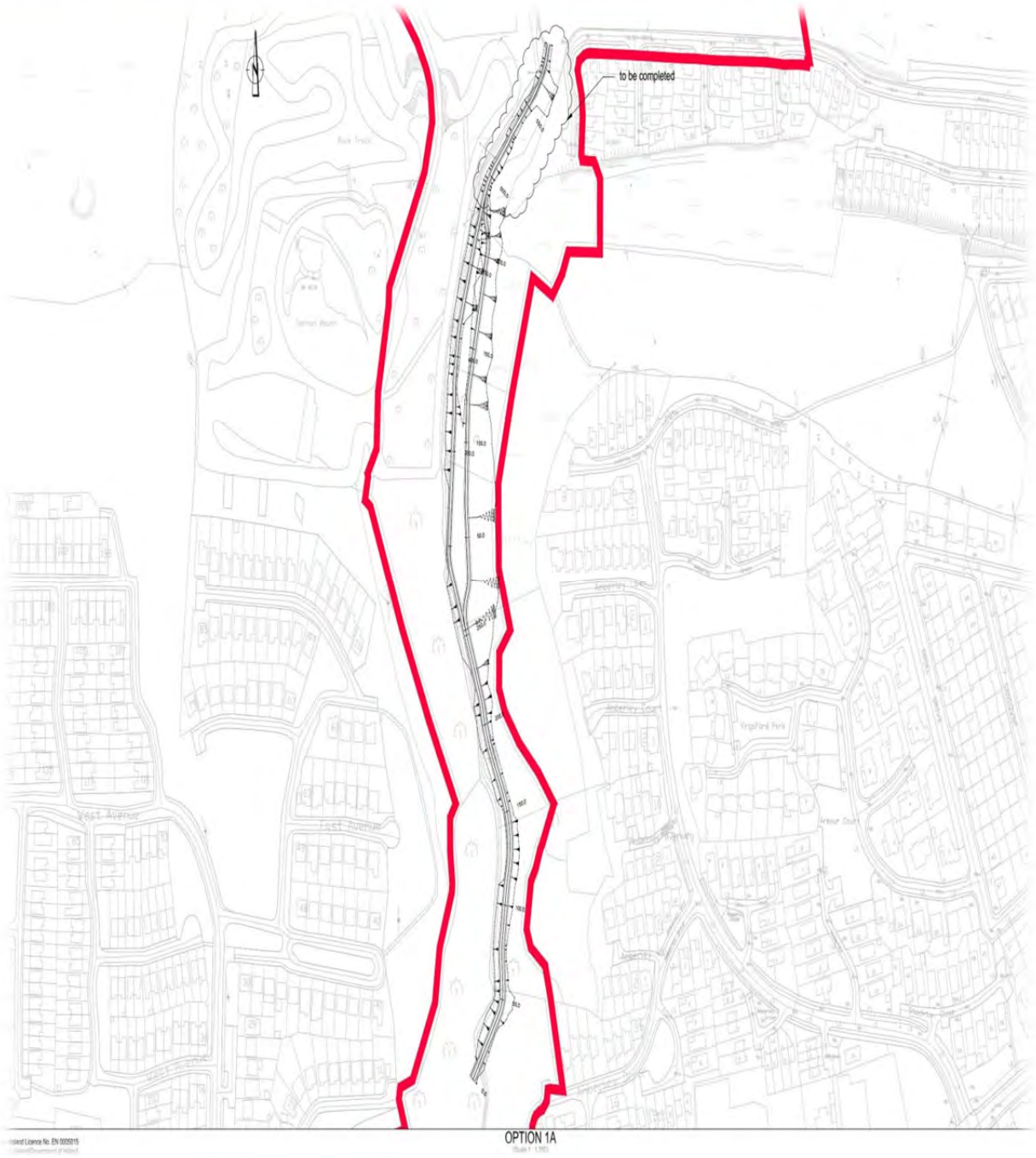
As can be seen from the table above, leisure trips account for the majority of the projected pedestrian users and approximately 50% of those on bicycle.

[2] Source: Grange Road to Tramore Valley Park Pedestrian/Cycle Link Service Requirements – Cork County Council

5.2 PROPOSED ROUTE OPTION 1A

The route commences at the proposed stream crossing just south of the existing trail. The trail continues to the east of the existing trail as a combined pedestrian/cycle link for approximately 250m with a combined width of 4.0m. At this stage the proposed 2.0m wide pedestrian link continues along the existing trail whereas the proposed 2.0m cycle link separates to the east of the existing trail. Both routes combine to the southwest of Alden Grove before they cross the stream and tie-into the proposed N40 overbridge.

