

FENIT VILLAGE DESIGN MASTERPLAN

APPENDIX

CARR COTTER & NAESSENS ARCHITECTS
MASTERPLAN OPTION A 1:500@A1
MASTERPLAN OPTION B 1:500@A1

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AUTOTRACKING DRAWINGS

100m 200m 300m 400m 500m 600m 700m 800m 900m 1000m 1100m



- KEY**
- 1 SEA FRONT PLAZA
 - 2 LIFEGUARD TOWER
 - 3 CHANGING & WC PAVILION
 - 4 PLAYGROUND
 - 5 PICNIC/PLAY SHELTER
 - 6 PATH TO BACK BEACH
 - 7 RAILWAY BRIDGE
 - 8 BIKE PARKING
 - 9 CAR PARKING
 - 10 CASUAL TRADING BAYS
 - 11 GREENWAY
 - 12 HOSTEL
 - 13 TERRACED HOUSING
 - 14 PARKING SPACES
 - 15 POND & VILLAGE SIGN
 - 16 VILLAGE GREEN
 - 17 NEW BUILDING/STALL STANDS
 - 18 INFILL BUILDINGS



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 - 17 SAMPHIRE HOTEL
 - 18 INFILL BUILDINGS
 - 19 NEW BUILDING/STALL STANDS

Fenit Village Masterplan

Engineering Inputs to Masterplan

Document Control

Document Number: 194-101-DSR

Revision	Description	Date	Prepared	Checked	Approved
R0	Issued to CCN Architects	05/11/2019	MOC	CM	CM
R1	Issued to CCN Architects	15/01/2020	MOC	CM	CM

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1 Introduction

The following report provides engineering inputs for the Fenit Village Masterplan which is being compiled by Carr Cotter & Naessen (CCN) Architects on behalf of Kerry County Council. The scope of this report covers the following subject areas:

- a. Historical review of study area
- b. Desk top review of ground conditions, bedrock, geology, hydrology and geotechnics
- c. Desk top review of existing utilities including water, foul and storm drainage, electricity and gas
- d. Desk top review of flood risk
- e. Desk top traffic and transportation review

The masterplan proposals are discussed in each section relative to each of the above subject areas.

2 Site History and Previous Land Uses

2.1 Previous Land Use & Contamination Risk

Historical maps were used to identify significant past land uses relating to the masterplan study area. Historical 6" maps dating from the period 1837 to 1842 indicate that the site was in agricultural use at that time. The later 25" maps dating from the period 1888 to 1913 show that the area had built up somewhat with the construction of Fenit Harbour in 1880, and limited settlements are visible on this map. The area remained largely in agricultural use however.

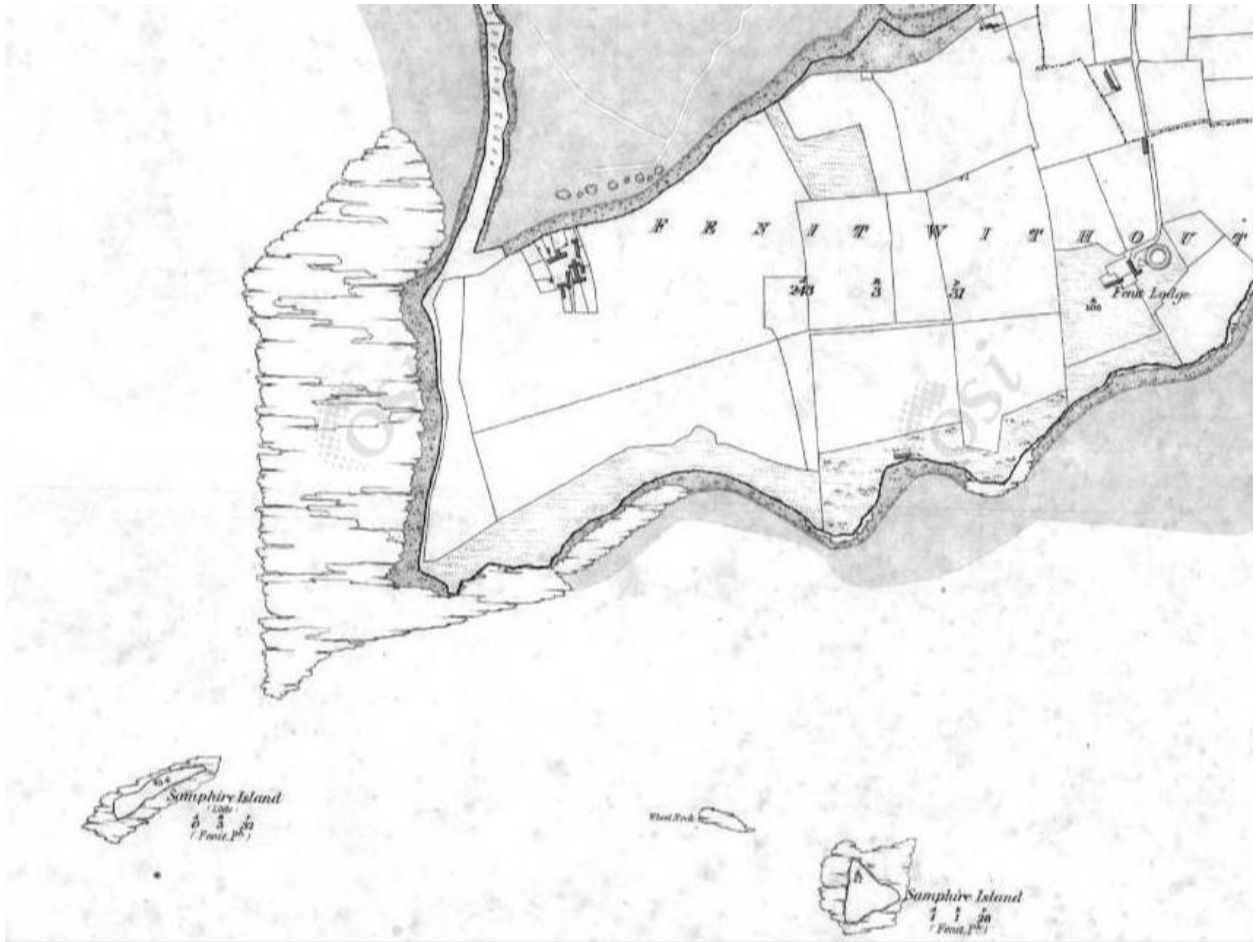


Figure 2-1 6" Map 1837-1842

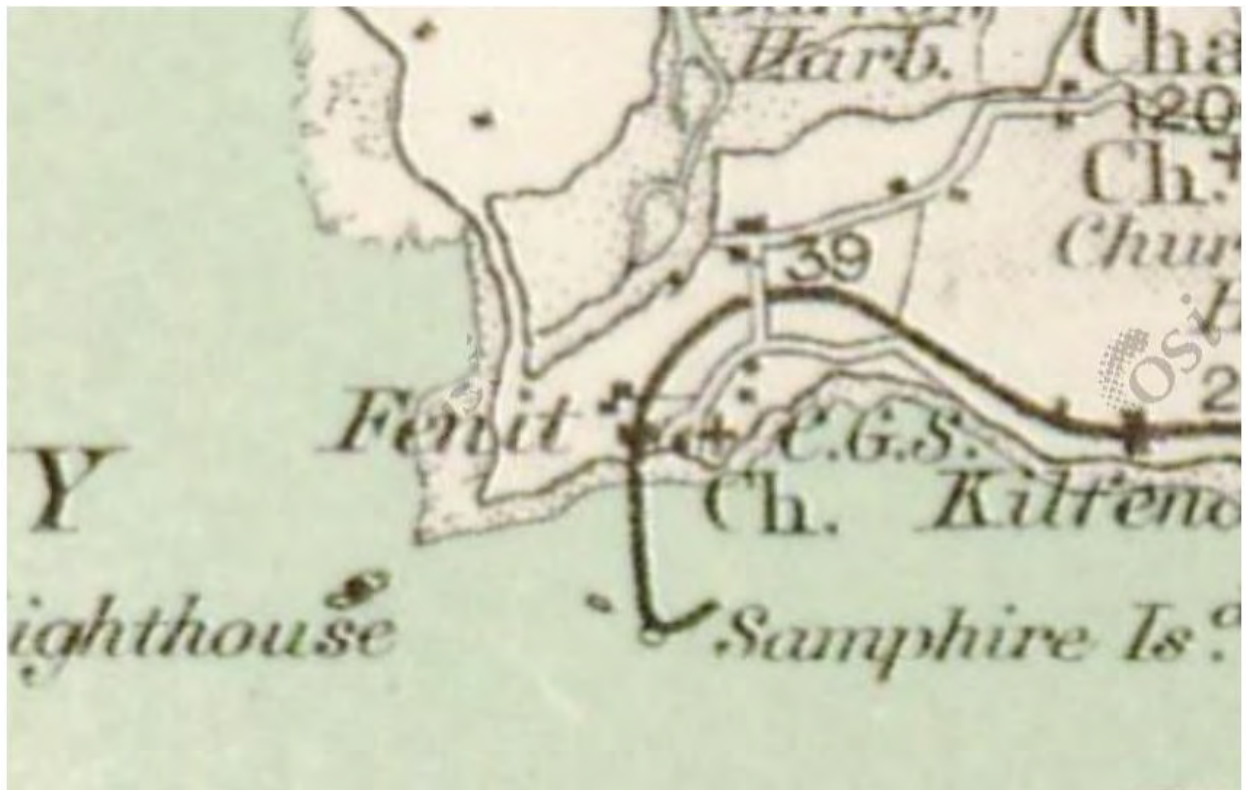


Figure 2-2 8" Maps 1888-1913

The village began to develop in earnest after construction of the harbour and a railway service operated from Fenit from the 1880s until its cessation in the 1970s. The R558 through the village has been used for accessing the harbour since this time. The Fenit Marina was constructed in 1997 and caters for up to 130 vessels.

The main cargo of the port through the 20th Century was oil and cranes from the nearby Liebherr factory in Killarney. The fuel distribution base at Fenit was dismantled in the late 1990s and hence given this historic use of the site, caution should be exercised in undertaking excavations and disposal of any arisings from the area surrounding the harbour as there is a potential for hydrocarbon contamination due to possible previous cargo spills. It is recommended that a suite of environmental testing is included as part of any site investigation commissioned as part of any future construction works arising from the proposals contained within this overall village masterplan.

3 Site Characteristics Review

3.1 Topography

The general topography of the existing village is generally gently sloping from north to south. The green field site which is earmarked for housing and proposed village green slopes at approximately 1 in 36 along the proposed line of houses, while the proposed terminus/plaza has a gentle 1 in 60 longitudinal gradient from the West End Bar to the Harbour entrance.

3.2 Bedrock

The national draft generalised bedrock map (ref: Figure 3-1) shows that the underlying bedrock for the site consists of Massive unbedded lime-mudstone of the Waulsortian Limestones formation. Rock outcrops are visible immediately adjacent the footpath along the eastern side of the street within the village centre.

