A2 Buncrana Road Improvement
Stage 2 Scheme Assessment

DRD Roads Service Northern Division
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Client:

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A2 Buncrana Road Improvement

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Executive Summary

Executive Summary

This report summarises the Stage 2 Scheme Assessment for the improvement of the A2 Buncrana Road, Londonderry between Pennyburn Roundabout at the junction with Strand Road and Culmore Road and the border with the Republic of Ireland (RoI).

Three potential alignment options were developed between Pennyburn Roundabout and Skeoge Roundabout, and have been assessed in terms of cost, economics and environmental impact. The three routes in question are the Red Route (on-line), Blue Route (part off-line from Collon Terrace to Springtown Road, one way traffic west bound) and Purple Route (off-line between Collon Terrace to Springtown Road, two way traffic) Each option includes revised junction layouts and traffic signal arrangements where applicable.

Only one option, the Navy Route, has been examined between Skeoge Roundabout and the Border, as a number of factors combine to severely limit the potential route options over this section.

In terms of environmental impact, the Purple Route is favoured. No route is considered to be unacceptable.

In terms of cost, the Red Route is the cheapest option, followed by the Blue, with the Purple Route being the most expensive.

Economically, the Red Route outperforms the other options.

The report recommends that the Red Route be taken forward to Stage 3 for the Pennyburn Roundabout to Skeoge Roundabout section, and that the Navy Route be taken forward to Stage 3 between Skeoge Roundabout and the Border.

1 Introduction

1 Introduction

1.1 Introduction

1.1.1 The A2 Buncrana Road widening scheme is identified in the Regional Strategic Transport Network Transport Plan 2015 (RSTN TP).

1.1.2 Faber Maunsell was commissioned by Road Service by letter dated 6 April 2006 (ref RDS 4/5/14/04) to develop proposals for the improvement to A2 Buncrana Road between Pennyburn Roundabout in Londonderry and the border with the Republic of Ireland (RoI).

1.1.3 The brief for the commission is to investigate route options for upgrading the road to two lanes in each direction, to report the assessment and appraisal of the options and to recommend a Preferred Route.

1.1.4 This Stage 2 Scheme Assessment Report (SAR) is in accordance with the Design Manual for Roads and Bridges Volume 5 TD 37/93 Scheme Assessment Reporting. This standard states that Stage 2 should identify the environmental, engineering, economic and traffic advantages, disadvantages and constraints associated with broadly defined improvement strategies.

1.2 Background

1.2.1 Recent traffic counts indicate that Buncrana Road carries in excess of 19,000 vehicles per day, and Branch Road Roundabout currently carries in excess of 3,000 vehicles per hour in the peak hour.

1.2.2 Many of the junctions on Buncrana Road suffer from saturation for long periods of the day. Recent improvements at Racecourse Road were only provided as a short term solution and this junction will quickly reach capacity through the expected increase in traffic volumes.

1.3 Conclusions from Stage 1 Report

1.3.1 The Stage 1 Scheme Assessment Report dated September 2007 and the Addendum dated March 2008 reported on five options for Buncrana Road.

1.3.2 Red Route: On-line widening from Pennyburn Roundabout to Skeoge Roundabout including a new junction at Branch Road.

1.3.3 Brown Route: On-line widening identical to the Red Route but with the westbound carriageway from Pennyburn Pass to Racecourse Road off-line and to the south of the existing.

1.3.4 Blue Route: On-line widening identical to the Red Route but with the westbound carriageway from Pennyburn Pass to Springtown Road off-line and to the south of the existing.

1.3.5 Purple Route: Similar to the Blue Route but with both carriageways off-line between Pennyburn Pass and Springtown Road.

1.3.6 Navy Route: An on-line widening option from Skeoge Roundabout to the RoI border.

1.3.7 The conclusions of the Stage 1 report recommended taking forward the Red, Blue, Purple and Navy Routes to Stage 2 assessment; the Brown Route was not to be considered further because it did not offer any significant advantages over the other options and was the option least favoured during consultation.

2 Existing Conditions

2 Existing Conditions

2.1 Introduction

2.1.1 The following section of the report gives a brief overview of the existing route of the A2 Buncrana Road.

2.1.2 The A2 Buncrana Road is an existing single carriageway road from Pennyburn Roundabout in Londonderry at the junction with Strand Road and Culmore Road to the N2 at the border with the RoI. The road runs in a southeast to northwest direction but for simplicity the road is described as running from east, at Pennyburn Roundabout, to the west at the RoI border. The road has been sub-divided into four sections for simplicity.

2.1.3 From Pennyburn Roundabout to Racecourse Road, a distance of 0.6km, Buncrana Road is within an urban environment with retail and residential properties fronting directly onto the carriageway.

2.1.4 From Racecourse Road to Branch Roundabout, a distance of 1.3km, and from Branch Road to Skeoge Roundabout, a distance of 1.1km, Buncrana Road is semi rural with side roads, entrances to industrial & retail outlets, playing fields and a few residential properties but generally with wide verges that provide a semi rural environment.

2.1.5 From Skeoge Roundabout to RoI border, a distance of 1.3km, Buncrana Road is in a rural environment with a small number of side roads and farm accesses and one business entrance onto the road.

2.1.6 Skeoge Roundabout is a recently constructed roundabout which forms the start of the A515 Skeoge Road Link, a bypass to the north of Londonderry. This roundabout has been constructed to tie in with the proposed future widening of Buncrana Road, and part of the carriageway surfacing is cordoned off to tie in with the current layout.

2.1.7 Figure 2.1, included in Appendix B of this report, shows the existing road layout.

2.2 Pennyburn Roundabout to Racecourse Road

2.2.1 From Pennyburn Roundabout to Racecourse Road, Buncrana Road is a single carriageway with a minimum width of 9m and maximum of 10m. At Pennyburn Roundabout the westbound carriageway widens to form two queuing lanes onto the roundabout. 50m east of Racecourse Road, Buncrana Road again widens to form three westbound lanes for queuing at the Racecourse Road signal controlled junction. Side roads off Buncrana Road include Maybrook Mews, Pennyburn Pass, Farren Park, St Francis Terrace and two dropped kerb entrances into St. Patrick's Church. A number of residential and two industrial properties front the carriageway. Although right turns are permitted there are no dedicated right turn facilities within this section of Buncrana Road. The speed limit on this section is 30mph.

2.2.2 Footpaths exist on both sides of the carriageway; generally 2.2m wide on the north side and 1.9m wide on the south side. There is a dedicated pedestrian refuge at the west entrance to St Patrick's Church.