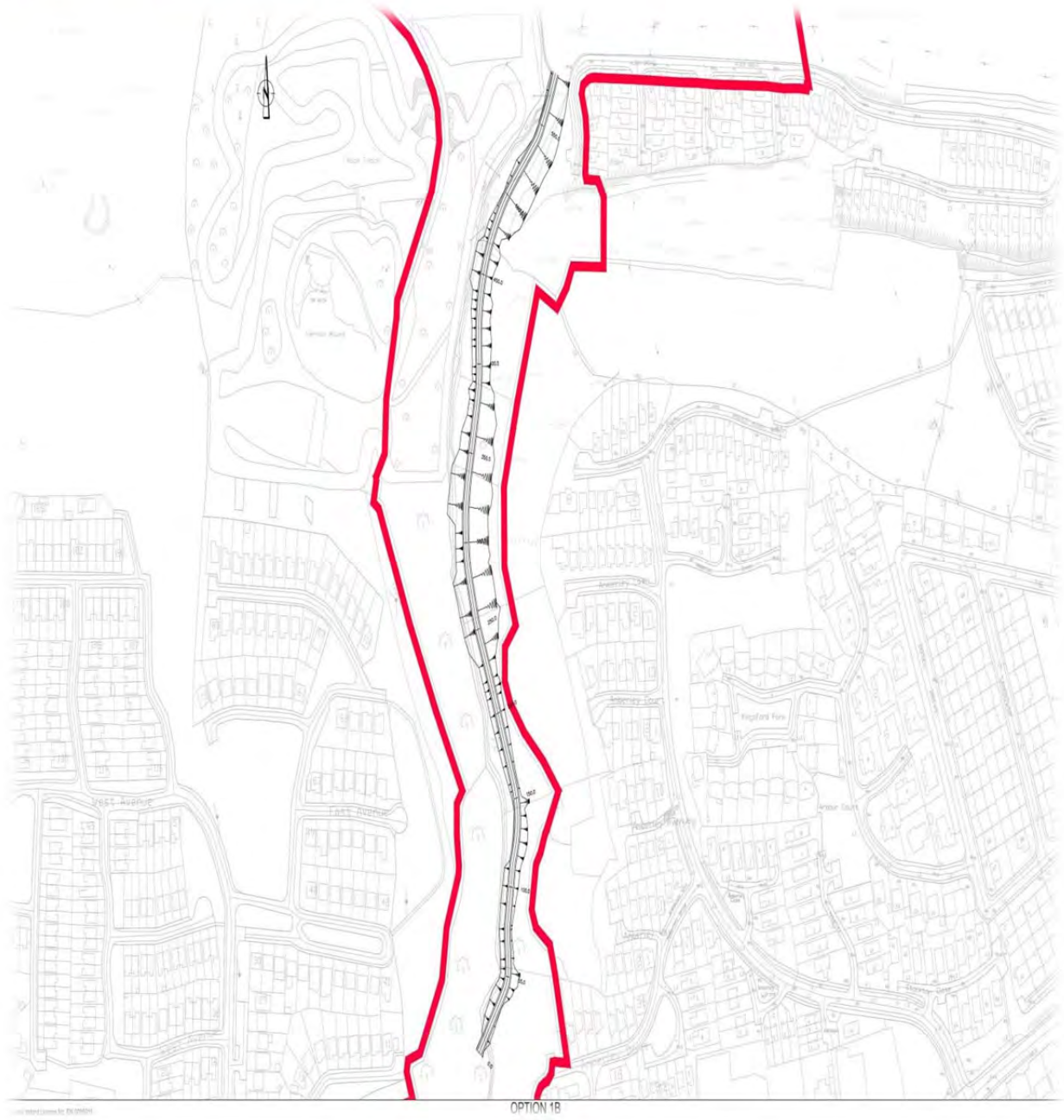
Figure 5-1: Proposed Route Option 1A



5.3 PROPOSED ROUTE OPTION 1B

The route commences at the proposed stream crossing just south of the existing trail. The trail continues to the east of the existing trail as a combined pedestrian/cycle link with a width of 4.0m. The route stays to the east of the stream for the extent of the route as shown in the drawing below. This option will tie into the proposed N40 overbridge to the west of the study area.

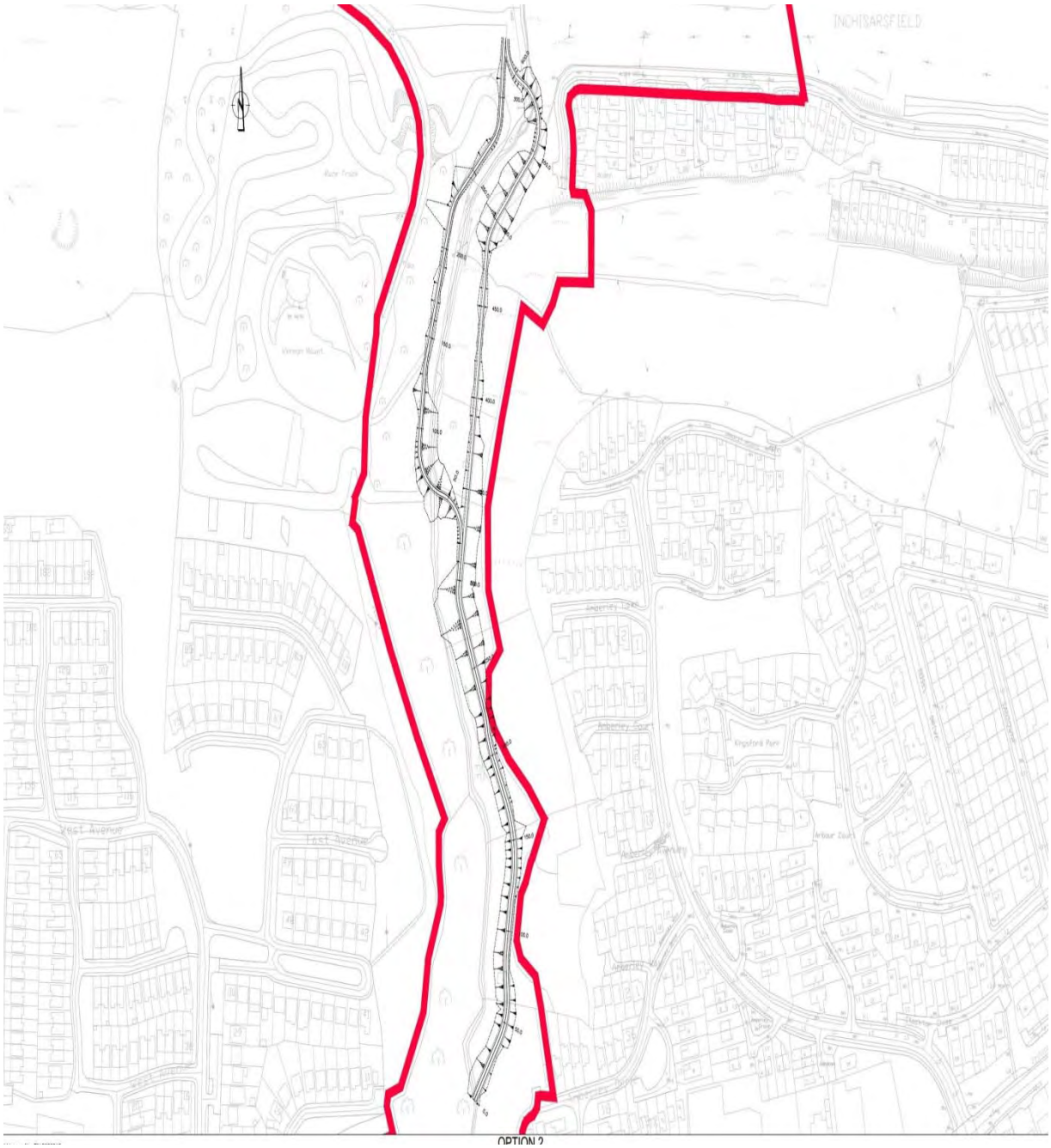
Figure 5-2: Proposed Route Option 1B



5.4 PROPOSED ROUTE OPTION 2 (WESTERN VARIANT)

The route commences at the proposed stream crossing just south of the existing trail. This option continues north to the east of the existing trail as a combined 4.0m pedestrian/cycle link. The combined route continues for c. 70m north of option 1. At this stage, it is proposed that the proposed 2.0m cycle link will separate and cross to the west of the stream. The proposed 2.0m pedestrian link will remain to the east of the stream. The proposed pedestrian link will continue north, east of the stream until a point to the west of Alden Grove where it will cross over the stream and re-joins the proposed cycle link. The combined link will then tie into the proposed N40 overbridge to the west of the study area.

Figure 5-3: Proposed Route Option 2 (Western Variant)



6 EVALUATION OF PROPOSED ROUTES

6.1 ENGINEERING ASSESSMENT

The Engineering Assessment was undertaken using the following criterion.

Table 6-1: Engineering Assessment Matrix

Description	Ranking : 1 – High Preference	Ranking: 2 – Medium Preference	Ranking: 3 –Low Preference
Structures	Least impact on Stream (compared to other options)		Most impact on stream (compared to other options)
Utilities	No impact on utilities	Utilities protected during work	Significant Utility Diversions
Earthworks	Least volume of earthworks to be imported/exported		Highest volume of earthworks to be imported/exported
Geometrics	Achieves recommended gradient over longer lengths of the scheme		Achieves recommended gradient over shorter lengths of the scheme.
Land & Property	Affects least no. of land parcels		Affects most no. of land parcels

6.1.1 Structures

All of the proposed routes will involve a number of crossings across the stream. The no. of stream crossings required to accommodate these crossings are quantified in the table below.

Table 6-2: No. of Proposed Structures Required for Route Options

Route Option	No. of Structures required
Option 1A	This option crosses the stream at 2 no. locations: • Ch.140 of Southern Section • Ch. 280 of Eastern Section
Option 1B	This option crosses the stream at 2 no. locations: • Ch.140 of Southern Section • Ch. 280 of Eastern Section
Option 2	This option crosses the stream at 3 no. locations: • Ch.140 of Southern Section • Ch. 25 of Western Section • Ch. 580 of Eastern Section

Summary of Structures Assessment:

Table 6-3: Summary of Structures Assessment

Route Option	Structure
Option 1A	High Preference
Option 1B	High Preference
Option 2	Low Preference

6.1.2 Utilities

The construction of a new trail will invariably necessitate the relocation of services. Interference with utilities will have financial implications in terms of new apparatus for relocation purposes and temporary disturbances during construction. Service diversions should be avoided as much as possible, but should not be the determining factor in selecting a preferred route.