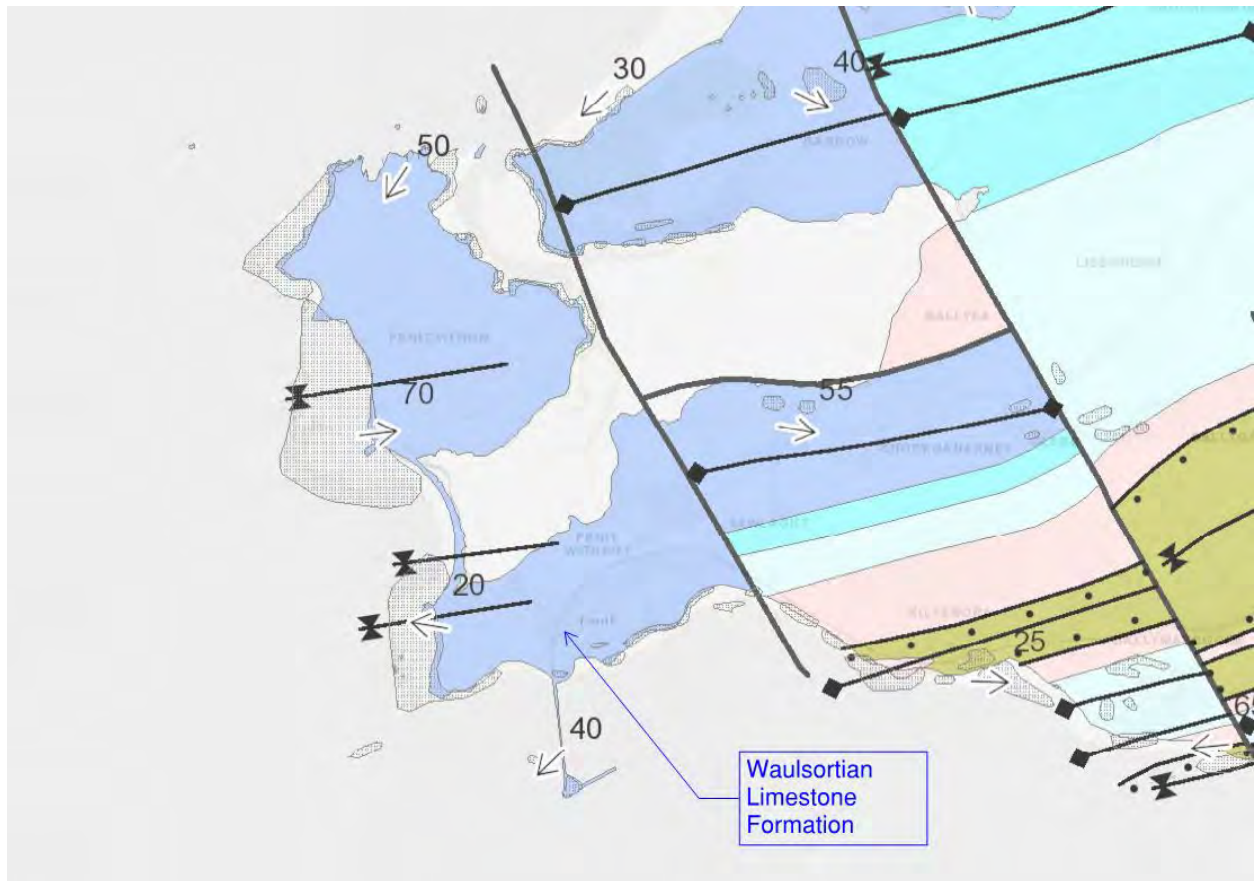


Figure 3-1 Bedrock Mapping (ref: GSI)

3.3 Groundwater Vulnerability

Groundwater vulnerability for the majority of the site is classified as “H” (High) with an area to the south east of the village centre along the shore classified as “E” (Extreme) and X which denotes rock at or near the surface. The groundwater vulnerability is based on the predicted time taken for a pollutant released to the ground at surface level to reach an aquifer. Groundwater vulnerability mapping is presented in Figure 3-2 below. This indicates relatively low overburden depth and possible rock, or possible karstic features located near the surface.

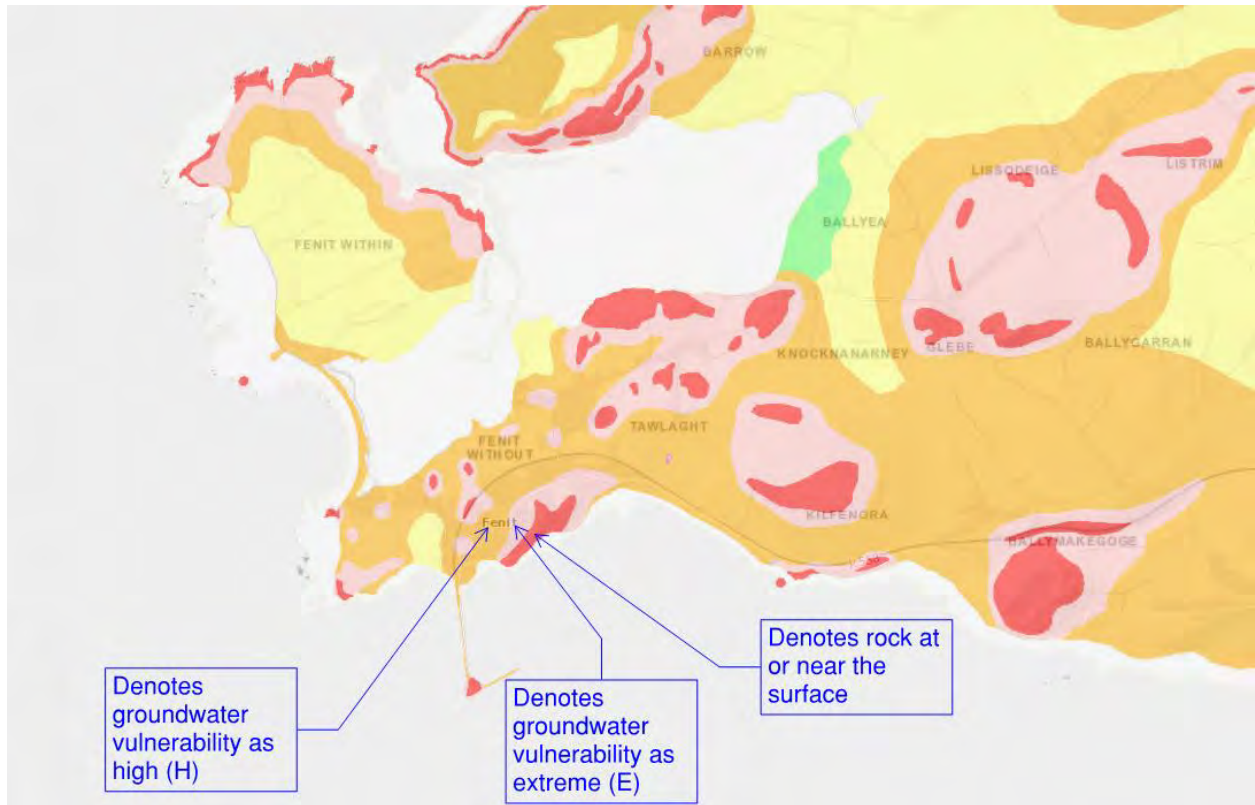


Figure 3-2 Groundwater Vulnerability (ref: GSI)

3.4 Subsoils Mapping

Subsoils mapping as presented in Figure 2-5 below indicates that the immediate area surrounding the urbanised village centre comprises of Grey Brown Podzolics and brown earth which are derived from limestone till.

A detailed site investigation is recommended to identify ground conditions for any proposed future development. It must be noted that due to the site history, the likelihood of made ground in the pier area is high and the site should be de-risked appropriately by means of ground investigations and in situ CBR testing at proposed formation level in order to establish cost certainty of pavement build ups for the proposed pier site at an early stage.

Owing to the presence of Karst features in the underlying limestone rock in the surrounding area, geophysical surveys consisting of 2-D resistivity and seismic refraction testing would be recommended to help map the underlying rock and verify that there are no large detected voids. It would be advisable for geophysical surveying to be undertaken in advance of procurement of a site investigation to help better inform density and locations for boreholes/rotary coring. Any such voids detected within the underlying rock raise the risk of sink holes developing in the overburden which may have associated implications for pavement design and foundations.

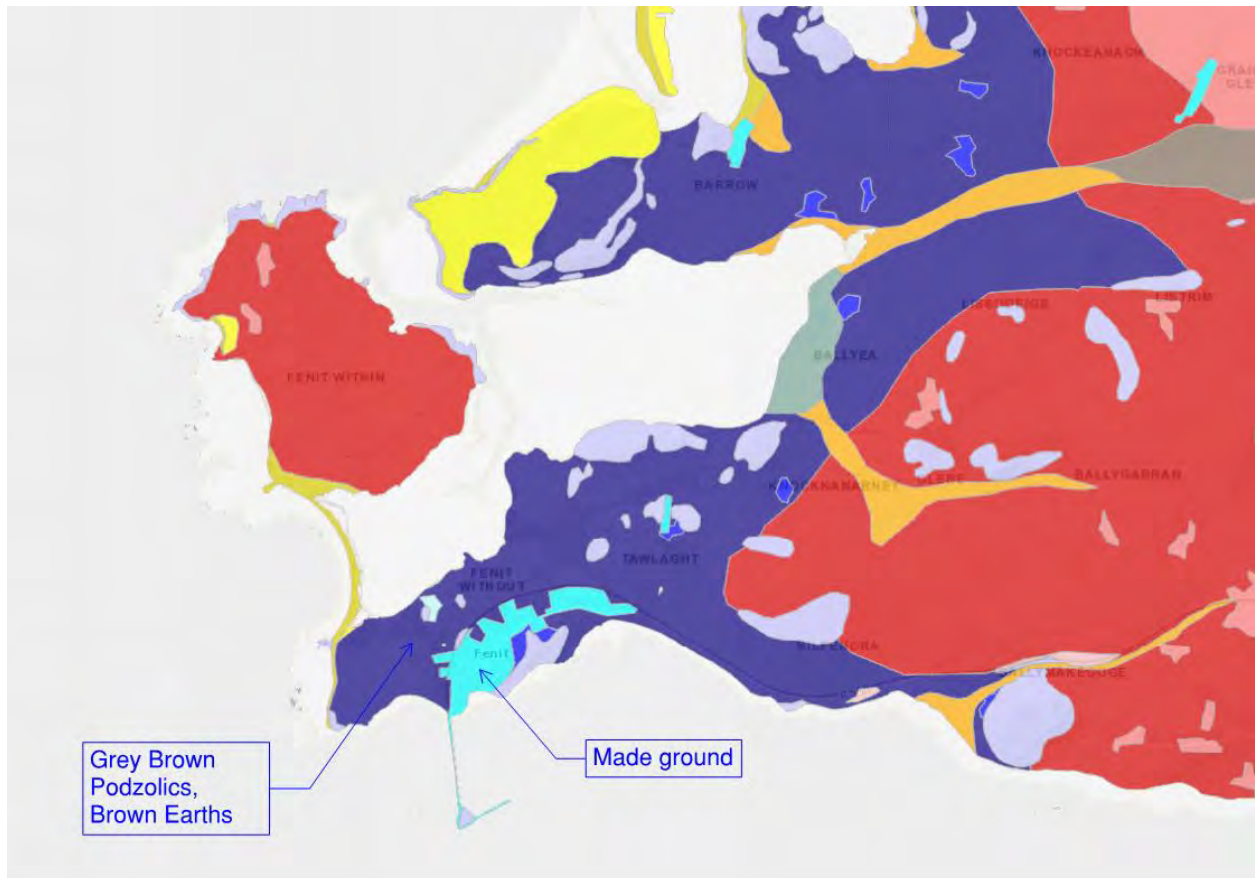


Figure 3-3 Subsoils Mapping (ref: GSI)

4 Existing Utilities Review

4.1 Watermain

The existing watermain within Fenit Village consists of cast iron pipework from the mid-1960s. Pre-Connection enquiries should be submitted to Irish Water at the earliest possible juncture in respect to any future proposed developments to ascertain information on any capacity constraints (if any) that may exist, and infrastructure upgrades which may be required to upgrade the conveyance network.