2.2.3 There are two bus stops along this section; one is located on the eastbound carriageway to the east of the church, the other, complete with lay-by, is located on the westbound carriageway opposite Maybrook Mews.

2.2.4 A car park is located adjacent to the westbound carriageway, with capacity for approximately 50 vehicles. Ownership of this car park has not been confirmed.

2.3 Racecourse Road to Branch Roundabout

2.3.1 For 200m east of Racecourse Road, Buncrana Road is within an urban environment. The environment is semi rural with landscaped verges and reduced direct frontage onto Buncrana Road. The speed limit of Buncrana Road increases from 30mph to 40mph over the majority of this section.

2.3.2 From Racecourse Road to Branch Road, Buncrana Road is a single carriageway with a varying width from 9m and 13m. There is a central ghost island for the full length except at the following:

- Gaps within the ghost island for right turning traffic occur at Springtown Road, St Columb's College entrance, Balliniska Road, The Hawthorns and the Seagate entrance.
- Between Shandon Park and St Johns Park approximately, Buncrana Road is a wide single carriageway without ghost island.
- In advance of Branch Road a central reservation separates the carriageways:
  - The westbound carriageway widens to form two queues at Branch Roundabout.
  - The eastbound carriageway is two lanes from the exiting Branch Roundabout and narrows to 1 lane at the entrance to the B&Q retail park east of Branch Roundabout. In addition there is a dedicated off-slip into B Q retail park.

2.3.3 For 50m approaching Racecourse Road the eastbound carriageway widens to three lanes for queuing at the traffic signals; the left hand lane being left turn only.

2.3.4 From Racecourse Road to St. John's Park the footpath on the north side varies from 1.2m to 1.8m. This footpath widens up to 6m in width from St John's Park to the B&Q entrance. There is a footpath on the south side that varies in width and is up to 4m wide.

2.3.5 Pedestrian refuges occur 50m west of Messines Park, between Springtown Road and St John's Park, at St Columb's College and at B Q. With the exception of the crossing at B Q, existing tactile paving layouts do not conform to current standards.

2.3.6 Bus stops and shelters are situated 30m east of Shandon Park eastbound and at St Columb's College westbound. Bus stops are also located at the following locations:

- Westbound near Collon Bar.
- Westbound between Balliniska Road and the employee entrance to Seagate.
- Eastbound at the entrance to The Hawthorns.

2.3.7 Between Racecourse Road and Branch Roundabout, there are several side roads and property/building accesses directly onto Buncrana Road and are described as follows:

- On the southern side, opposite the entrance to St Johns Park and Racecourse Road there are 10 residential and retail entrances directly on to Buncrana Road.
- There is an entrance and separate exit into St Columb's College.
- On the northern side there is a narrow access into The Hawthorns housing estate.
- On the southern side there is an employee access into Seagate.
- There is a narrow exit on the southern side for the Ulster Science and Technology Park (USTP) which allows left out movements only towards Branch Roundabout.

2.4 Branch Roundabout to Skeoge Roundabout

2.4.1 Within the semi rural section from Branch Roundabout to Skeoge Roundabout the speed limit along Buncrana Road is 40mph. With the exception of a 100m stretch to the west of Skeoge Roundabout (which was constructed as part of Skeoge Roundabout and therefore widened to accommodate future widening of Buncrana Road) this section of Buncrana Road is a single carriageway varying in width from 7.3m to 10.5m. There is a central ghost island for the full length and gaps for right turning traffic into Collon Lane, Templegrove, the Spar Market, Upper Galliagh Road and retail units east of the Skeoge Roundabout.

2.4.2 There is a footway on both sides of the carriageway except between the vehicle entrance and exit to the retail units east of the Skeoge Roundabout. The width of this footpath varies from 1.6m to 4m wide on the north side and 1.2m to 4m on the south side. These footpaths have dropped kerbs at the side road junctions, but without tactile paving. There are two small pedestrian refuges, one situated between Templegrove and Collon Lane and the other east of Upper Galliagh Road. A signal-controlled pedestrian crossing is situated between Branch Roundabout and Collon Lane. The controlled crossing has red coloured tactile paving that conforms to current standards.

2.4.3 Between Collon Lane and Upper Galliagh Road, along the northern side of Buncrana Road, is situated the Templemore Sports Complex. This complex has sports fields located adjacent to Buncrana Road. There is an entrance into a large asphalt surfaced area on the northern side opposite the Spar market, which is currently used as a car park. On the southern side is a small Spar market with off-road customer parking adjacent to Buncrana Road.

2.4.4 There is a bus stop and shelter on the eastbound carriageway 50m west of the junction with Templegrove, a bus stop with lay-by and shelter located opposite Collon Lane on the westbound carriageway and a bus stop westbound between Templegrove and Whitehouse Road.

2.4.5 Other features of note include:

- There are three private property accesses (one single access 100m east of the junction with Whitehouse Road and one double access approximately 160m eastwards). The single access is located adjacent to the large asphalt surfaced area on the northern side opposite the Spar market. The double access is located on the southern side approximately midway between the Spar market and Templegrove.
- There is a field access almost directly opposite the eastern entrance to the retail units east of Skeoge Roundabout, with a dropped kerb.
- There are no turning restrictions to and from any side roads between the Skeoge Roundabout and Branch Roundabout along the Buncrana Road.
- Collon Lane serves only one residential property, and provides no through road or access to the sports complex. There are removable bollards approximately 25m from the junction with Buncrana Road to prevent any vehicle access.

2.5 Skeoge Roundabout to RoI Border

2.5.1 This rural section of Buncrana Road has a speed limit of 60mph, changing to 100kph at the border with the RoI. The carriageway width varies from 7.7m to 10.9m.

2.5.2 From Skeoge Roundabout, Buncrana Road is a single carriageway with hardstrip on the eastbound between Elagh Road and the RoI border. The carriageway widens to form a ghost island with a right turn refuge into Elagh Business Park.

2.5.3 From the business park entrance the road narrows to a wide single with a hardstrip westbound to the border with the RoI. There is also a diverge slip for eastbound vehicles turning left into the business park.

2.5.4 At the Border there is a large westbound lay-by 160m long, 7.3m wide with tapers of 25m at the eastern end and 7m at the western end.

2.5.5 Also from the Border, there are segregated cycleway and footway facilities on the northern side to a bus stop approximately 80m east of the junction with Benview Road. The width of this combined footway/cycleway is 3m. On the southern side there is a footpath of width varying from 1.7m to 2.4m from the lay-by adjacent to the RoI Border to Skeoge Roundabout.