The principal services encountered by the route options are outlined hereunder.

Table 6-4: No. of Proposed Structures Required for Route Options

Route Option	Utilities	
	Location	Service Type
Option 1A	Refer to DG0001 in Appendix A	Overhead ESB Foul and Storm Services
Option 1B	Refer to DG0001 in Appendix A	Overhead ESB Foul and Storm Services
Option 2	Refer to DG0001 in Appendix A	Overhead ESB Foul and Storm Services

All of the routes have a proposed section of trail to the east side of the stream. Therefore all routes will potentially impact on the foul and storm services to the same extent. To the northwest of the scheme, all the options will potentially impact the overhead ESB line also to the same extent.

6.1.3 Earthworks

Indicative approximate earthworks volumes and balances for each of the route options are calculated based on the route options indicative designs. It is noted that the estimated quantities would be likely to change during further stages of the design development. These indicative quantities are presented in Table 6.5 below.

Table 6-5: Proposed Earthworks for each Option

Route Option	Link Type	Cut Volume m3	Fill Volume m3	Volume Difference m3	Plan Area m2
Route Option 1A	Combined link & Ped link	3698.868	1751.178	1947.69	9188.647
	Cycle link	8397.997	1.585	8396.413	3237.993
	Total	**12096.865**	**1752.763**	**10344.103**	**12426.64**
Route Option 1B	Combined ped/cycle link	**3627.79**	**1314.15**	**2313.64**	**7188.70**
Route Option 2	Combined link & Ped link	1681.316	1347.902	333.414	6141.759
	Cycle link	130.864	2086.936	-1956.073 (fill)	2116.634
	Total	**1812.180**	**3434.838**	**-1622.658 (fill)**	**8258.383**

Table 6-6: Summary of Earthworks Assessment

Route Option	Earthworks
Option 1A	Low Preference
Option 1B	High Preference
Option 2	Medium Preference

6.1.4 Geometrics

The main geometrics required for the proposed trail is the cross section and the gradient.

The recommended gradient for the proposed scheme should be as follows:

According to Table 6.2 of TD300/14 the gradient requirements are as follows:

	Gradients
Desirable Maximum	3%
One Step Below Desirable Maximum	5%
Two Steps Below Desirable Maximum	10%

Sustrans Design Manual

According to SUSTRANS (Table 6.7) gradient criteria:

Table 6-7: Gradient Requirements (Sustrans)

Gradient		Criteria
3%	1 in 33	Preferred maximum
5%	1 in 20	Normal maximum – up to 100m
7%	1 in 14	Limiting gradient – up to 30m, when there is no practical alternative
>7%	Steeper than 1 in 14	For short lengths

Each option was looked at to investigate whether one route offered shorter lengths of route with gradients of 7%. Due to the existing topography of the proposed area all options will have limiting gradients of 7% for a maximum length of 30m. The lengths of gradients for the 7% are similar for all options and therefore no route will offer more or less benefit when compared to each other in terms of gradient.

Option 1A and Option 2 have partial separate cycle paths whereas Option 1B is a combined cycle and pedestrian link. The separate paths for both pedestrians and cyclists offer more safety and attractiveness for users therefore option 1A and Option 2 will be more attractive than Option 1B.

Table 6-8: Summary of Geometry Assessment

Route Option	Earthworks
Option 1A	High Preference
Option 1B	Low Preference
Option 2	High Preference

6.1.5 Land and Property

This assessment comprised of a desktop study and outlines the impacts of route options on land and property. The area of land the proposed route options traverse is predominantly used for recreational use. Land take is the main impact on third party lands. The land-take is the area of land lost under the proposed scheme.

The route options are ranked under the criteria of land take and severance with the preferred route being determined based on yielding consistently low impacts under each heading.

Table 6-9: No. of Proposed Landholdings impacted by the Scheme

Route Option	No. of Landholding Affected	Severance
Option 1A	No. 9 - Barry O' Connell No. 5 - Anglo-Eire Property Company Ltd. No. 4 - VM Development Co. Ltd No. 3 - The Munster Motor Cycle & Car Club Ltd No. 1 - The Lord Major Alderman & Burgesses of Cork	1 3 1 1 1
Option 1B	No. 9 - Barry O' Connell No. 5 - Anglo-Eire Property Company Ltd. No. 4 - VM Development Co. Ltd No. 3 - The Munster Motor Cycle & Car Club Ltd No. 1 - The Lord Major Alderman & Burgesses of Cork	1 2 1 1 1
Option 2	No. 9 - Barry O' Connell No. 5 - Anglo-Eire Property Company Ltd. No. 4 - VM Development Co. Ltd No. 3 - The Munster Motor Cycle & Car Club Ltd No. 1 - The Lord Major Alderman & Burgesses of Cork	1 1 3 3 1

Table 6-10: Summary of Landholdings

Route Option	Landholdings
Option 1A	Medium Preference
Option 1B	High Preference
Option 2	Low Preference

6.1.6 Summary of Engineering Assessment

Table 6-11: Summary of Engineering Assessment

Description	Option 1a	Option 1b	Option 2
Structures	High	High	Low
Utilities	Similar	Similar	Similar
Earthworks	Low	High	Medium
Geometrics	High	Low	High
Land & Property	Medium	High	Low

6.2 ENVIRONMENTAL ASSESSMENT

The Environmental Assessment was undertaken using the criterion set out in the table below.

Table 6-12: Environmental Assessment Matrix

Description	Ranking : 1 – High Preference	Ranking: 2 – Medium Preference	Ranking: 3 –Low Preference
Population and Human Health	Least impact on human beings (compared to other options)		Most impact on human beings (compared to other options)
Material Assets	Least impact on material assets (compared to other options)		Most impact on material assets (compared to other options)
Ecology (flora and fauna)	Least impact on ecological features (compared to other options)		Most impact on ecological features (compared to other options)
Soils, Geology and Hydrogeology	Least impact on soils, geology and hydrogeology (compared to other options)		Most impact on soils, geology and hydrogeology (compared to other options)
Water	Least impact on stream and hydrologically connected waterbodies (compared to other options)		Most impact on stream and hydrologically connected waterbodies (compared to other options)
Air, Climatic Factors, Noise and Vibration	Least impact on air, climate, noise and vibration (compared to other options)		Most impact on air, climate, noise and vibration (compared to other options)
Landscape, Cultural and Built Heritage	Least impact on landscape, architecture and archaeology (compared to other options)		Most impact on landscape, architecture and archaeology (compared to other options)

Table 6-13: Environmental Assessment

Description	Ranking : 1 – High Preference	Ranking: 2 – Medium Preference	Ranking: 3 –Low Preference
Environmental	Positive impact on the environment	Nominal impact on the environment, minor in-stream works.	Possibility of significant negative impact on the environment, due to construction methods or significant in-stream works.

Description	Option 1a	Option 1b	Option 2
Ecology [3]	Low to Medium Preference	Medium Preference	Medium

6.3 ECONOMIC ASSESSMENT

The Economic Assessment was ranked as high preference based on the lowest estimated construction cost and as low preference based on the highest estimated construction cost.