An upgrade to the existing water treatment plant in Fenit was completed in 2017 which removed 950 people from the EPA's remedial action list. This infrastructure upgrade consisted of works to install Ultra Violet (UV) treatment at the plant. Similarly, to the watermain network, Irish Water should be engaged at an early stage to determine adequacy of the treatment plant to cater for any future developments.

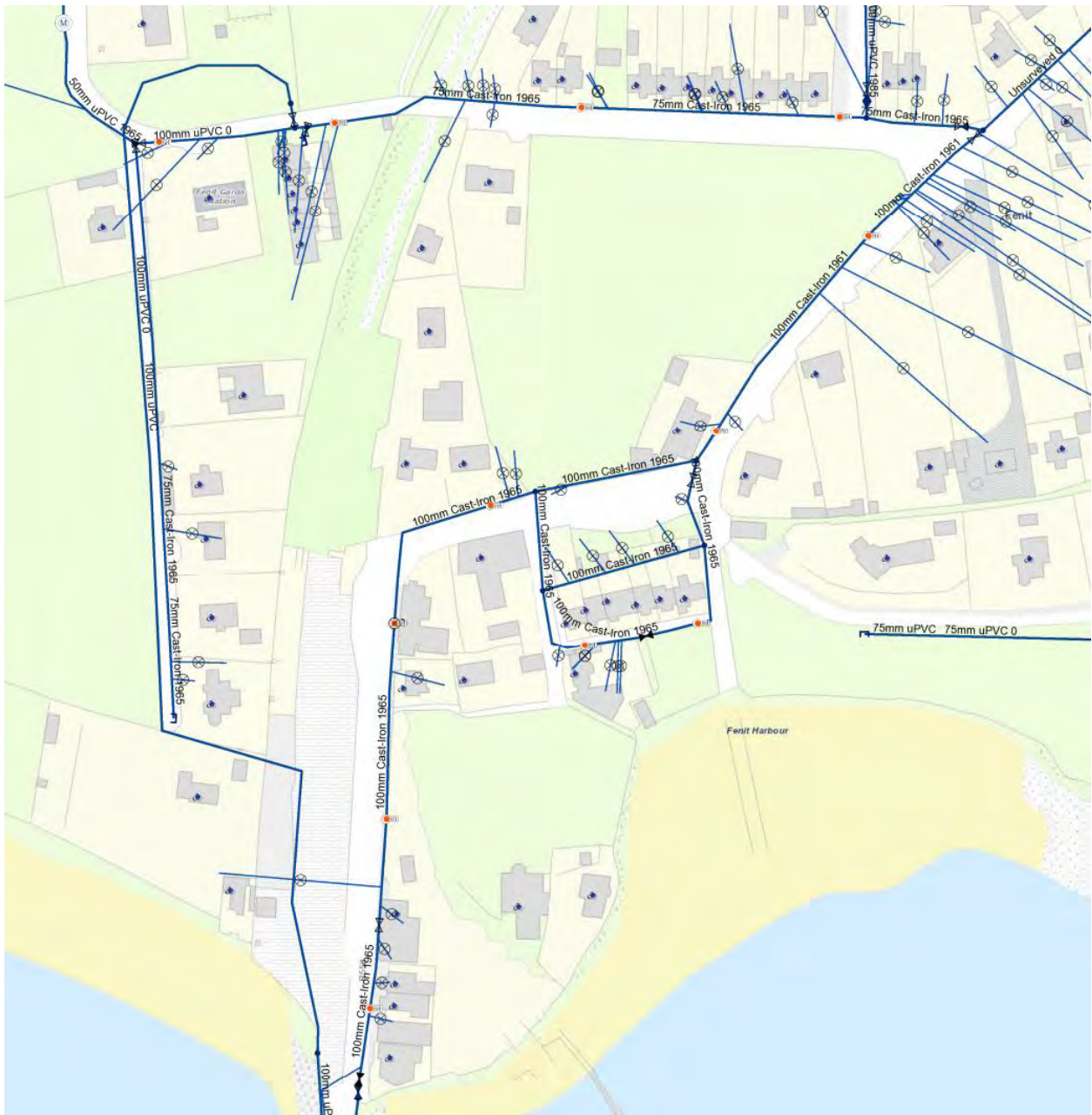


Figure 4-1 Existing Watermain Layout (ref: Kerry County Council)

4.2 Foul Drainage

The existing sewer network for Fenit is a combined system that includes a number of separate pumping stations that pump wastewater into manholes on the main sewer line, which direct flows to the wastewater treatment plant.

Fenit wastewater treatment plant is located in the townland of Fenit, approximately 650m west of the proposed village plaza area. The existing wastewater treatment system consists of a septic tank which provides primary treatment only. The outfall from the treatment plant discharges to Tralee Bay, and could be considered a long outfall as the discharge point is approximately 220m offshore.



Figure 4-2 Existing Combined Sewer Layout (ref: Kerry County Council)

As the existing wastewater treatment plant at Fenit is at capacity, new wastewater treatment facilities will be required for the village. Lands have been acquired and the necessary planning approvals are in place for this infrastructure and it is to be included in Irish Water’s Capital Investment Programme from 2021 to 2024.

The Local Area plan states that while provision has been made for an increase in the population of Fenit, subject to the proposed upgrade works being completed. In the interim, detailed assessment of the capacity of the existing wastewater treatment unit for any additional loading would need to be carried out on a case by case basis, however it should be assumed that the significant residential development proposed as part of this masterplan will not be possible until after the major infrastructure upgrade of the waste water treatment plant has taken place.

4.3 Storm Drainage

The existing sewer network in Fenit consists of combined sewers only. Irish Water do not accept storm water flows from new developments into their network and measures to prevent or restrict entry of storm water flows from any new developments to combined sewers will be required in accordance with the SUDS Manual and Greater Dublin Strategic Drainage Study (GSDSDS). Detailed ground investigations will be necessary to determine suitability of ground for direct infiltration which would be the preferred solution for serving any new developments from a sustainability perspective. If existing ground conditions are not suitable for infiltration, then a piped storm sewer network will be required to serve new developments.

Installation of a dedicated surface water sewer network to serve future developments and reduce loading on the WWTP should be considered. Such infrastructure can be provided without the need for any attenuation, however appropriate hydrocarbon interception and sedimentation control infrastructure should be provided. Water quality is the sole criteria of importance under the GSDSDS when discharging to the sea or an estuary, with no requirement for flow controls or attenuation.

Given the site topography and upgrade proposals for the R558 through the village centre, installation of a dedicated surface water sewer and outfall could be undertaken analogous to these developments with relatively minor disruption.

SUDS measures (e.g. Swales, bioretention areas, filter drains) should be considered for installation locally at individual development locations for collection, treatment and conveyance of surface water before entering mainline drainage. In this regard, development proposals should take cognisance of the Department of Housing, Local Government and Heritage publication 'Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Area - Water Sensitive Urban Design Interim Guidance Document'.

4.4 Electricity

ESB record drawings have been sourced from the ESB for the masterplan area. The vast majority of existing ESB infrastructure consists of overhead medium voltage (MV) and low voltage (LV) overhead lines. This is a limited section of underground MV/LV cable route in the area identified for the proposed terminus/plaza within the masterplan. It is likely that other existing overhead cables in this area will need to be undergrounded as part of the proposed public realm upgrade works.

It is likely that a new district level substation will be required to service the proposed residential developments included within the masterplan scheme. The design and location of this sub-station will need to align with ESB Networks design standards. Further co-operation from ESB with respect to cable routes and sub-station requirements to service proposed development would require completion and submission of new connection application by the client.

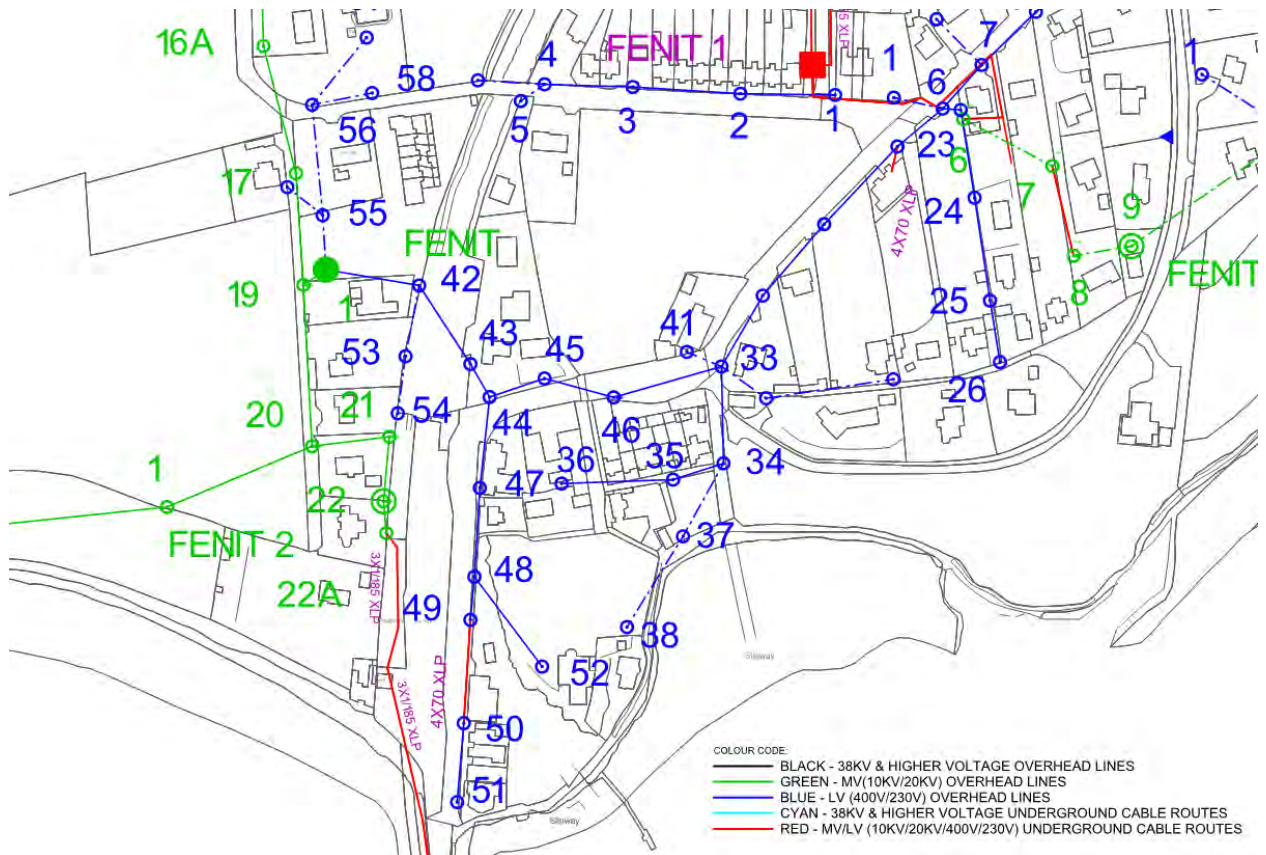


Figure 4-3 Existing ESB Layout (ref: ESB)

4.5 Gas

Gas Networks Ireland have confirmed that no transmission or distribution gas network currently exists within the greater Fenit area.