2.5.6 East of the access to Elagh Business Park, there is a junction with substandard stagger into Elagh Road and Benview Road respectively.

2.5.7 There is one private access to the dwelling of ‘Derryowen’ directly from Buncrana Road 50m east of the junction with Benview Road.

2.5.8 There are several field accesses directly off Buncrana Road.

2.5.9 There are no turning restrictions to and from side roads between Skeoge Roundabout and the RoI border.

3 Alternative Schemes

3 Alternative Schemes

3.1 Description of Alternative Schemes

3.1.1 This section of the Stage 2 Scheme Assessment Report describes the options under consideration.

3.1.2 The proposal for Buncrana Road is to increase the capacity and improve safety of the existing road by on-line or off-line improvements. Four options have been considered:

3.1.3 Red Route: On-line widening from Pennyburn Roundabout to Skeoge Roundabout, with a new roundabout/gyratory junction at Branch Road.

3.1.4 Blue Route: On-line widening identical to the Red Route but with the westbound carriageway from Pennyburn Pass to Springtown Road off-line and to the south of the existing.

3.1.5 Purple Route: Similar to the Blue Route but with both carriageways off-line between Pennyburn Pass and Springtown Road.

3.1.6 Navy Route: An on-line widening option from Skeoge Roundabout to the RoI border.

3.1.7 Figures 3.1 to 3.4 included in Appendix B show the extent of the Red, Blue, Purple and Navy options respectively.

3.1.8 The following describes the four options.

3.2 Red Route

3.2.1 The Red Route is the fully on-line widening of Buncrana Road from Pennyburn Roundabout to Skeoge Roundabout. This widening would be a four lane carriageway with a new roundabout or gyratory, at the junction of Branch Road and Templemore Road. Junctions at Racecourse Road and Springtown Road would be signal controlled. The on-line widening between Pennyburn Roundabout and Maybrook Mews would be to the south largely on car parking space. Properties at Collon Terrace would be demolished to accommodate the widening leaving the properties on the north side of Buncrana Road largely untouched. Through the semi rural section the widening would generally encompass the verges on either side of the existing road, particularly the landscaped verge to the south.

3.2.2 It is anticipated that access and egress would be generally be provided at all current locations, albeit that some junction alterations may be required, for example Farren Park may be a restricted movement junction. This will be investigated in more detail at Stage 3.

3.2.3 There are a number of other options that can be incorporated into the design. These are listed as follows and would be examined in more detail within the future Stage 3 Assessment:

- Cycling facilities either within the carriageway or separate within a combined footway.
- Branch Roundabout could be constructed as a signalised gyratory or similar.
- Improvements to pedestrian crossing facilities. These would be investigated within the Stage 3 Assessment following a non-motorised user survey.
- Improvements to junction operational capacity and the options recommended by DRD Road Service (Traffic Engineer).
- Public Transport provision, for example bus priority measures including bus gates or bus lanes, with a view to reducing car usage by encouraging modal shift. This important aspect of the scheme will be considered in more detail once the Preferred Route has been identified.

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3.3 Blue Route

3.3.1 This Blue Route option is the same as the Red Route option except between Pennyburn Pass and just west of Springtown Road.

3.3.2 Between Pennyburn Pass and Springtown Road eastbound traffic would travel along the existing Buncrana Road. Westbound traffic would use a new off-line section at the rear of Collon Terrace, between Collon Bar and the bus depot, to the rear of the print works and car wash to rejoin Buncrana Road approximately 300m west of Springtown Road. New junctions would be provided along the off-line westbound carriageway at Racecourse Road and Springtown Road. This option would require the demolition of the disused Ulster Ceramics factory but not residential properties at Collon Terrace.

3.3.3 The on-line section between Pennyburn Pass and 300m west of Springtown Road carrying only eastbound traffic would be largely unchanged.

3.3.4 Left or right turn access and egress would be provided at all current locations onto the one-way stretches of Buncrana Road..

3.3.5 There are a number of other options that can be incorporated into the design. These are similar to those listed for the Red Route.

3.4 Purple Route

3.4.1 The Purple Route option is the same as the Blue Route option except that between Pennyburn Pass and 300m west of Springtown Road, all through traffic would be off-line and follow the same route as the Blue Route option.

3.4.2 The existing Buncrana Road would be stopped 280m west of Springtown Road and Maybrook Mews except for access and egress by public transport and non-motorised users. The existing, stopped-up section of Buncrana Road would remain for local traffic. New junctions on the off-line route at Racecourse Road and Springtown Road would connect to the “local” section of Buncrana Road. This option would require the demolition of the disused Ulster Ceramics factory and adjacent plumbers merchants but not residential properties at Collon Terrace.

3.4.3 Access and egress would be provided at all current locations.

3.4.4 There are a number of other options that can be incorporated into the design. These are similar to those listed for the Red Route.

3.5 Navy Route

3.5.1 This is the only option being considered for the rural section from Skeoge Roundabout to the RoI border. The proposal is for a two lane dual carriageway from Skeoge Roundabout to Elagh Roundabout and a new roundabout into Elagh Business Park. West of Elagh Roundabout the existing carriageway would be widened to a four lane carriageway to the border with the RoI, albeit that part of the carriageway would be ‘cordoned-off’ to tie in with the current single carriageway section immediately across the Border. A new link would connect Elagh Roundabout to Coshquin Road. Benview Road would be closed to traffic entering Buncrana Road. Traffic from the Benview estate and the new developments around the Benview estate would join Buncrana Road from the new link road off Coshquin Road. There would also be a left in left out connection to the future H1 development between Elagh Roundabout and Skeoge Roundabout. The current T junction of Elagh Road and Buncrana Road would be stopped up and a new link provided by one of the following options:

- Sub option 1: a connection from the east of Elagh Business Park to Elagh Road.
- Sub option 2: a longer connector road through the centre of Elagh Business Park to Elagh Road.
- Sub option 3: a connector road from the west of Elagh Business Park to Elagh Road.
- Sub option 4: a connector road from the H1 housing development to Elagh Road.

3.5.2 Full pedestrian or combined pedestrian and cyclist facilities would be provided along Buncrana Road with uncontrolled crossings at Elagh Roundabout and Skeoge Roundabout.

4 Cost Estimates

4 Cost Estimates

4.1 Assumptions with the Cost Estimate

4.1.1 The construction cost for the Red, Blue, Purple and Navy Routes have been calculated using typical 2008 Q2 rates from schemes of similar size supplemented with rates taken from SPONS Price Book.