Table 6-14: Economic Assessment

Description	Ranking : 1 – High Preference	Ranking: 2 – Medium Preference	Ranking: 3 –Low Preference
Economic	Lowest Construction Costs		Highest Construction Costs

A comparison of the costs estimate for the central section was undertaken to establish a comparative construction estimate for all schemes (northern and southern section all same specification). A preliminary cost estimate (excluding VAT) for all route options is as follows:

- Option 1A - €319, 002.90;
- Option 1B - €276, 253.40;
- Option 2 - €368,941.50.

Therefore Option 1B was the preferred option and Option 2 the least preferred.

6.4 SUMMARY OF OVERALL ASSESSMENT

The preliminary options were assessed under various headings as set out below. The options were assigned marks ranging from 1-3 in terms of preference. An overall preference ranking was then derived from the marks based on a collective qualitative assessment of the 'Engineering', 'Environmental' and 'Economic' Assessment culminating in the assignment of an overall 'High Preference', 'Medium Preference' and 'Low Preference' to each of the preliminary route options.

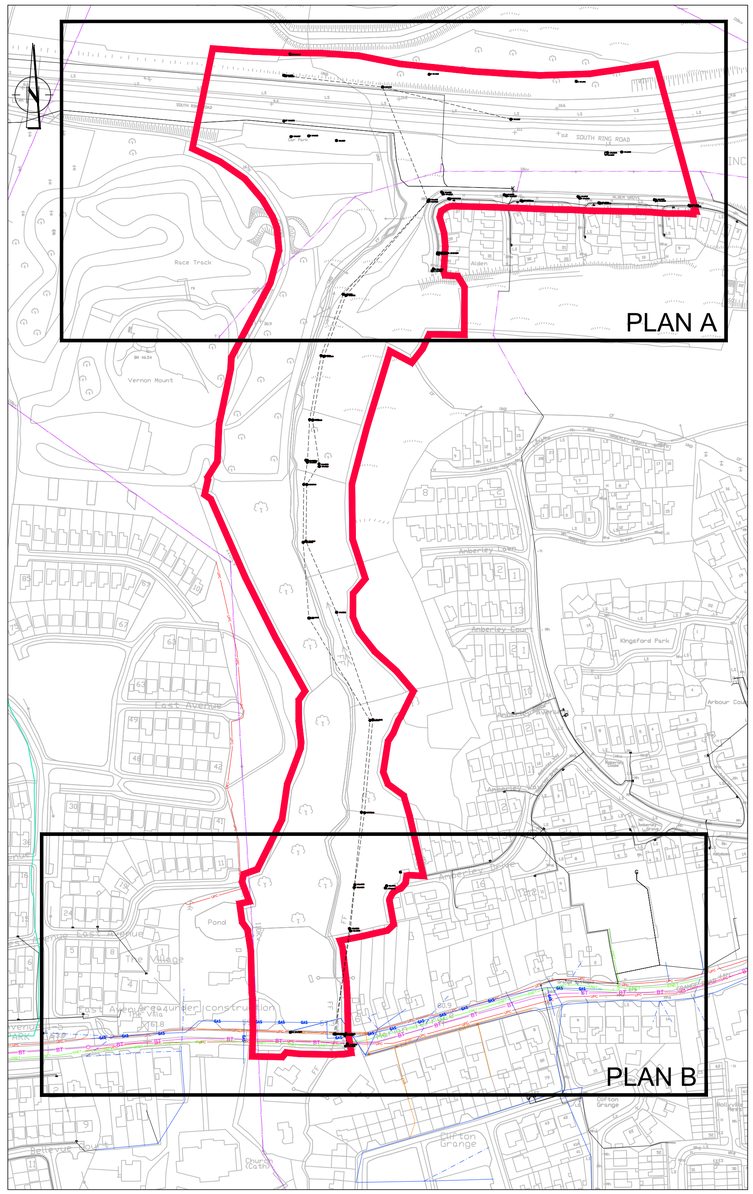
[3] With the exception of Ecology all of the other headings had similar impacts and are discussed in the EIA Screening Report

Table 6-15: Summary of Overall Preliminary Assessment

Route Option	Engineering	Economic	Environmental
Option 1A	Medium Preference	Medium Preference	Low to Medium Preference
Option 1B	High Preference	High Preference	Medium Preference
Option 2	Low Preference	Low Preference	Medium Preference

As can be seen from the above assessment option 1B is the preferred route options in terms of Engineering, Economic and Environmental Assessment.

APPENDIX A: Landowners and Utilities Drawings

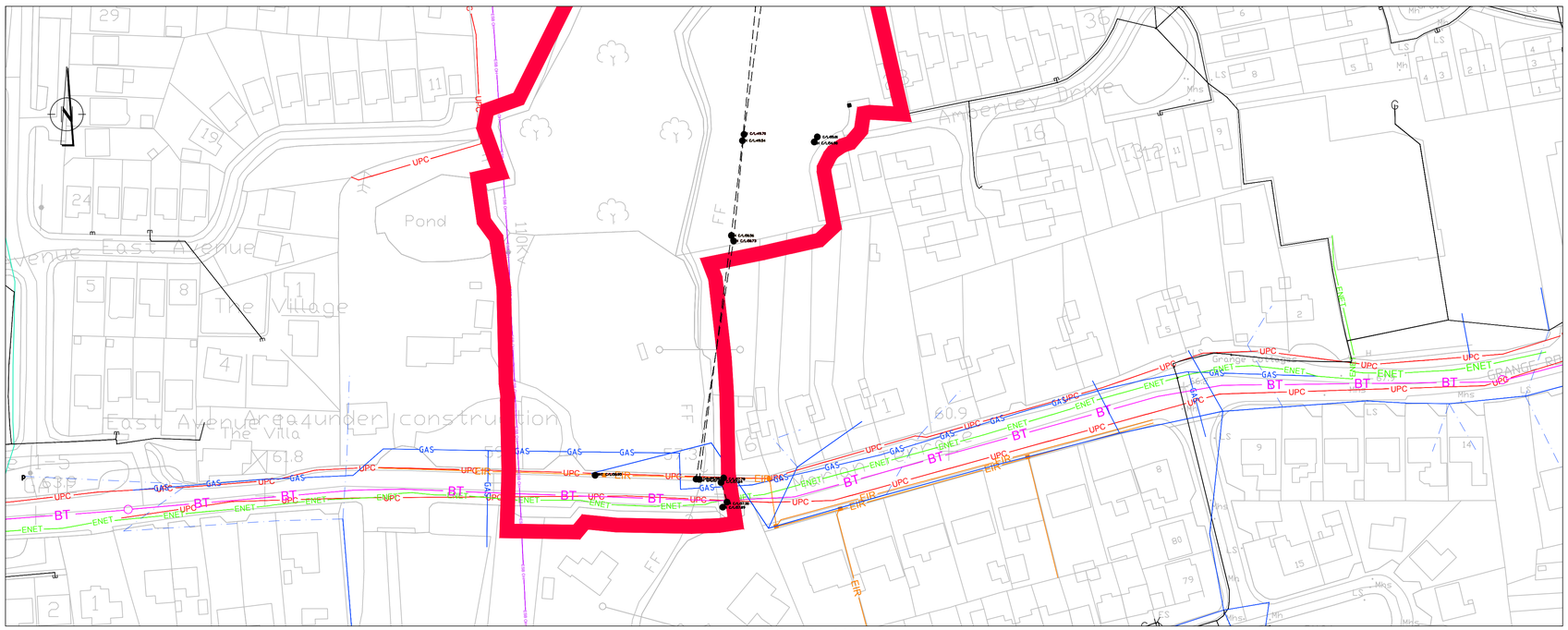


UTILITIES LAYOUT PLAN
(Scale 1 : 2,500)