5 Flood Risk Review

Fenit village has been reviewed in relation to Flood Risk by consultation with mapping prepared for the area by the Office of Public Works (OPW), which is available on MyPlan.ie and reproduced in Figure 4-1 below. The mapping indicates coastal flooding risk in green. It can be seen from the diagram that some areas to the west of the village may be at risk from coastal flooding, however these areas have been zoned appropriately under the Tralee Municipal District Local Area Plan, for uses not susceptible to flooding. The orange coloured areas are zones susceptible to pluvial flooding, which can be controlled by means of an appropriately designed surface water drainage system.

It should be noted that the areas earmarked for future development as part of this village masterplan including both public realm works and proposed residential developments are outside of those areas which are currently identified as being at risk from coastal and pluvial flooding. A more detailed flood risk assessment would be required as part of the planning stage design for any future developments envisioned within this masterplan in which proposed streetscape level/floor levels etc. would be reviewed to ensure an adequate buffer from future flood risk taking climate change into account.



Figure 5-1 Flood Extent Mapping (ref: OPW)

6 Traffic & Transportation Review

The primary route to access Fenit Village is via the R558 from Tralee, which is one of the busier regional routes in the county year-round but particularly during the tourist season.

The R558 is strategically designated under the Tralee Municipal District Local Area Plan and targeted for upgrade within the environs of Fenit to facilitate the movement of abnormally large vehicles carrying large machinery and infrastructural components to the port, particularly Liebherr crane components. It is envisaged that such an upgrade will aid the development of Fenit Port, and Kerry County Council and the Department of Transport have made a commitment to upgrading this route.

Due to the nature of the village and potential for pedestrian/vehicular interaction in the central core area, a Road Safety Audit shall be required to be undertaken in respect of both the R558 realignment and the Central Core proposals.

A key consideration impacting the design of the proposed Central Core area will be the proposed R558 realignment. As this route is being designed to facilitate transport of extremely heavy plant and oversized vehicles, appropriately durable road build ups and surface courses must be specified for the trafficable areas. To this end, comprehensive in situ testing at proposed road formation level in the Central Core area should be undertaken at design stage to inform design of pavement thickness.

The proposed realignment will necessitate the removal of some existing trees and an existing shed to the rear of O'Sullivan's Hotel (currently not in operation) which fronts on to the R558 in its current alignment. The interface between the Hotel and the road in its current guise is extremely unsafe and would prohibit any redevelopment of the building itself due to the proximity of the site entrance to the

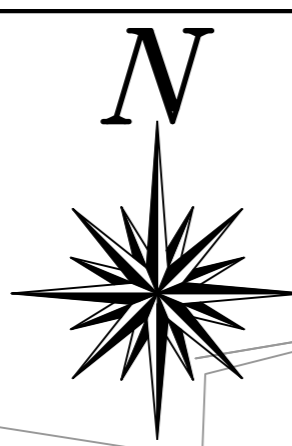
existing road, the lack of adequate footpaths in the vicinity and the location of the building entrance on the inside of a bend which limits visibility of the entrance for approaching drivers in both directions. The proposals to realign the R558 to pass behind O'Sullivan's will open the possibility of redevelopment of this building and construction of a new urban streetscape to the front which will provide additional amenity value for Fenit village.



Figure 6-1 Existing Pub on R558

In the absence of specific information relating to the size of vehicles which Liebherr will be using to access the pier, vehicle auto-tracking was carried out for trucks of various sizes to determine the maximum vehicle size which can navigate the proposed R558 realignment. The current proposals can facilitate movement of an 18m long double articulated lorry without overhang, crossing of the road centreline or conflict with pedestrian routes, as shown in PUNCH drawings 194-167-015 to 194-167-020.

It is recommended that discussions are held with Liebherr to confirm the maximum vehicle size which will need to navigate the road and that an auto-track be undertaken for this vehicle in order to confirm final road geometry.

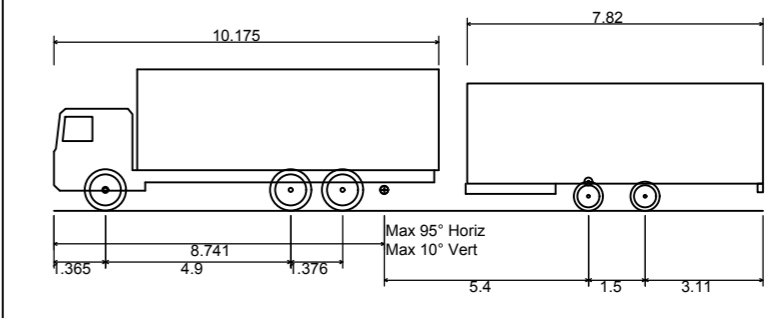


AUTOTRACK LEGEND

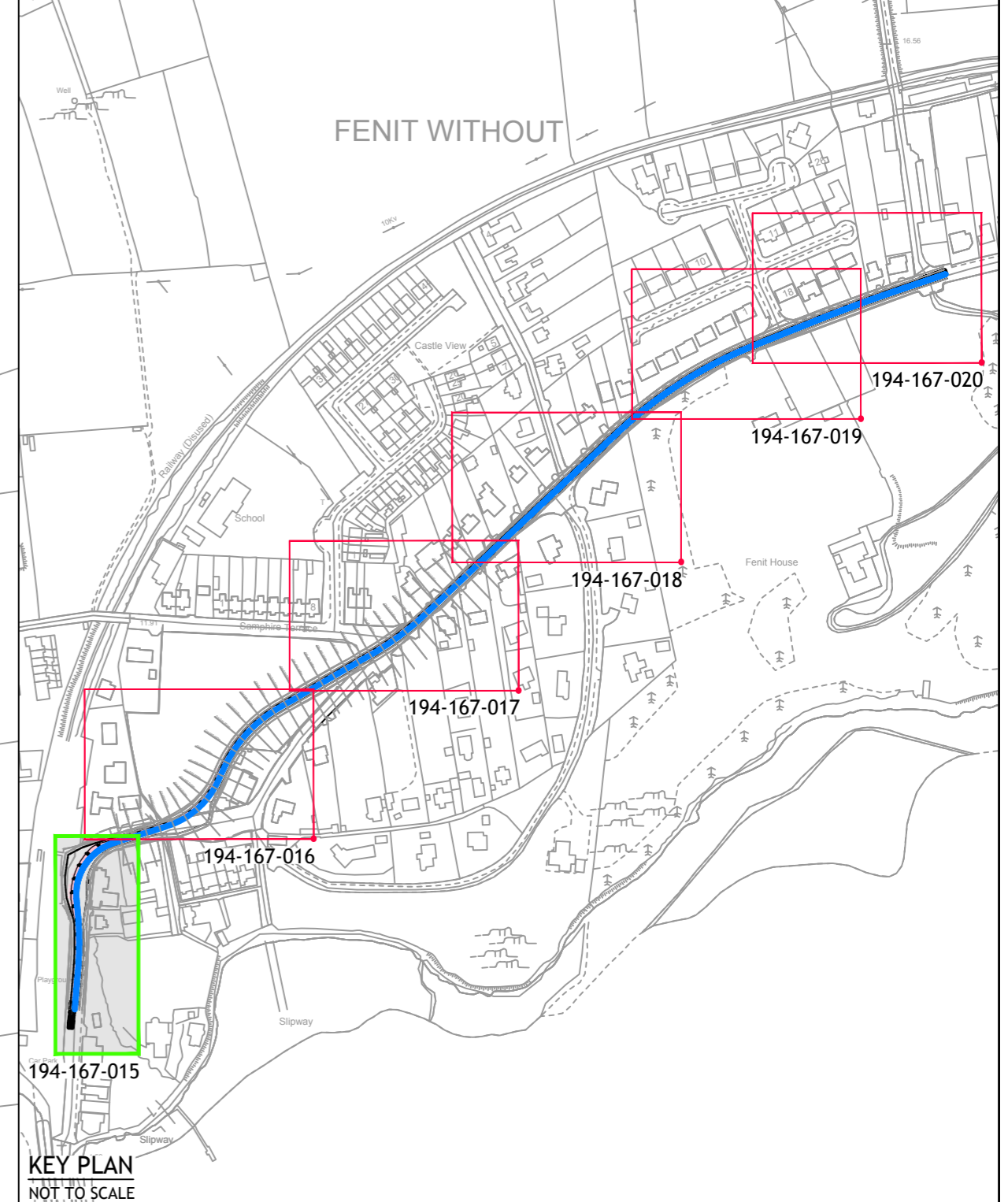
VEHICLE MOVING FORWARD



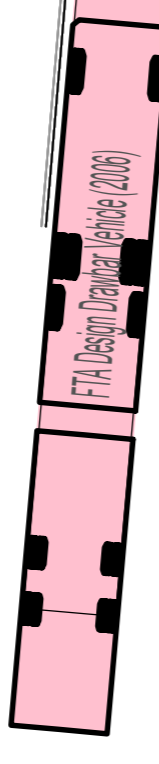
PROPOSED CENTRELINE



FTA Design Drawbar Vehicle (2006)	
Overall Length	18.751m
Overall Width	2.550m
Overall Body Height	3.745m
Min Body Ground Clearance	0.450m
Max Track Width	2.470m
Lock-to-lock time	3.00s
Curb to Curb Turning Radius	10.000m



round



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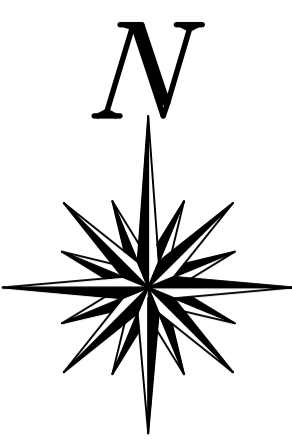
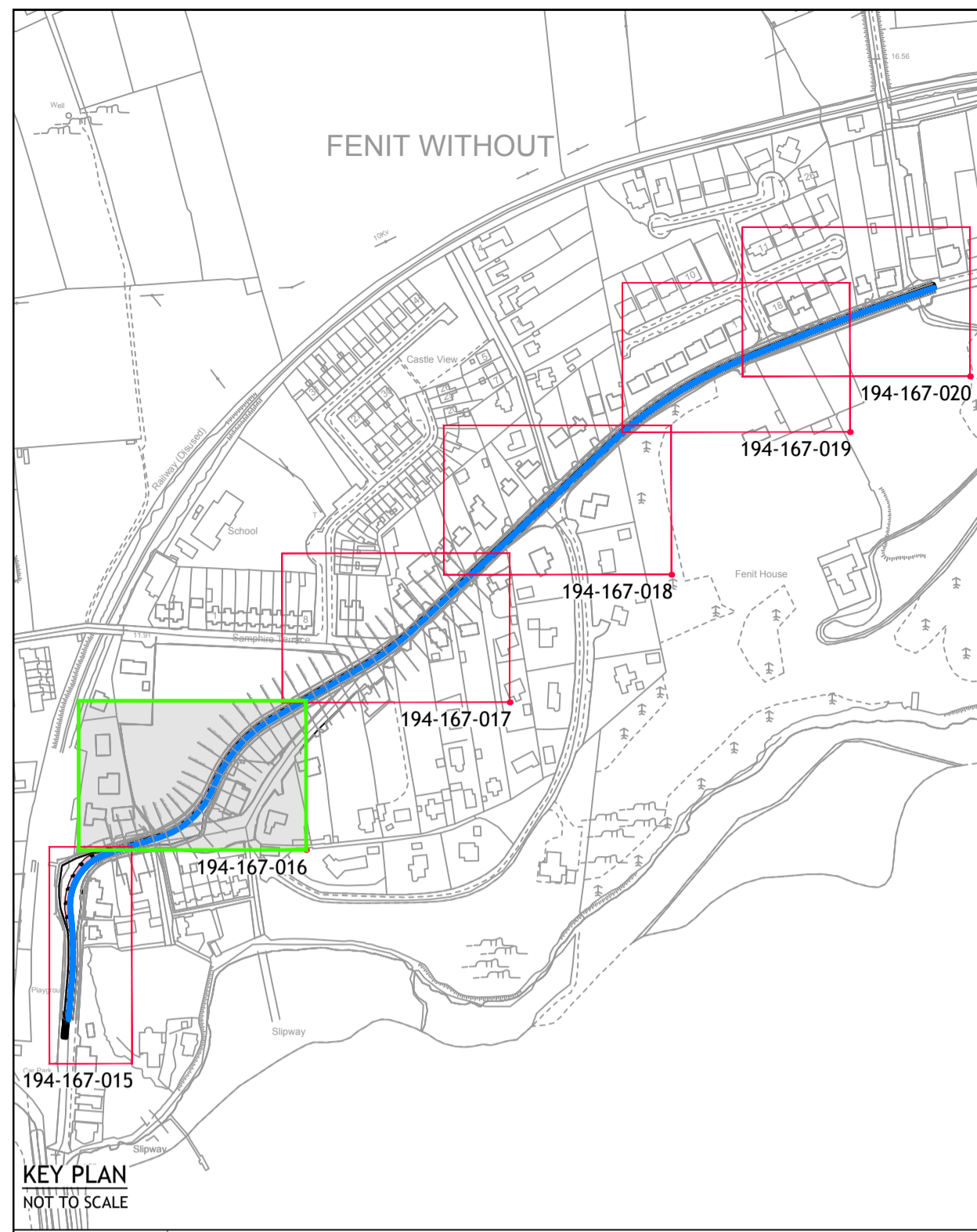
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PR2	KEY PLAN ADDED	COS	2020-01-14