4.1.2 The scheme cost for the Navy Route includes Sub Option 4 described in Section 3.

4.1.3 The following is a summary of assumptions used in the estimate:

- Contractor's preliminaries assumed at 25% including traffic management.
- There is an assumption that the highway drainage would discharge into the current drainage system with attenuation to capture the run-off from the increased hard surfacing.
- Only limited geotechnical information was available at the time of preparing the scheme cost & estimates. Normal site conditions have been assumed with risk included in the risk register. &
- Pavement overlay has been assumed. Strengthening of the existing pavement has not been & assumed although an allowance for strengthening is included in the risk register.
- It has been assumed that the section from Pennyburn Roundabout to Skeoge Roundabout would be lit with new lighting columns and cabling works.
- Ancillary works in Table 4.2 below includes Statutory Undertakers' diversions and landscape and ecology.
- Statutory Undertakers C2 returns in accordance with the Northern Ireland Roads Authority and Utilities Committee (NIRAUC) Code of Practice have been received. C3 estimates would be requested in Stage 3. A reasonable allowance has been included in the construction estimate and risk register.
- The scheme does not include a high structural content. Skeoge Culvert may require localised slabbing and some retaining walls have been included. Relocation of Skeoge Culvert has not been included.
- Estimates of land costs were provided by Land and Property Services in September 2008.

4.1.4 A Risk and Value Engineering Workshop was undertaken on 23 June 2008. The minimum, most likely and maximum costs and probability of the residue risks identified at the workshop have been assessed and input the into the Highways Agency's Risk Model HARM. This carries out a Monte Carlo risk assessment of all the residue risks. A 50 confidence factor has been taken to value the risk in this report.

4.1.5 Preparation costs have been taken as 12% of construction and land cost. Supervision costs were taken as 5 . These percentages are in accordance with defaults assumed within the COBA program.

4.2 Optimism Bias

4.2.1 The purpose of Optimism Bias is described in HM Treasury "Green Book" dated 2003. The Optimism Bias used on this scheme was 20 for both construction and land. The calculation justifying the 20% is shown in Table 4.1 using the recommendations from the "Supplementary Green Book Guidance".

Table 4.1 Calculation for Optimism Bias

	Standard Civil Eng Works	44	
Procurement	Complexity of Contract Structure		
	Late Contractor Involvement in Design	3	2
	Poor Contractor Capabilities		
	Government Guidelines		
	Dispute and Claims Occurred	21	8
	Information Management		
	Other (specify)		
Project Specific	Design Complexity		
	Degree of Innovation		
	Environmental Impact	22	10
	Other (specify)	18	9
Client Specific	Inadequacy of the Business Case	10	3
	Large Number of Stakeholders		
	Funding Availability		
	Project Management Team		
	Poor Project Intelligence	7	3
	Other (specify)		
Environment	Public Relations	9	6
	Site Characteristics	3	1
	Permits / Consents / Approvals		
	Other (specify)		
External Influences	Political		
	Economic	7	2
	Legislation / Regulations		
	Technology		
	Other (specify)		
	Total	**100**	**44**
		OB=	19.4
			Say 20

4.3 Cost Summary

4.3.1 The scheme costs at (2008 Q3 prices) together with a breakdown are shown in Table 4.2.

The Navy option is the only option for the section Skeoge roundabout to RoI border. The total scheme costs are shown in Table 4.3.

Table 4.2 Summary of Scheme Costs

	RED ROUTE £ million	BLUE ROUTE £ million	PURPLE ROUTE £ million	NAVY ROUTE £ million
Construction	**6.719**	**7.318**	**7.500**	**4.876**
Prelims & TM	**1.490**	**1.605**	**1.645**	**1.220**
Ancillary Works	**1.195**	**1.113**	**1.014**	**0.832**
Risk	**4.028**	**5.000**	**5.004**	**1.032**
Design and supervision (17)	**2.786**	**3.232**	**3.713**	**1.533**
Land Costs	**6.984**	**8.976**	**11.680**	**2.090**
Optimism Bias (20)	**4.640**	**5.449**	**6.111**	**2.316**
TOTAL	**27.842**	**32.693**	**36.667**	**13.899**

Table 4.3 Total scheme capital works costs

RED+NAVY ROUTE	BLUE+NAVY ROUTE	PURPLE+NAVY ROUTE
£41.738m	£46.588m	£50.562m

5 Engineering Assessment

5 Engineering Assessment

5.1 Design Standards

5.1.1 Urban carriageway standards have been used for the Red, Blue and Purple Routes and rural carriageway standards for the Navy Route. These are summarised in Table 5.1.

Table 5.1 Summary of Highway Standards used in the Design

Route Option	Section	Standard
Red Route	Pennyburn Roundabout to Branch Roundabout	Single 4 (S4) AP Urban Road 17.6 m Carriageway (4x3.65m lanes) 3.0m Ghost Island 3.0m Footway/Cycleway x 2
	Branch Roundabout to Skeoge Roundabout	Single 4 (S4) AP Urban Road 17.6m Carriageway (4x3.65m lanes) 3.0m Ghost Island 3.75m Footway/Cycleway x 2
Blue Route	Pennyburn Roundabout to Maybrook Mews	Single 4 (S4) AP Urban Road 17.6 m Carriageway (4x3.65m lanes) 3.0m Ghost Island 3.0m Footway/Cycleway x 2
	Maybrook Mews to Springtown Road	Dual 2 AP Urban Road 7.3m carriageway on-line eastbound and off-line westbound carriageway Varies – Footway/Cycleway x4 (3m min)
	Springtown Road to Skeoge Roundabout	Single 4 (S4) AP Urban Road 17.6m Carriageway (4x3.65m lanes) 3.0m Ghost Island 3.75m Footway/Cycleway x 2
Purple Route	Pennyburn Roundabout to Maybrook Mews	Single 4 (S4) AP Urban Road 17.6 m Carriageway (4x3.65m lanes) 3.0m Ghost Island 3.0m Footway/Cycleway x 2
	Maybrook Mews to Springtown Road	Single 4 (S4) AP Urban Road 7.3m carriageway each carriageway 3.0m – Footway/Cycleway x4
	Springtown Road to Skeoge Roundabout	Single 4 (S4) AP Urban Road 17.6m Carriageway (4x3.65m lanes) 3.0m Ghost Island 3.75m Footway/Cycleway x 2

Route Option	Section	Standard
Navy Route	Skeoge Roundabout to Elagh Roundabout	Dual 2 AP Rural Road 7.3m Carriageway x 2 1.0m Hard strips x 2 4.5m Central Reserve 4.0m Footway/cycleway x 2
	Elagh Roundabout to Border	Single 4 (S4) AP Rural Road 14.6m Carriageway (4x3.65m) 1.0m Hard strips x 2 4.0m Footway/Cycleway x 2

5.2 Departures from Standard

5.2.1 The design of Buncrana Road complies with TD9/93 Link Design. Junction designs and the carriageway cross sections are not finalised, therefore compliance with these design standards has not been investigated. This applies equally to all four options and does not impact on the Preferred Route decision. Full junction design would be carried out in Stage 3 together with the identification of any Departures from Standard.