LEGEND

- GAS — GAS (Distribution Pipe)
- UPC — UPC
- ENET DUCT — ENET DUCT
- EIR — EIR
- BT — BT (With Chamber)
- ESB HV O/H LINE — ESB HV O/H LINE
- ESB MV O/H LINE — ESB MV O/H LINE
- ESB LV O/H LINE — ESB LV O/H LINE
- ESB MV/LV CABLE — ESB MV/LV CABLE
- WATER SERVICES (STORM & FOUL TO BE CONFIRMED) — WATER SERVICES (STORM & FOUL TO BE CONFIRMED)

UTILITIES - PLAN A
(Scale 1 : 1,000)



UTILITIES - PLAN B
(Scale 1 : 1,000)

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Scale	Half @ A3
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Job No.	MCT0649
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Drg. No.	DG0001
Rev.	D01

Project
GRANGE ROAD TO TRAMORE VALLEY PARK
PEDESTRIAN / CYCLE LINK (INC. N40 OVERBRIDGE)

Title
CONSTRAINTS - UTILITIES

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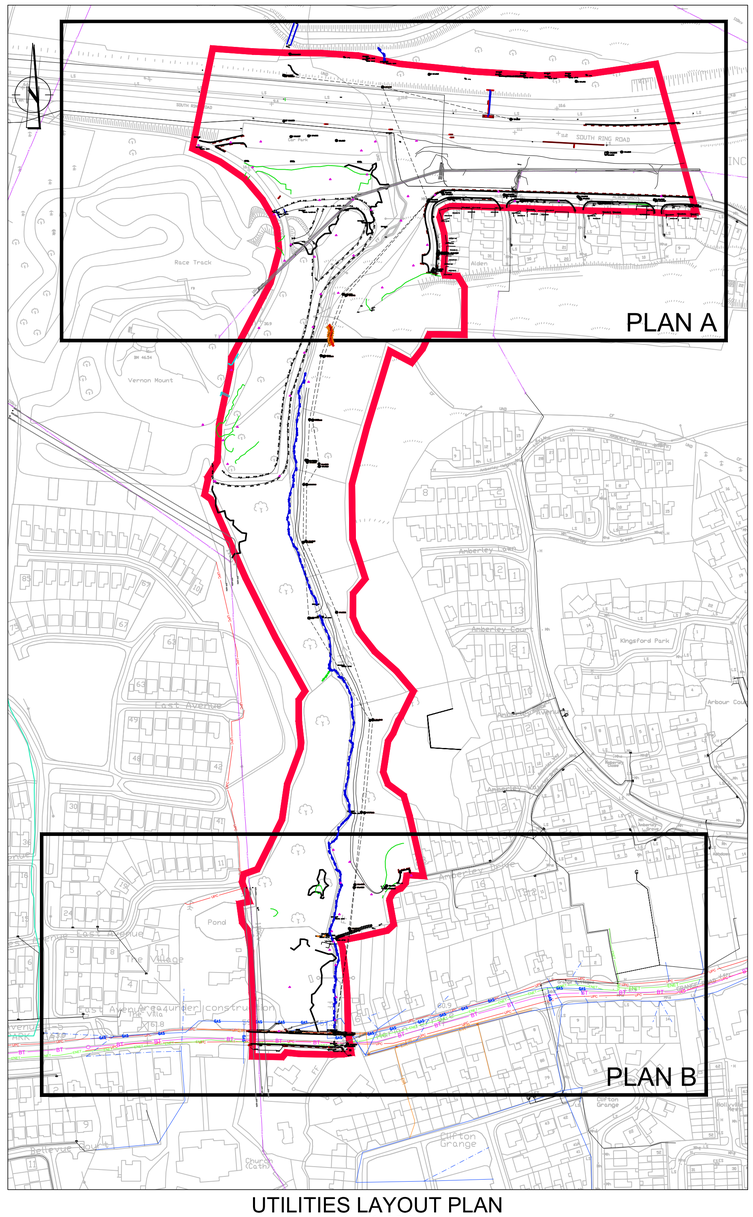

UTILITIES LAYOUT PLAN
(Scale 1 : 2,500)