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Date Issued: 2019-11-29	
Issued By: COLIN O'SULLIVAN	

Job: FENIT MASTERPLAN
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Approved: CIAN MURPHY	Drawing No: 194-167-015
Revised: PR2	

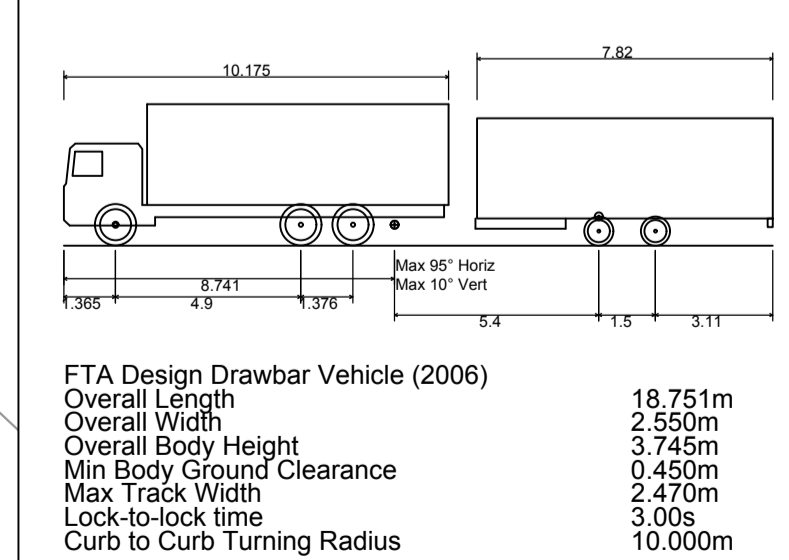
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AUTOTRACK LEGEND

VEHICLE MOVING FORWARD

PROPOSED CENTRELINE



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Overall Width	3.745m
Overall Body Height	0.450m
Min Body Ground Clearance	2.470m
Max Track Width	3.008m
Lock-to-lock time	10.000m
Curb to Curb Turning Radius	

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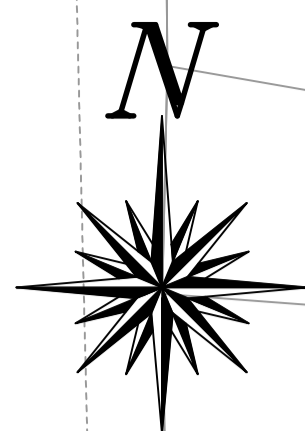
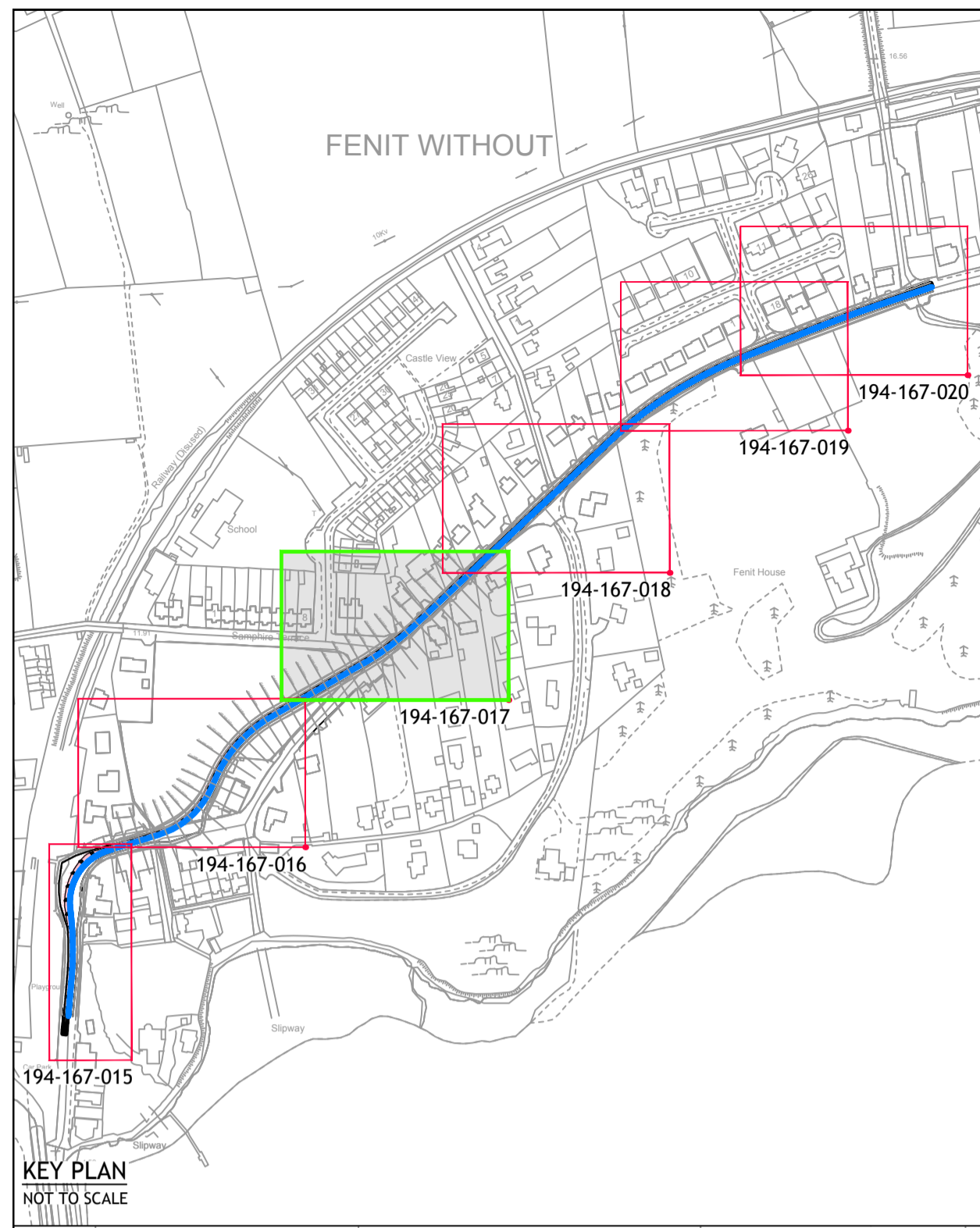


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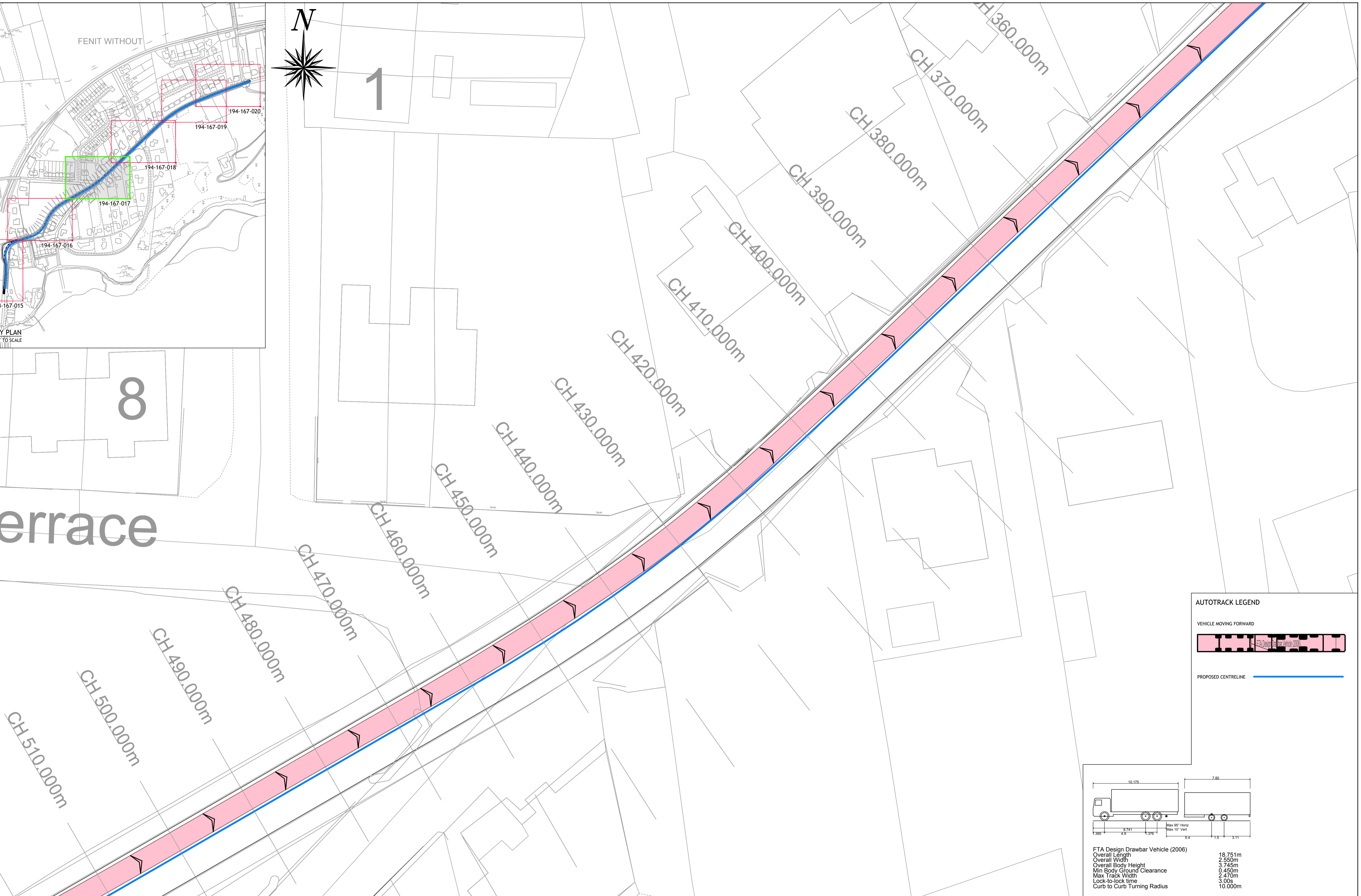
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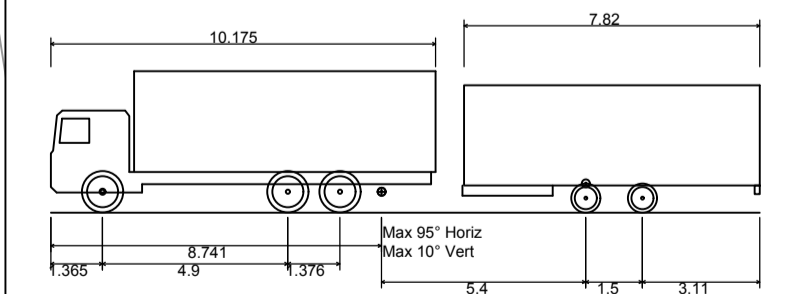
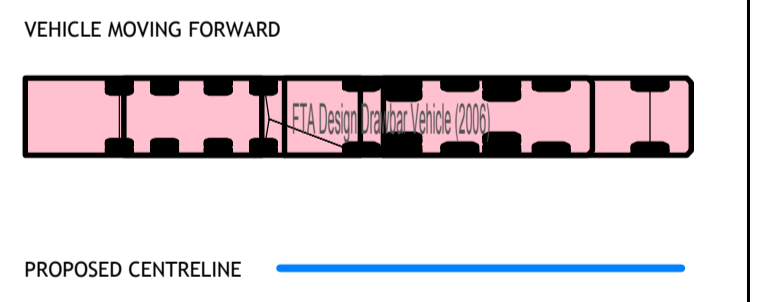
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errace