5.3 Effect on Accesses

5.3.1 Generally, the design of existing side road junctions has been undertaken to allow identical movements to those that are currently allowable. However, final junctions layouts will be examined in more detail at Stage 3.

5.4 Public Transport Option

5.4.1 Generally the Red, Blue and Purple options do not provide any specific public transport provision however a number of scenarios have been examined, ranging from taking out part of the proposed two lanes to providing a third lane in each direction as a bus lane, and including a number of measures between these two extremes. The benefits associated with public transport provision, particularly bus priority, require further investigation in Stage 3 once the Preferred Route has been identified however all options can be tailored to include measures to decrease journey times and improved journey time reliability for buses, and it is not considered that this issue has a significant impact on the selection of a Preferred Route.

5.5 Existing Pavement

5.5.1 The existing carriageway has not been tested. A visual examination has identified minor cracking, poor statutory undertakers' reinstatement work and worn skid resistance surfacing but no major defects. For the pavement to be overlaid to a 20 year design life, a full set of pavement tests would need to be undertaken.

5.6 Recent Improvements to Buncrana Road

5.6.1 Two junctions have been improved over the last few years:

- The junction at Racecourse Road has been widened to provide more stacking lanes at the signals.

- A newly constructed roundabout has been constructed at Skeoge Roundabout. This roundabout forms the southern junction for the A515 Skeoge Link which was opened earlier this year. Skeoge Roundabout has been constructed to accommodate future widening of Buncrana Road.

5.7 Structures

5.7.1 There are three retaining walls, three known culverts under Buncrana Road and Skeoge Culvert which runs parallel to Buncrana Road from Pennyburn Roundabout to Skeoge Roundabout.

5.7.2 The three retaining walls are located at:

- Pennyburn Roundabout to Pennyburn Pass on the south side of Buncrana Road.
- From St Patrick's Church entrance to Maybrook Mews on the north side of the road.
- At B Q car park on the north side of Buncrana Road.

5.7.3 The culverts are located:

- 2no. between Whitehouse Road and Skeoge Roundabout.
- 1no. at 3 Flowers Cottage.

Skeoge Culvert

5.7.4 From Pennyburn Roundabout to Skeoge Roundabout, Skeoge Culvert is to the north of Buncrana Road except between Maybrook Mews and Springtown Road where it crosses Buncrana Road and follows the route of the Blue and Purple off-line section.

5.7.5 This culvert may require a protective slab where it is under the future road.

5.8 Geotechnical Considerations

Soils

5.8.1 Buncrana Road lies within a corridor known as the 'Pennyburn Depression'. This is a major glacial feature of the Londonderry area forming a valley with sand and gravel deposits towards the River Foyle.

5.8.2 Geological maps indicate drift deposits through the road corridor to be alluvial (clay/silts) and glaciofluvial deposits (sands/silts) with glacial sands and gravels present at both ends of the scheme. Glacial till or rock at the surface bounds either side of the road corridor with rock occasionally showing at the surface.

5.8.3 Historical borehole data shows the built up areas between Pennyburn Roundabout and Branch Roundabout to be made ground consisting of loose sand and gravel with cinders, brick and wood for the first 3.5m below ground level.

5.8.4 Below the made ground the underlying natural soils are generally silty sand and gravels extending to the rockhead. Occasionally areas of peat have also been found around Pennyburn Roundabout, St Columb's College, Branch Roundabout and the playing fields west of the Branch Roundabout.

5.8.5 The depth of peat excavated at the recently constructed Skeoge Roundabout was between 2.7m to a maximum of 5.6m below ground level.

5.8.6 Geological maps show glacial till drumlins and moundy glaciofluvial deposits (sand and gravels) to be the predominant drift feature between Skeoge Roundabout and the RoI border.

Rock

5.8.7 Geological maps indicate that the solid geology is a mixture of psammite and pelite and schistose of the Londonderry formation. This rock is unlikely to have undergone coal workings.

Historical boreholes confirm that the underlying rock is highly weathered schist. The depth of this rock is shallow in parts but is generally found between 2m to 4m below ground level.

Foundations

5.8.8 Except for shallow retaining walls and the protection for Skeoge Culvert no other structures are anticipated. Surface deposits are anticipated to be shallow and should avoid the need for deep foundations.

5.8.9 A carriageway constructed on 350mm of capping with removal of the local peat deposits and construction of conventional filter drains would be adequate for the anticipated soils deposits.

Import and export of material

5.8.10 It is unlikely that site won material would be adequate for fill below ground level although the excavated material could be used to form verges and bunding. There would be a need to take material off site.

5.8.11 From historical Ordnance Survey plans and a site walkover survey, the following areas were identified as possibly containing contaminated material:

- The site of the former Pennyburn Locomotive Works.
- Several existing and former Petrol Filling Stations and a former vehicle servicing garage.
- Existing tanks associated with the factory north west of the Pennyburn Pass sideroad.
- Derry Journal Printing Works.
- Existing tanks associated with the factory at Balliniska Business Park.
- Electrical Substation at Balliniska Business Park.

6 Environmental Assessment

6 Environmental Assessment

6.1 Introduction

6.1.1 This section summarises the Stage 2 environmental assessment work carried out for the proposed improvements to the A2 Buncrana Road.

6.1.2 At Stage 2 the Design Manual for Roads and Bridges (DMRB) assessment requires a detailed assessment of the route options to identify the Preferred Route to study in more detail. This report would be followed by a Stage 3 Scheme Assessment Report which includes a full Environmental Impact Assessment of the Preferred Route. There are twelve categories of assessment. Each route option is ranked in preference for each category, giving overall comparative rankings for the route options.