LEGEND

- GAS — GAS (Distribution Pipe)
- UPC — UPC
- ENET DUCT — ENET DUCT
- EIR — EIR
- BT — BT (With Chamber)
- ESB HV O/H LINE — ESB HV O/H LINE
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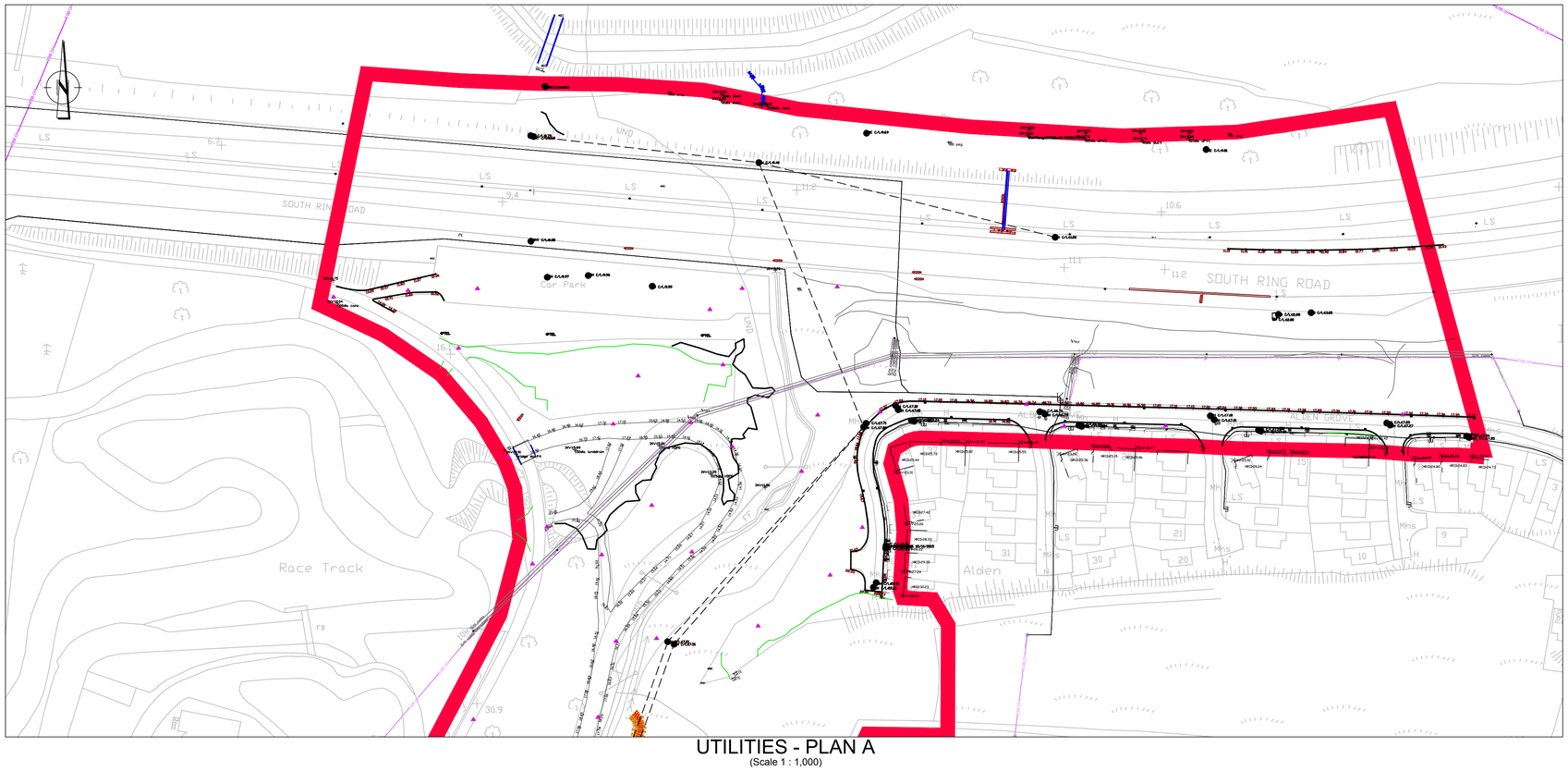
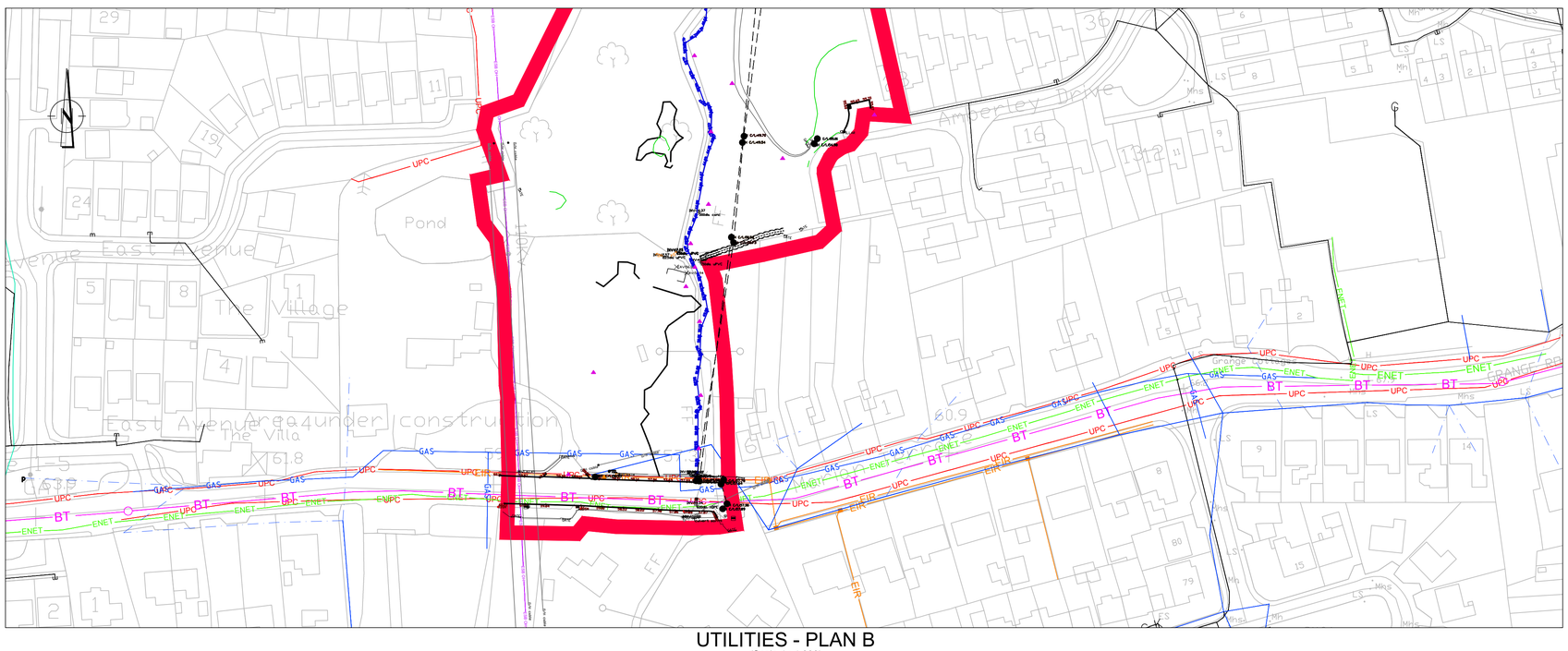
- WATER SERVICES (STORM & FOUL TO BE CONFIRMED) — WATER SERVICES (STORM & FOUL TO BE CONFIRMED)



UTILITIES - PLAN A
(Scale 1 : 1,000)



UTILITIES - PLAN B
(Scale 1 : 1,000)

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Project
GRANGE ROAD TO TRAMORE VALLEY PARK PEDESTRIAN / CYCLE LINK (INC. N40 OVERBRIDGE)

Title
CONSTRAINTS - UTILITIES

File Ref. MCT00649DG0001.dwg | Drg. No. DG0001 | Rev. D01

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No.	Landowner
1.	The Lord Mayor Alderman & Burgesses of Cork
2.	Daniel O'Mahony
3.	The Munster Motor Cycle & Car Club Ltd.
4.	V.M Development Co. Ltd.
5.	Anglo-Éire Property Company Ltd.
6.	O'Flynn Construction
7.	Lilian Matthews
8.	Lilian Matthews & Edward Matthews
9.	Barry O'Connell
10.	Cork Co. Co.

Right Of Way

LANDOWNERS

(Scale 1 : 2,500)

Client

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County Hall, Cork

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GRANGE ROAD TO TRAMORE VALLEY PARK PEDESTRIAN / CYCLE LINK (INC. N40 OVERBRIDGE)