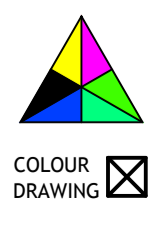


AUTOTRACK LEGEND



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Min Body Ground Clearance	0.450m
Max Track Width	2.470m
Lock-to-lock time	3.00s
Curb to Curb Turning Radius	10.000m

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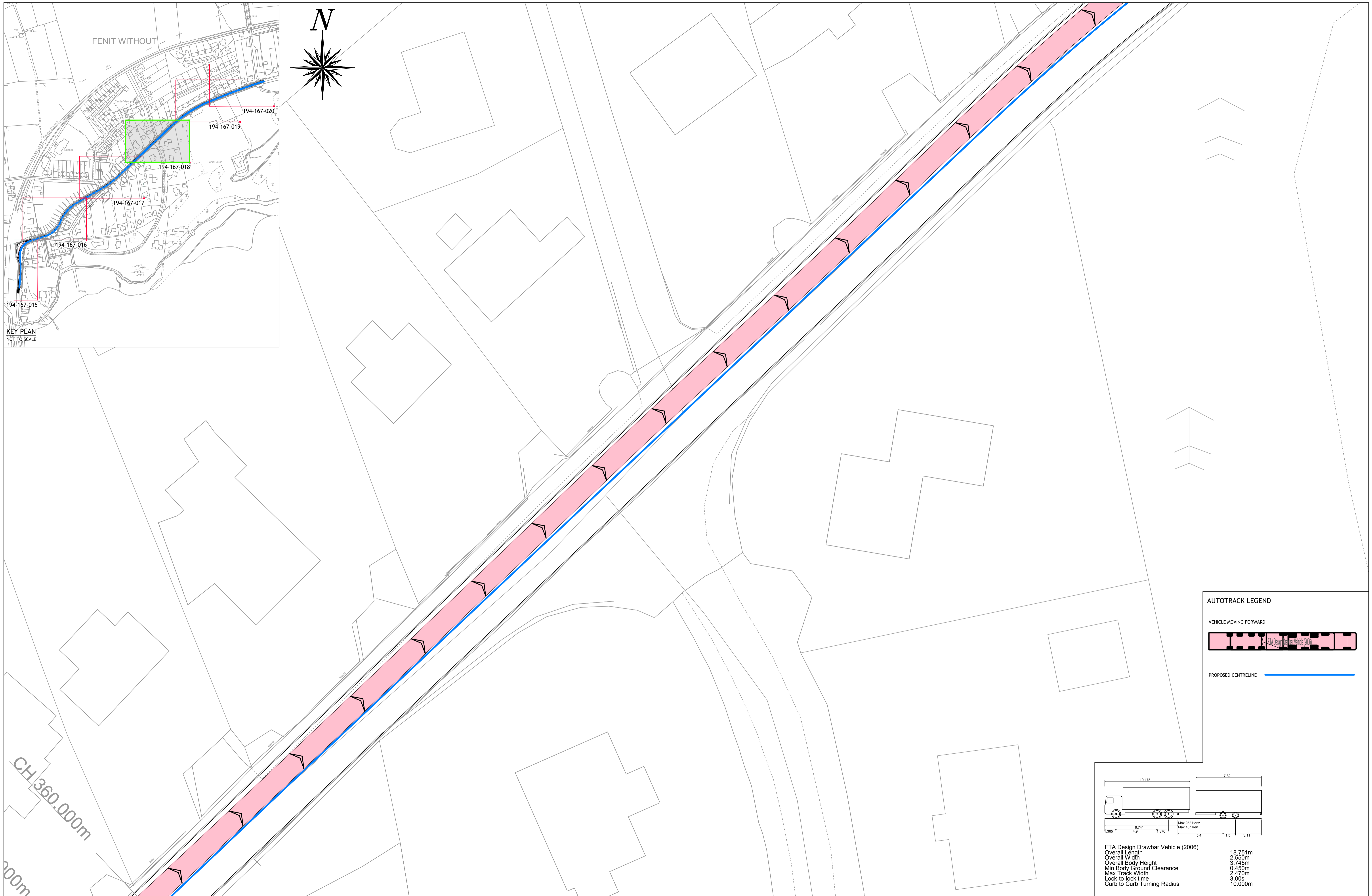
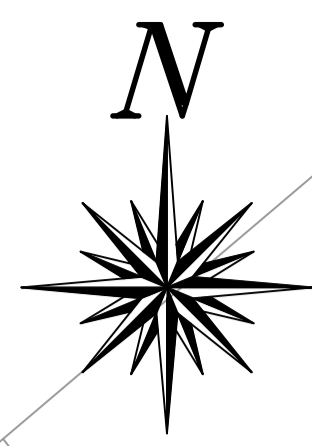
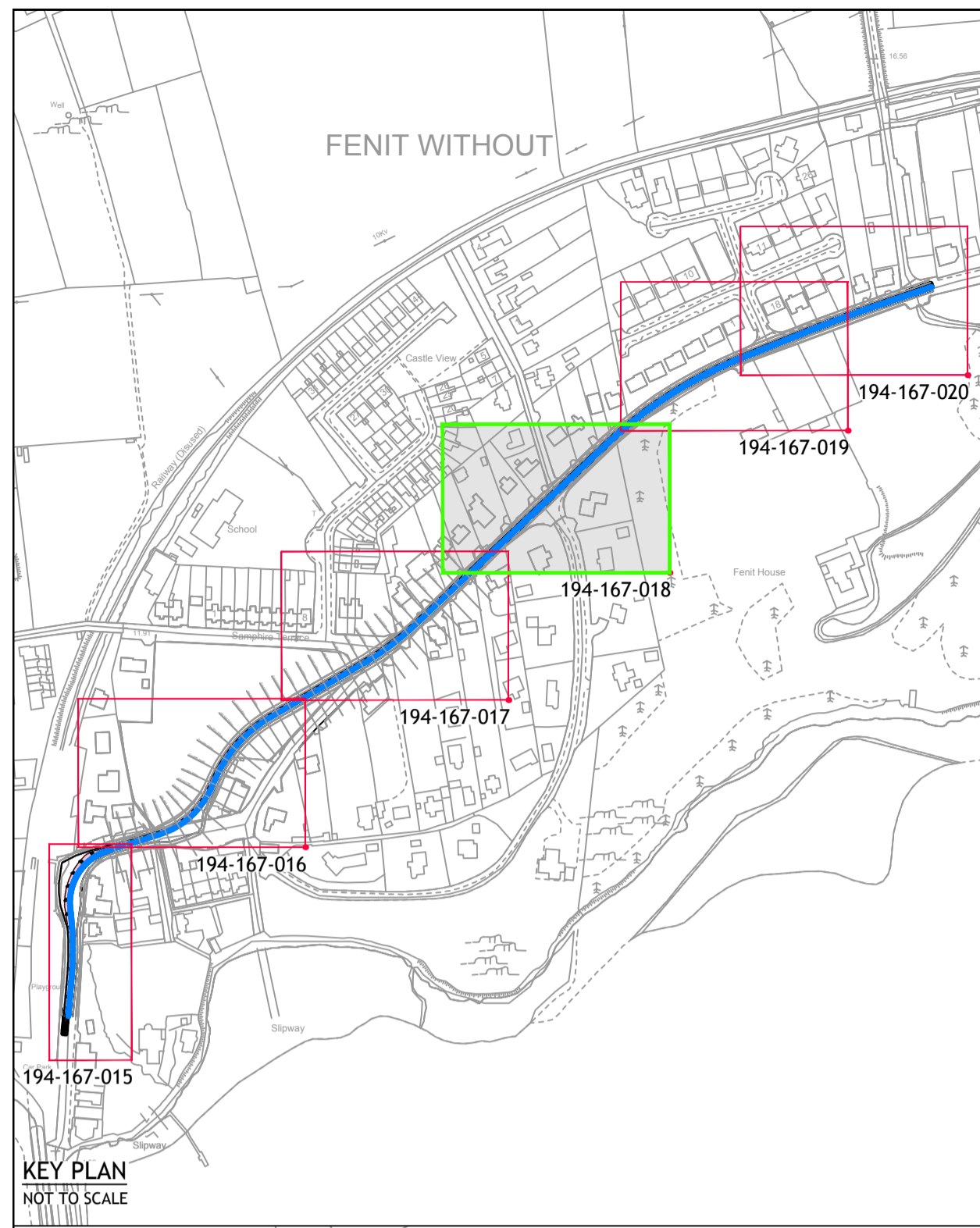