6.1.3 The following is a summary of the environmental studies conducted at Stage 2. All studies were undertaken in compliance with the requirements of the DMRB, Volume 11, and with reference to the internet based Transport Analysis Guidance (WebTAG).

6.1.4 Air Quality – A two stage assessment, with a map comprising of:

1) assessment of the local air quality via an estimation of how pollutant concentration will change as a result of the proposals.

2) a regional assessment examining the change in emissions of a range of pollutants as a result of the scheme on a regional, national and international scale. In addition a WebTAG assessment was used to gauge overall changes in area quality.

6.1.5 Cultural Heritage – A map and schedule of the number of cultural heritage sites including historic buildings and structures, archaeological sites and industrial heritage sites in proximity to the proposed road works was produced.

6.1.6 Disruption Due to Construction – An assessment of transient environmental impacts as a result of the construction phase was undertaken. This includes a quantitative statement of the number of properties within 100m of each possible route option, highlighting any sensitive properties or sites.

6.1.7 Ecology and Nature Conservation – An assessment was undertaken which included habitat, mammal, bird and amphibian site surveys, assessment of the impacts on adjacent designated ecological sites and non-designated areas of nature conservation interest directly or indirectly affected by the route options.

6.1.8 Landscape and Visual – An assessment of landscape, townscape and visual impacts of the proposed route options was undertaken.

6.1.9 Land Use – An assessment was made of the number of potential demolitions of private and public properties resulting from the scheme. This includes a preliminary assessment of how businesses in the area will be affected by the proposed route options.

6.1.10 Traffic Noise and Vibration – An assessment of each route option, with a map noting properties within a 300m wide strip, split into distance bands of 0-50m, 50-100m, 100-200m and 200-300m was undertaken. Ambient and predicted noise levels were noted for noise sensitive locations and information on airborne, traffic-induced vibration for unscreened buildings within 40m of the existing and proposed routes. A statement of change in noise environment for the local population was also included.

6.1.11 Pedestrians, Cyclists, Equestrians and Community Effects – An assessment was undertaken of potential impacts based on location of community facilities and pedestrian routes.

6.1.12 Vehicle Travellers – An assessment based on views from the proposed road and on driver stress levels for the scheme, derived from existing traffic data was undertaken.

6.1.13 Water Quality and Drainage – An assessment was made of the routine runoff to surface water and ground water and the pollution impacts from accidental spillages.

6.1.14 Geology and Soils – An assessment was completed based on perceived magnitude of impact of the route options to mineral deposits, agricultural soil, hydrogeology and geologically important sites.

6.1.15 Policies and Plans - The identification of key current policies or proposals within the study area was undertaken and an assessment was made of the impacts of the proposed route options on the achievement of the policy objectives.

6.1.16 The issues arising from these chapters have been plotted on the associated Stage 2 drawings, extracted from the separate DMRB Environmental Report (Stage 2 Environmental Assessment Report for A2 Buncrana Road) and reproduced in Appendix B of this report:

- Air Quality – Figures 5.1 to 5.4
- Cultural Heritage – Figures 6.1 to 6.4
- Disruption Due to Construction – No figures
- Ecology and Nature Conservation – Figures 8.1.1 8.1.2
- Landscape and Visual – Figures 9.1 (Sheets 1 2), 9.2 (Sheets 1 2), 9.3 (Sheets 1 to 4)
- Land Use – Figures 10.1 & 10.2
- Traffic Noise and Vibration – Figures 11.1 to 11.4
- Pedestrians, Cyclists, Equestrians and Community Effects – Figure 12.1
- Vehicle Travellers – No figures
- Water Quality and Drainage – Figure 14.1
- Geology and Soils – Figures 15.1 to 15.4
- Policies and Plans - No figures

6.2 % Consultations

6.2.1 Written consultations have been conducted with the following organisations:

- Association of Community Groups
- Bord Gais Éireann (Northern Ireland)
- British Telecom
- British Trust for Ornithology
- Cable Wireless Communications Ltd.
- Centre for Environmental Data and Recording
- Confederation of British Industry
- Council for Nature Conservation the Countryside
- DARD - Director of Policy
- DARD - Fisheries and Rural Policy Division
- DARD Environmental Policy Branch
- DARD Forest Service
- Loughs Agency
- DARD - Quality Assurance
- DARD Rivers Agency (Coleraine Office)
- DARD Rivers Agency (Headquarters)
- DARD Rivers Agency (Western Regional Office)
- DCAL Central Management
- Fisheries Conservancy Board
- DCAL Inland Fisheries
- DCAL Inland Waterways
- DCAL River Bush Salmon Station
- Department of Education - Development Branch
- Department of Health, Social Services and Public Safety
- Derry City Council - Chief Executive
- Derry City Council - City Engineer
- Derry City Council - Community Services
- Derry City Council - Environmental Health Department
- Derry City Council - Recreational and Leisure Services

- DETI Geological Survey of Northern Ireland
- DETI Invest Northern Ireland
- DOE Planning Service - Landscape Architect Branch
- DOE Northern Ireland Environment Agency Water Management Unit
- DOE Northern Ireland Environment Agency Historic Buildings Historic Monuments
- DOE Northern Ireland Environment Agency Environmental Protection
- DOE Northern Ireland Environment Agency Natural Heritage
- DOE Northern Ireland Environment Agency Waste & Contaminated Land Unit
- DOE Planning Environmental Policy Group
- DOE Planning Service (Minerals Unit)
- DOE Planning Service (Special Studies Unit)
- DOE Planning Service Headquarters
- Donegal County Council (Inishowen Public Services Centre, Inishowen, Co. Donegal)
- Donegal County Council (Area Manager of Roads and Transportation, Lifford, Co. Donegal)
- Donegal County Council (Planning Department, Letterkenny, Co. Donegal)
- DRD Roads Service (Section Engineer)
- DRD Roads Service (Street Lighting Engineer)
- DRD Roads Service (Traffic Engineer)
- DRD Roads Service (Transportation Planning Branch)
- DRD Roads Service (Lands & Legislation Branch)
- Department of Social Development (Headquarters)
- DSD Regional Development Office (Western Office)
- DSD Regional Development Office (Headquarters)
- Eircom (NI) Ltd.
- Federation of Small Businesses
- Firmus Energy
- Foyle Fisheries Commission
- Foyle, Carlingford Irish Lights Commission
- Freight Transport Association
- Health and Safety Executive
- Historic Buildings Council
- Historic Monuments Council
- Irish Business & Employers Confederation (IBEC)
- Londonderry and Lough Swilly Railway Company
- Mobilise
- National Roads Authority (National Roads Design Office)
- Northern Ireland Electricity
- Northern Ireland Bat Group
- Northern Ireland Council for Voluntary Action
- Northern Ireland Fire and Rescue Service (Headquarters)
- Northern Ireland Tourist Board
- Northern Ireland Water
- Northwest Development Office
- NTL Communications
- Ordnance Survey of Northern Ireland
- Phoenix Natural Gas
- PSNI Road Management Unit
- Quercus, Queen's University Belfast
- RAC Motoring Services Ltd.
- River Faughan Anglers Ltd
- Royal Society for the Protection of Birds
- Sustrans Northern Ireland
- The Automobile Association
- The Housing Executive
- The Londonderry Chamber of Commerce
- The National Trust
- The Roe Valley Chamber of Trade & Commerce
- The Wildfowl and Wetlands Trust
- The Woodland Trust
- Translink