Title
LANDOWNERS

File Ref. MCT00649LH0001.dwg | Drg. No. LH0001 | Rev. D01

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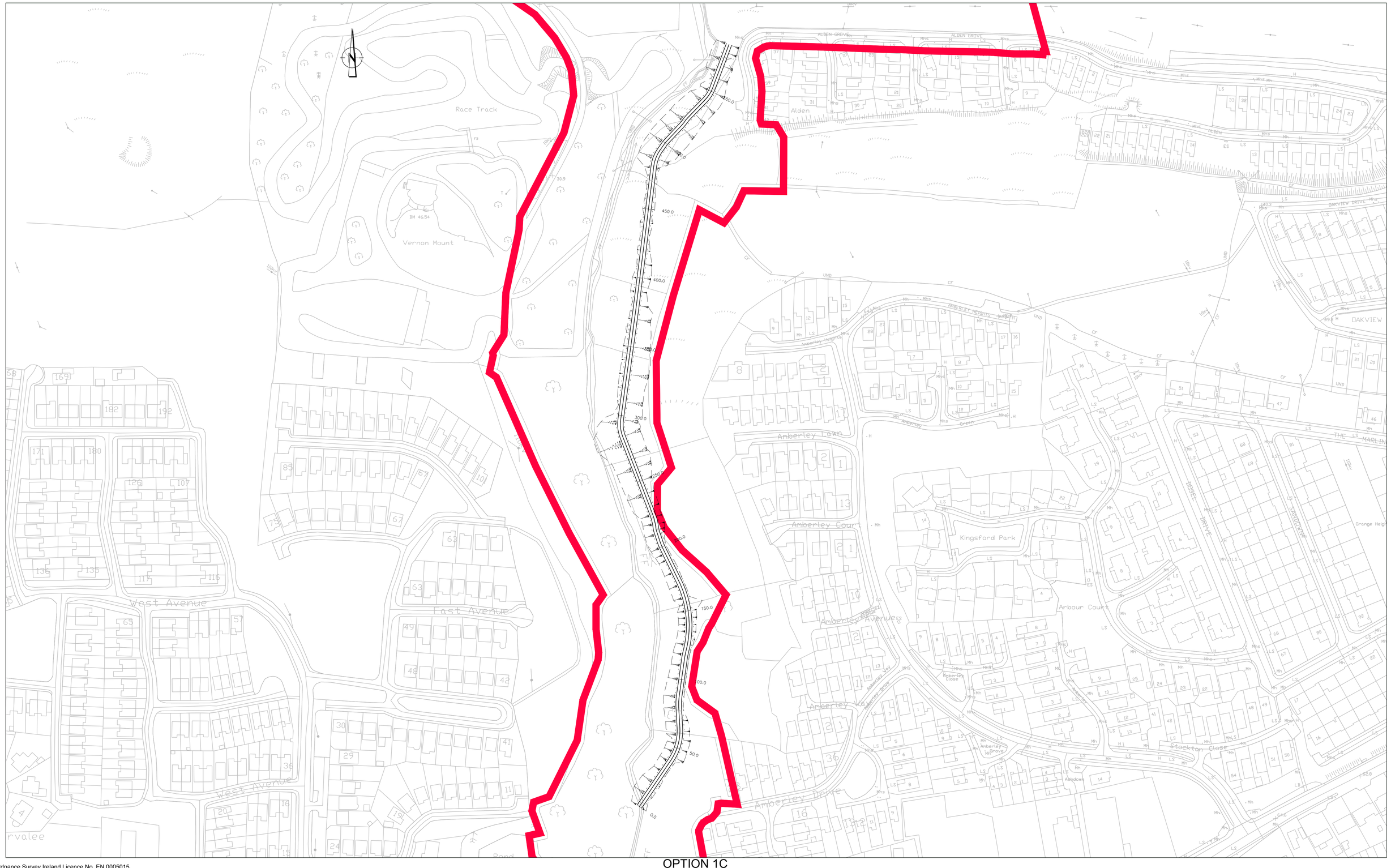
APPENDIX B: Route Options Drawings



OPTION 1C
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Project
GRANGE ROAD TO TRAMORE VALLEY PARK
PEDESTRIAN / CYCLE LINK (INC. N40 OVERBRIDGE)

Title
PLAN LAYOUT - OPTION C
PROPOSED ROUTE

File Ref. MCT00649DG0004 OP1.dwg | Drg. No. DG0004 | Rev. D01

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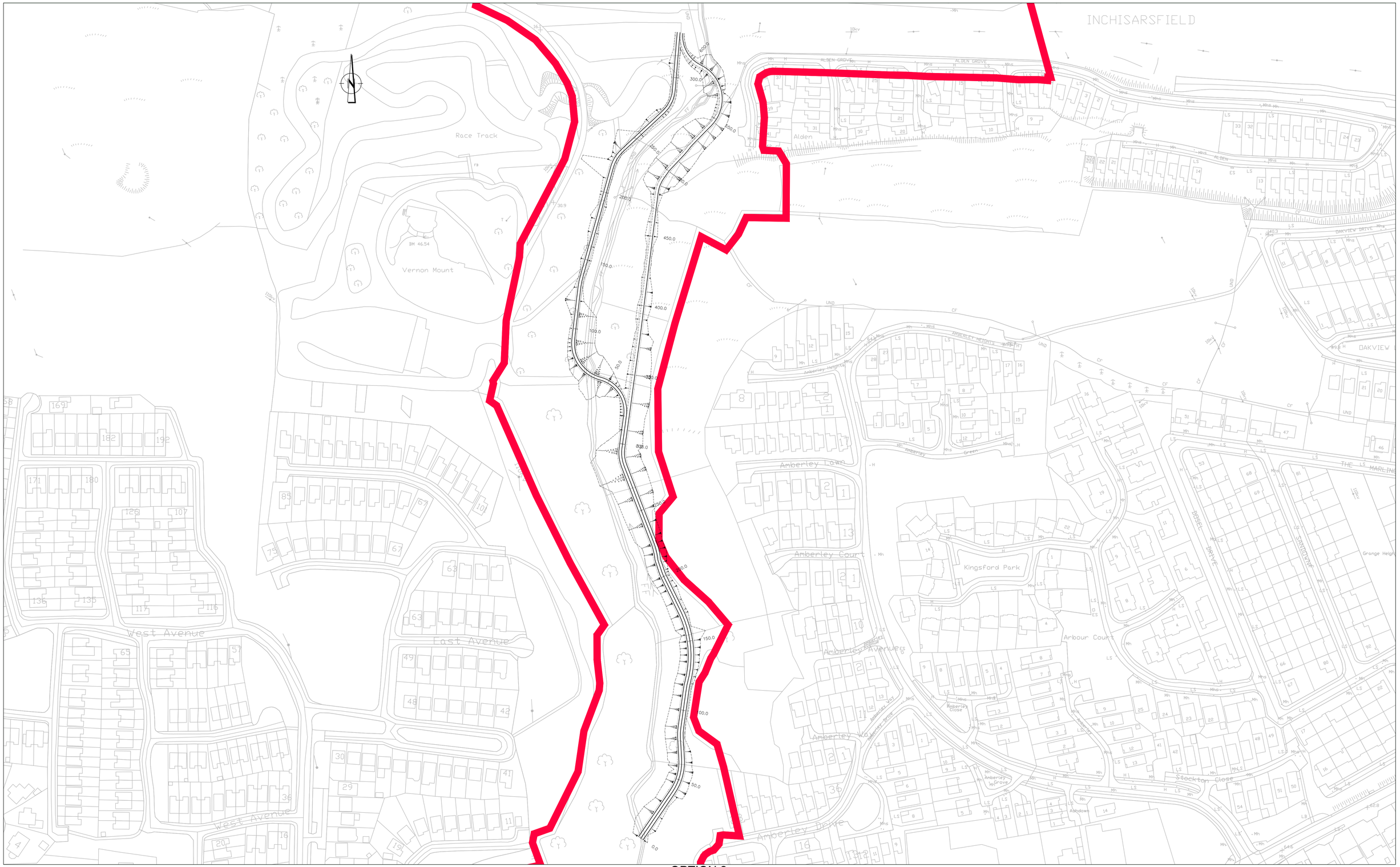

OPTION 2
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Project
GRANGE ROAD TO TRAMORE VALLEY PARK
PEDESTRIAN / CYCLE LINK (INC. N40 OVERBRIDGE)