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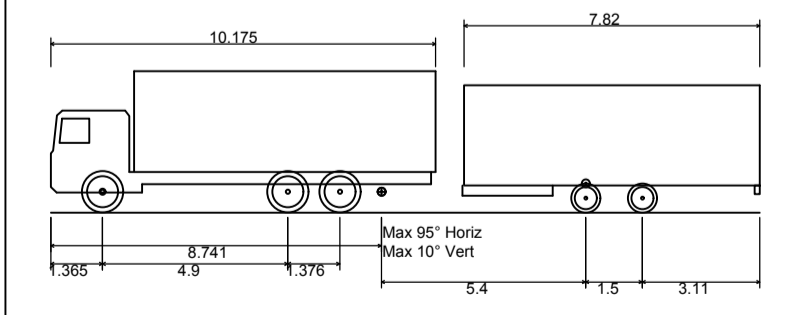
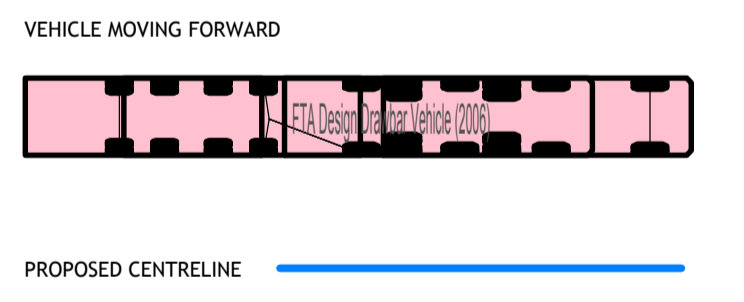
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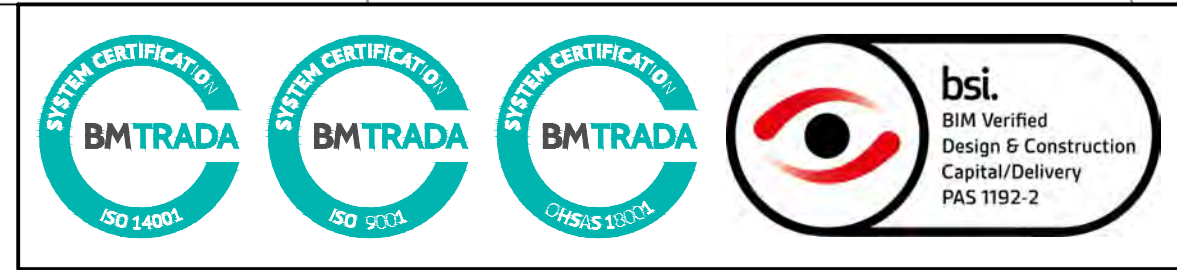
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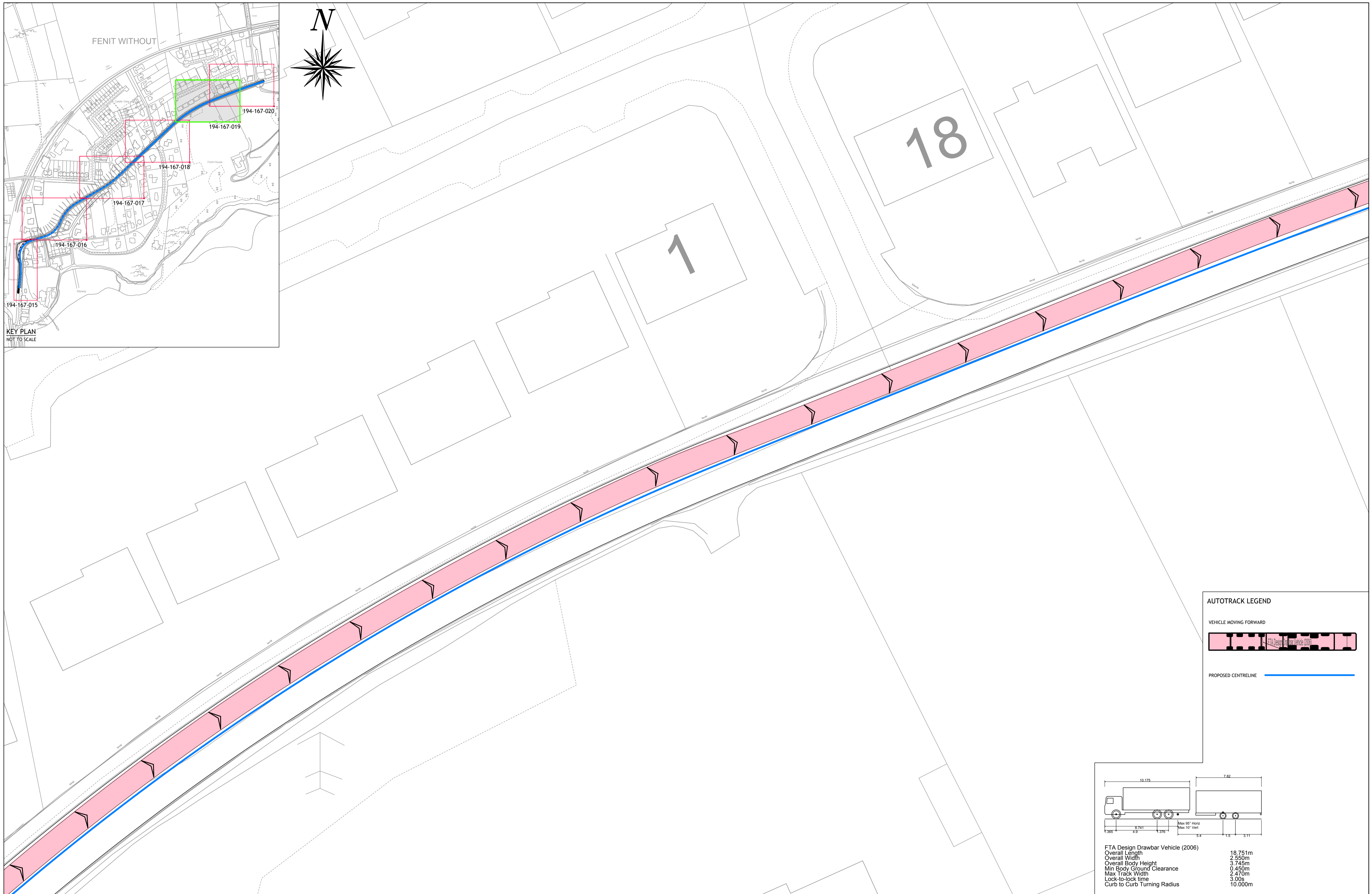
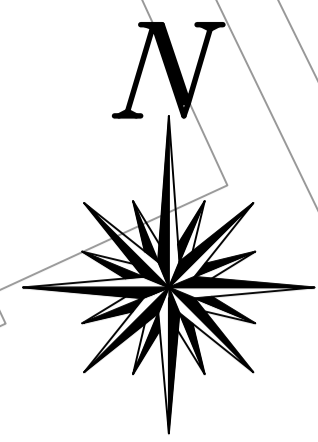
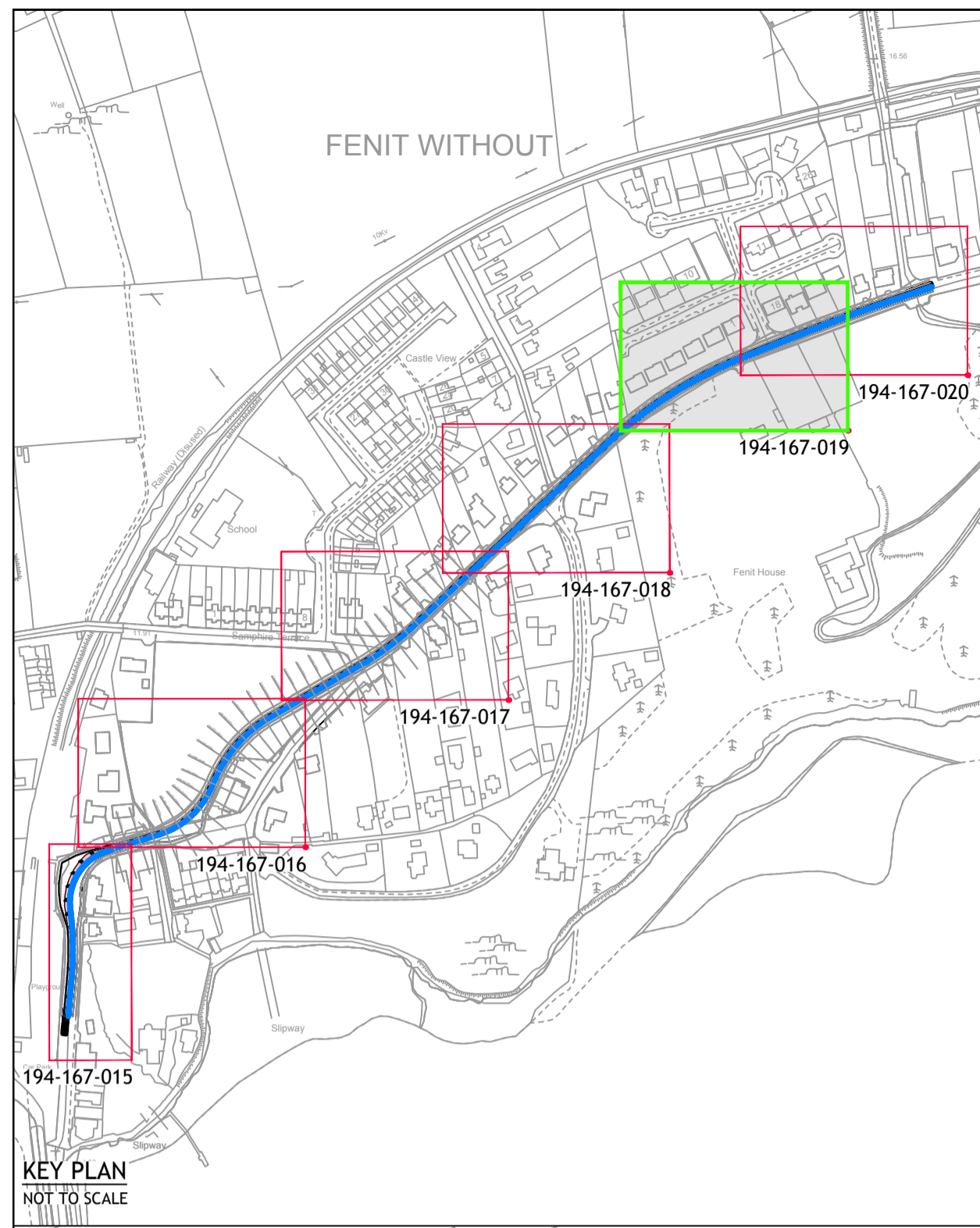


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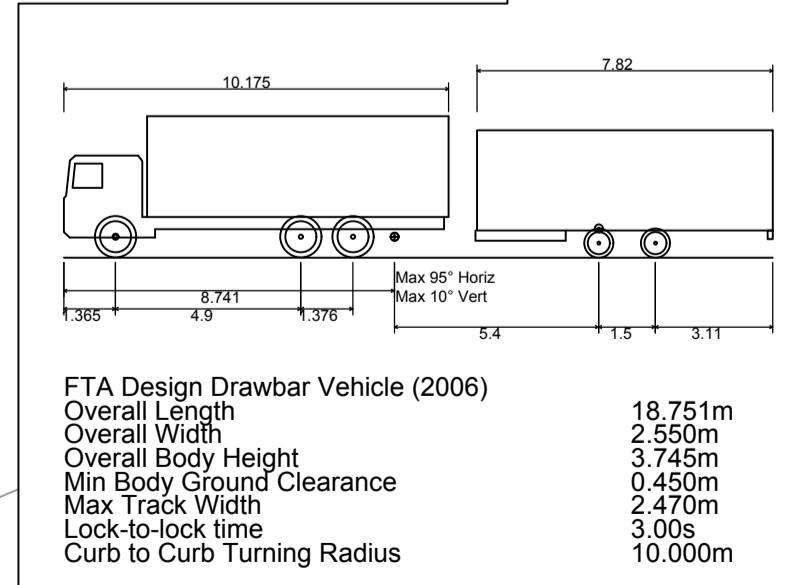
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 Rev: PR2