- Ulster Angling Federation &
- Ulster Farmers Union &
- Ulster Wildlife Trust &
- Valuation Service (Land & Property Services) &
- Virgin Media, Plant Enquiries Team &
- Western Education Library Board &

6.2.2 Copies of the responses received from the bodies consulted are included in the DMRB Environmental Report (Stage 2 Environmental Assessment Report for A2 Buncrana Road). A summary of the responses received is also contained within Appendix C of this report.

6.2.3 Public consultation was also undertaken wherein members of the public, as well as organisational representatives, were given opportunity to review the scheme proposals and revert comments.

6.3 % Study Methodology and Data Sources

Data Gathering

6.3.1 In order to complete the DMRB Stage 2 assessment, desktop studies were undertaken in combination with a range of site visits, walkover and drive over surveys.

6.3.2 Additional information was gathered from a range of sources including: Ordnance Survey maps and aerial photography, consultation with statutory and non-statutory bodies, museum records, documentary and cartographic records, and from published documentation.

Appraisal of Data

6.3.3 Data gathered was used to complete the Stage 2 assessment according to DMRB Volume 11, Part 3. Whereas the Stage 1 assessments were primarily desktop based, detailed desktop studies and/or site visits and surveys were carried out for all Stage 2 assessments. Surveys ranged from detailed surveys to site walkovers and roadside surveys.

6.3.4 Site visits and/or surveys were undertaken for the following assessments: Cultural Heritage; Disruption Due to Construction; Ecology and Nature Conservation; Landscape Effects; Land Use; Pedestrians, Cyclists, Equestrians and Community Effects; and Vehicle Travellers.

6.3.5 Site visits were not carried out for the Air Quality; Traffic Noise and Vibration; Road Drainage and Water Environment; and Geology and Soils assessments. The methodology for the Air Quality; and Traffic Noise and Vibration assessments is primarily based on calculations and therefore no site visits were necessary. Field surveys for the Road Drainage and the Water Environment assessment are not requited unless there is insufficient baseline data to undertake an assessment of the impacts. Site investigation for Geology and Soils is required only where a contaminated site may be impacted.

Route Options

6.3.6 The route options considered in this report are summarised in Section 3 Alternative Schemes.

6.4 % Environmental Scheme Appraisal

6.4.1 The following sections give a short précis summarising the environmental assessments. Full text can be found in the DMRB Environmental Report (Stage 2 Environmental Assessment Report for A2 Buncrana Road).

Air Quality

6.4.2 Property counts have been undertaken within a distance of 200m from the proposed routes and both local and regional air quality assessments have been undertaken. Properties closest to the affected roads are most likely to experience a change in air quality as a result of the proposed scheme.

6.4.3 For the Pennyburn Roundabout to the Skeoge Roundabout section, the Red Route is the preferred option with respect to improvements in air quality, followed by the Purple Route and Blue Route respectively. The Red Route performs better primarily due to the greater number of demolitions required by this option, resulting in the removal of receptors. In terms of local air quality, all three options are predicted to lead to an improvement in air quality at a greater number of properties than deterioration. All routes are expected to have a slight adverse impact on regional air quality.

6.4.4 The Skeoge Roundabout to RoI Border section is likely to affect only a relatively small number of properties. Sub-option 1 is potentially the preferable option for the re-alignment of Elagh Road. However, impact on ambient noise level and pollutant concentrations of the connector road is likely to be minimal, regardless of the option chosen.

Cultural Heritage

6.4.5 The Monuments and Buildings Record (MBR) contains records of 33 previously recorded sites within the study area (500m each side of the proposed road). One Scheduled Monument exists within the study area and a second just outside of this area, to the north. In addition, there are seven Listed Buildings, 13 Industrial Heritage sites, one battlefield and two recorded gardens within the study area.

6.4.6 The Red Route is considered to have a lesser impact on the cultural heritage of the area overall, although the significance of the cultural heritage impact of each option is the same. The Red Route is confined to the current road corridor with only limited land take from each side of the road, therefore there is less potential for impacting on previously unrecorded archaeological remains.

6.4.7 The Skeoge Roundabout to RoI Border section is anticipated to have a greater impact on cultural heritage, due to the more rural nature of its route. Further work is recommended to reduce the significance of impact on the cultural heritage of the area and establish the presence or absence of previously unrecorded archaeological remains.

6.4.8 Sub-option 1 is the preferred option for the re-alignment of Elagh Road, as this option has the smallest overall footprint.

Disruption Due To Construction

6.4.9 Potential impacts associated with Disruption Due to Construction include impacts on properties and traffic movement as well as impact on designated ecological and archaeological sites.

6.4.10 The impact of disruption due to construction on the local community is likely to be greatest in the urban route corridor because of the close proximity of residential areas and the requirement for demolition of property. Because the off-line section within the Purple Route can be constructed first, the option with the least disruption would be the Purple Route. The Blue Route offers some benefit over the Red Route because the off-line section of the Blue Route could also be used for east and westbound traffic in the temporary situation to permit the on-line eastbound section to be constructed.

6.4.11 The impact of disruption due to construction on the local community is likely to be least in the rural section because the proposed works will take place in open countryside or on development land that has yet to be occupied. However, the impact on the local nature conservation resource is potentially greater.

6.4.12 Sub-option 1 is the preferred option for the re-alignment of Elagh Road, since the feeder road is the shortest of all four options and will therefore result in the least disruption to traffic, dwellings and the natural environment during the construction phase.

Ecology and Nature Conservation

6.4.13 Surveys confirmed a number of habitats exist within the study area, including: agricultural land, damp grassland, amenity grassland, broadleaf woodland, open water, scrub, hedgerows and tree lines and watercourses. However, most of the habitats are of low conservation value.