Title
PLAN LAYOUT - OPTION 2
WESTERN VARIANT

File Ref. MCT00649DG0005 OP2.dwg | Drg. No. DG0005 | Rev. D01

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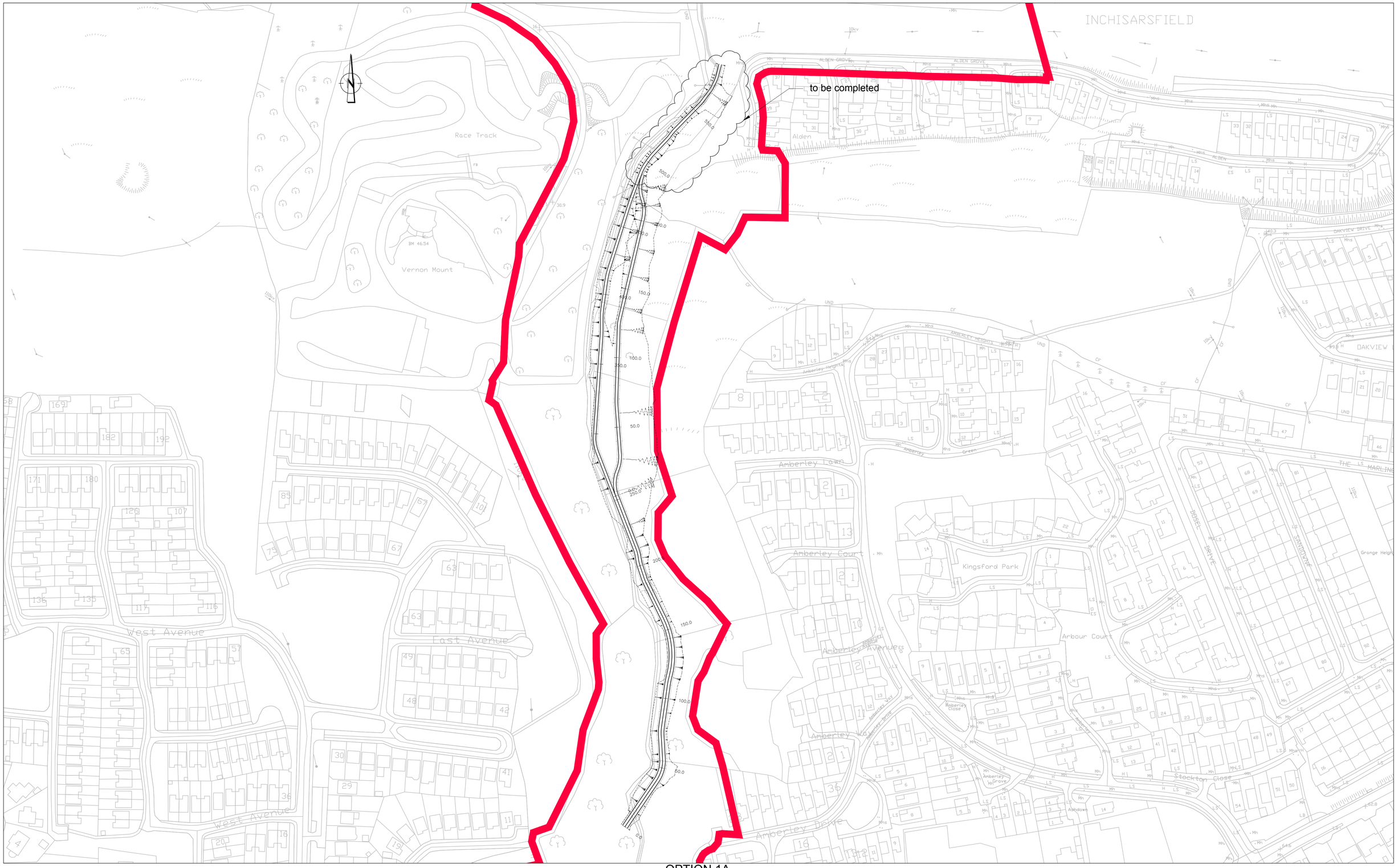

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OPTION 1A

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Project
GRANGE ROAD TO TRAMORE VALLEY PARK PEDESTRIAN / CYCLE LINK (INC. N40 OVERBRIDGE)

Title
PLAN LAYOUT - OPTION 1A
PROPOSED ROUTE

File Ref. MCT00649DG0006 OP3.dwg | Drg. No. DG0006 | Rev. D01

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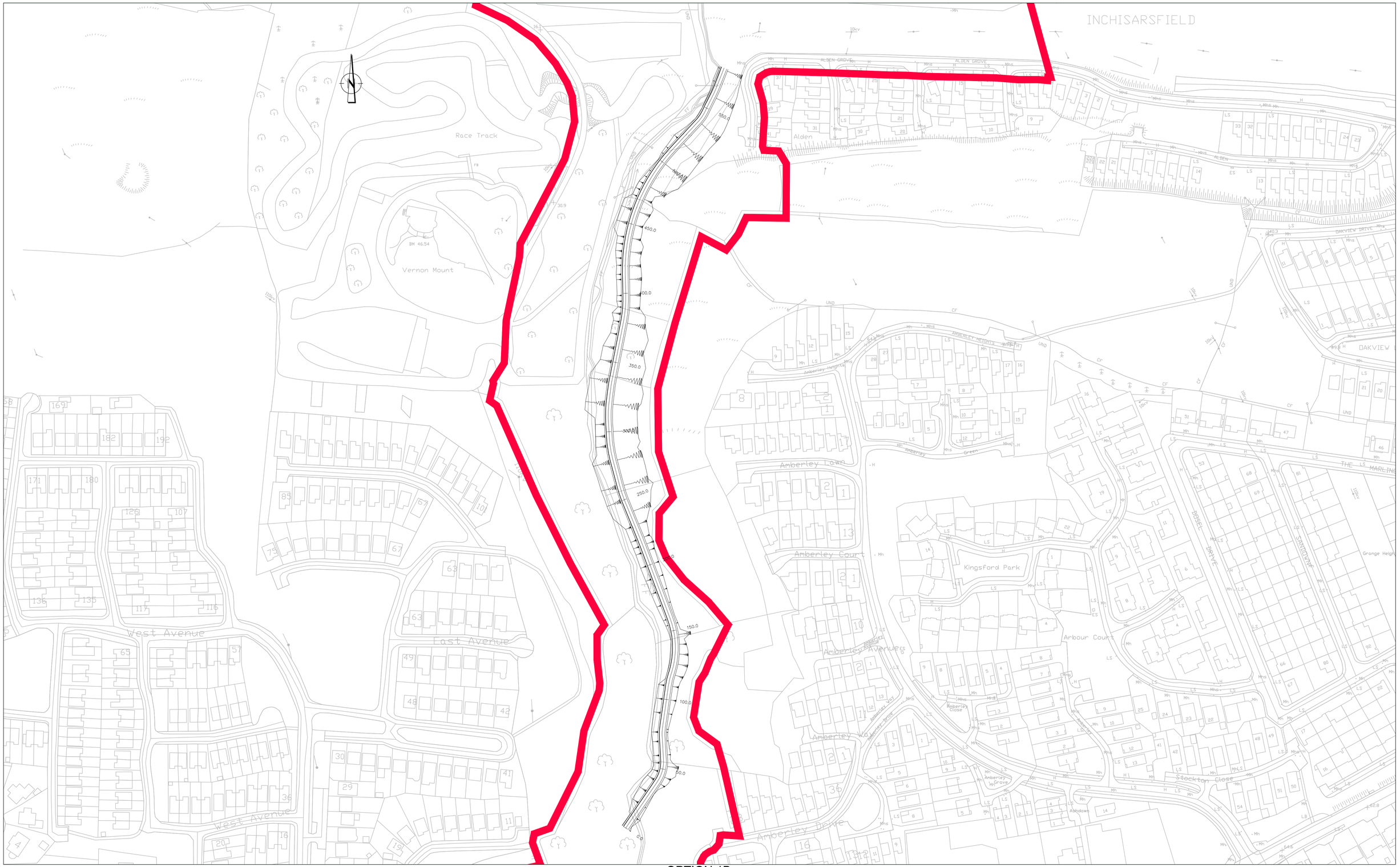

OPTION 1B

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Title: PLAN LAYOUT - OPTION 1B PROPOSED ROUTE

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