AUTOTRACK LEGEND

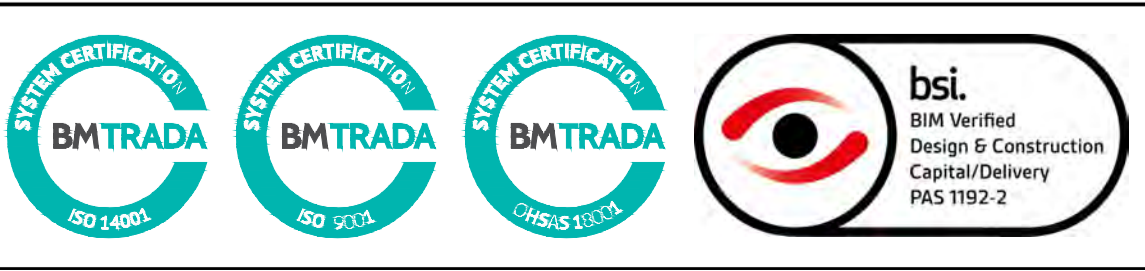
VEHICLE MOVING FORWARD

PROPOSED CENTRELINE



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Date Drawn: 2019-11-29
 Drawn By: COLIN O'SULLIVAN
 Date Issued: 2019-11-29
 Issued By: COLIN O'SULLIVAN

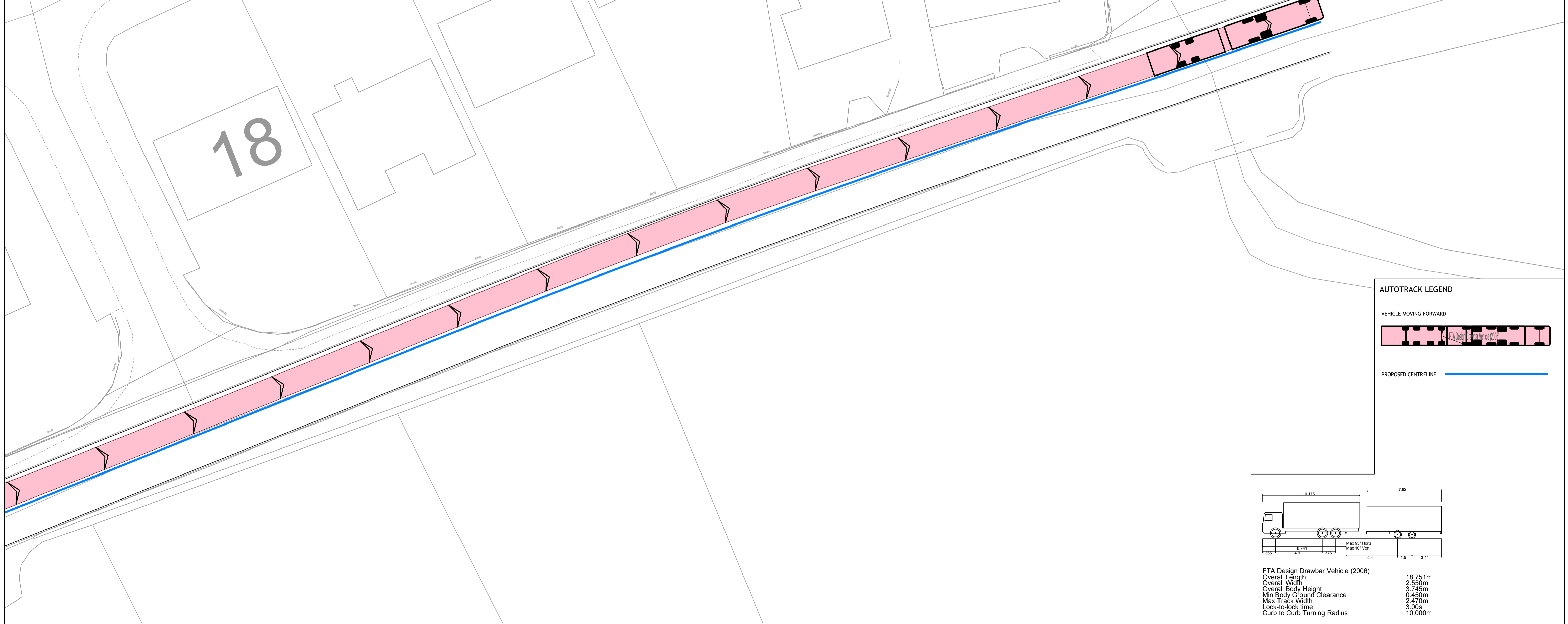
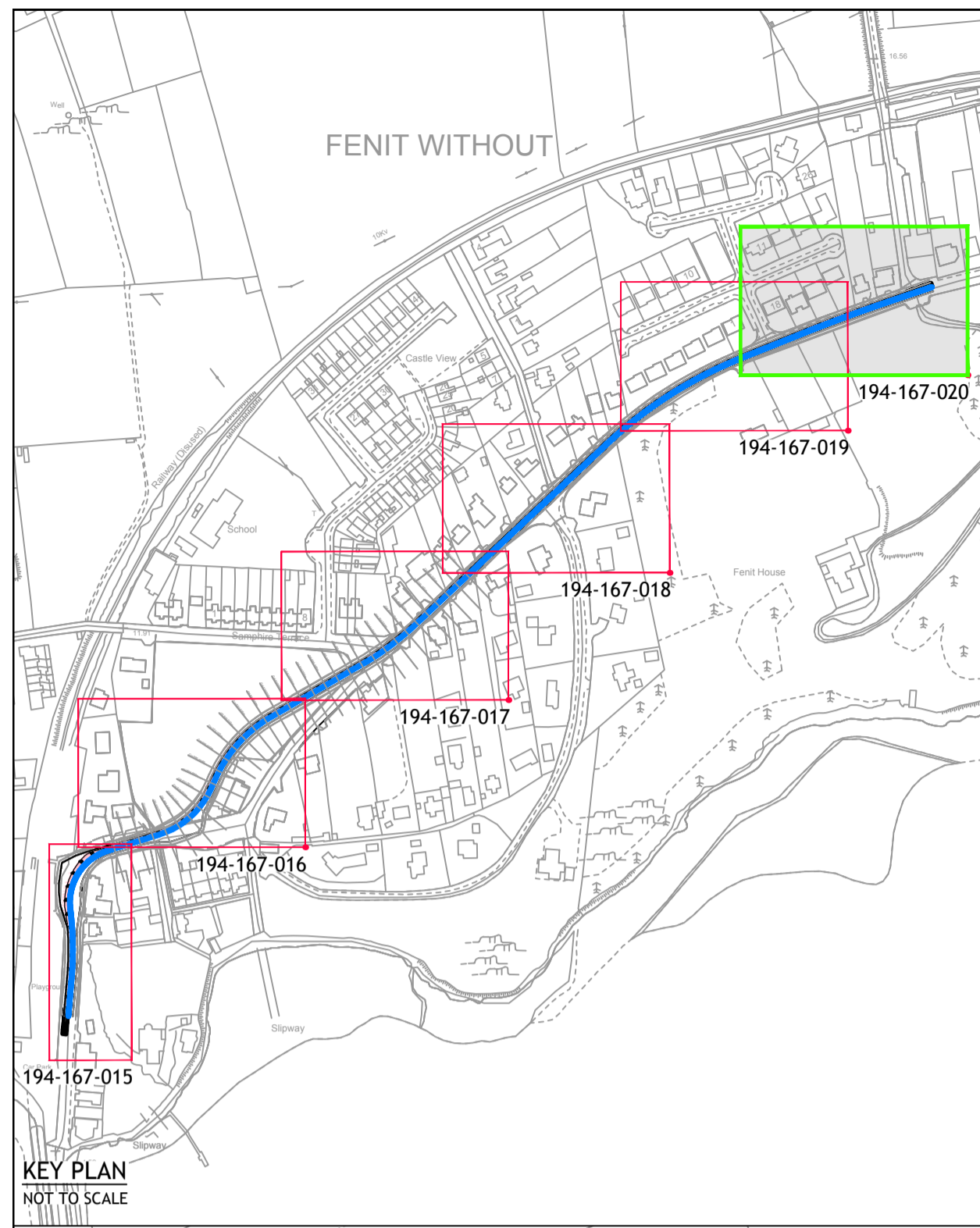


Rev	Amendment	By	Date
PR1	VEHICLE REVISED	COS	2019-12-13
PR2	KEY PLAN ADDED	COS	2020-01-14

Client:

Job: FENIT MASTERPLAN
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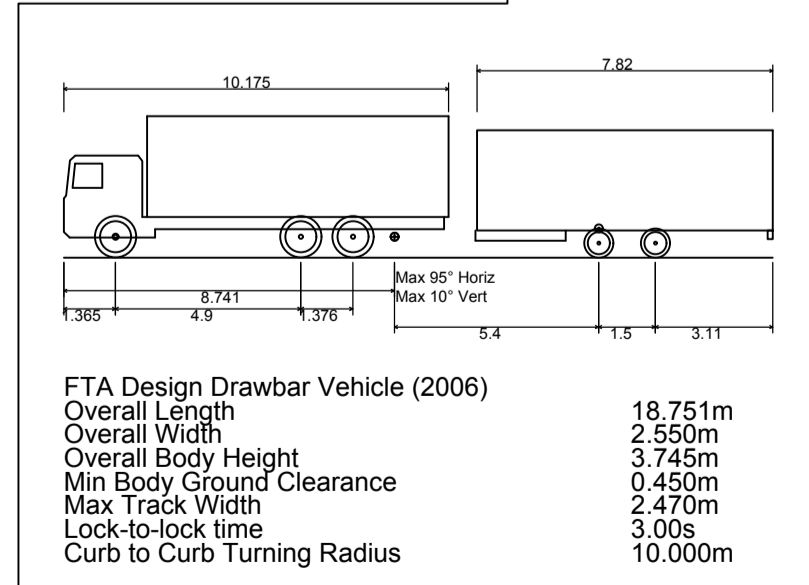
Stage: PRELIMINARY
 Scale @ A1: 1:500
 Technician Check: COLIN O'SULLIVAN
 Engineer Check: MIKE O'CONNOR
 Approved: CIAN MURPHY
 Drawing No: 194-167-019
 Rev: PR2



AUTOTRACK LEGEND

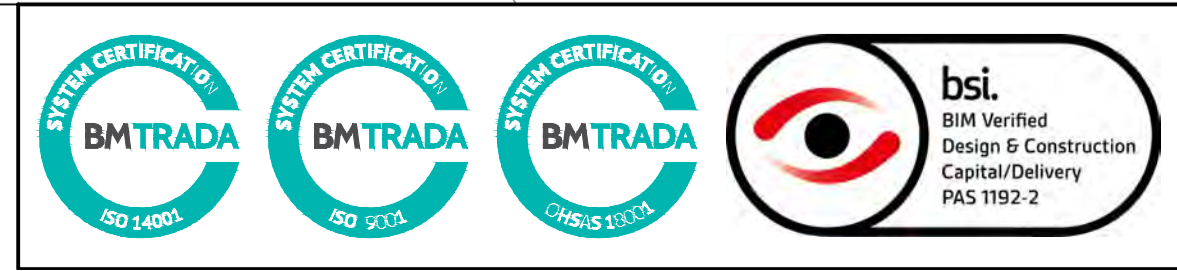
VEHICLE MOVING FORWARD

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Drawn By: COLIN O'SULLIVAN
Date Issued: 2019-11-29
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Rev	Amendment	By	Date
PR1	VEHICLE REVISED	COS	2019-12-13
PR2	KEY PLAN ADDED	COS	2020-01-14

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Stage: PRELIMINARY
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Technician Check: COLIN O'SULLIVAN
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