6.4.14 The major residual impact of the Red option would be a slight reduction in the area of planted woodland of low conservation value and loss of hedgerows. For the Purple and Blue options, the main residual impacts would be a slight reduction in the area of grassland of low conservation value and loss of areas of scrub as well as planted woodland.

6.4.15 Known potential impacts are similar for all options between Pennyburn and the Skeoge roundabouts; therefore there is no Preferred Route for this section of the proposed works.

6.4.16 Impacts associated with the Navy Route include loss of damp and improved grassland of low conservation value and a number of tree lines and hedgerows. Additionally, there may be a potential impact upon the breeding ponds of a protected species (the smooth newt).

6.4.17 For the re-alignment of Elagh Road, sub-option 4 (connection through H1 development land) for the Elagh link is preferred because it avoids the Skeoge River and its tributary, as well as habitat used by smooth newts.

Landscape Effects

6.4.18 For the Pennyburn Roundabout to Skeoge Roundabout section, the route options can be ranked in order of preference as: Purple, Blue and Red, with regard to townscape impacts. Impacts along this section range from Moderate Adverse to Major Adverse. The Navy option is expected to have Moderate Adverse impact. In terms of the tie in to Elagh Road, sub-option 1 is preferred, with no clear distinction between sub-options 2, 3 and 4.

6.4.19 With regards to visual impacts the route options of comparison can be ranked in order of preference as: Purple, Blue, Red. However, all of the route options have similar visual impacts on receptor groups except for a small number of receptor groups. Widening to dual carriageway from Skeoge Roundabout to Elagh Roundabout and to four lanes from the Elagh Roundabout to the RoI border would make the road more conspicuous in views from properties and roads on the hillsides either side, with Slight to Moderate Adverse visual impacts depending on distance and screening. Within this section sub-option 1 is preferred for the re-alignment of Elagh Road, with no clear distinction between sub-options 2, 3 and 4.

6.4.20 Overall, in terms of both townscape and visual impacts, the preferred option for the Pennyburn Roundabout to Skeoge Roundabout section is the Purple Route. For the re-alignment of Elagh Road, sub-option 1 is preferred overall.

Land Use

6.4.21 For the Pennyburn Roundabout to Skeoge Roundabout section, the Red Route has the most potential impact in terms of demolition of private property and land-take, as it would require the demolition of 17 properties. For the Navy Route, no demolition of private property will be required and no gardens will be directly affected.

6.4.22 In terms of loss of land used by the community, the Red Route will result in the demolition of the Northern Ireland Housing Executive office. All options require the demolition of the car park which is used by the congregation of St. Patrick's Church. Impacts associated with the Navy Route include encroachment of the lay-by at the Border and encroachment of green belt land.

6.4.23 In terms of loss of development land, all options will encroach upon the lands zoned for industry and land zoned for housing along the Buncrana Road, as well as open space land at the Templemore Sports Complex. TR1 Strategic Highway Proposals to widen Buncrana Road from the junction of Racecourse Road to Pennyburn Roundabout favour on-line widening (i.e. the Red option). For the Navy Route, widening could result in encroachment of H1a and H2 housing land, greenbelt land and lands zoned for industry along Buncrana Road.

6.4.24 Loss of agricultural land applies to the Navy Route only. None of the sub-options associated with the Navy Route will have any impact on Best Most Versatile land.

6.4.25 Overall, for the Pennyburn Roundabout to Skeoge Roundabout section, the Purple Route is preferred. For the re-alignment of Elagh Road, sub-option 4 is preferred because it bounds on land which is currently undesignated.

Traffic Noise and Vibration

6.4.26 Property counts have been undertaken within the distance of 300m from the proposed routes. It is expected that those properties closest to affected roads are most likely to experience a change in noise level as a result of the proposed schemes.

6.4.27 The assessment indicates that the proposed routes are likely to affect a similar number of properties. However due to the alignment of the Purple Route, less properties are within 50m of the road. The Red Route also has fewer properties within 50m as a result of several properties being demolished.

6.4.28 For the Pennyburn Roundabout to Skeoge Roundabout section, the Purple Route is the preferred option as it is predicted to have a beneficial impact at a greater number of residential properties and an adverse impact at a smaller number of residential properties than either the Red Route or the Blue Route.

6.4.29 For the Skeoge Roundabout to RoI border section the Navy Route is likely to affect only a relatively small number of properties and the relatively small realignment as a result of this route is unlikely to significantly alter the distance between these properties and Buncrana Road. There is no preference for the re-alignment of Elagh Road.

Pedestrians, Cyclists, Equestrians and Community Effects

6.4.30 For the Pennyburn Roundabout to Skeoge Roundabout section of the scheme, it is intended that pedestrian facilities will be kept to an existing standard, if not enhanced by the road improvements. These improvements would be investigated during Stage 3 following a non motorised user survey.

6.4.31 For this section the Purple Route is most preferred as it retains Collon Terrace and the Housing Executive office. It also removes the A2 Buncrana Road from in front of the houses along the existing A2 in Pennyburn. The Red Route is least preferred because it will reinforce and enhance the existing severance issues at the Racecourse Road junction and surrounding area.

6.4.32 For the re-alignment of Elagh Road, sub-option 3 is preferred in terms of journey length because it is the shortest route to Elagh Road from the Navy Route roundabout. In terms of community severance, sub-option 4 is preferred because it will connect the community along Elagh Road to another community, proposed on the H1 lands. However, overall sub-option 4 is preferred because of its potential for enhanced community cohesiveness.

Vehicle Travellers

6.4.33 For the Red option, there will be the least amount of change in terms of view from the road as this route is on-line. For the Purple and Blue options, views would differ for on-line and off-line traffic.

6.4.34 For driver stress, the Red and Purple Routes are preferred in terms of frustration, as they allow drivers the most uninhibited access to Buncrana Road. In terms of fear of accidents, the Red option is least preferred. The Purple option is most preferred as it would lower traffic flows along the existing Buncrana Road. The Blue option would result in the greatest degree of uncertainty of route, as a result of the one way system.

6.4.35 Overall there is no preferred option for the Pennyburn Roundabout to the Skeoge Roundabout section.

6.4.36 Views from Skeoge Roundabout to the RoI border will remain relatively open along this section of road. There will be minimal difference to uncertainty of route associated with the Navy

option; however there may be increased fear of accidents. Driver frustration should be reduced as a result of the proposed Elagh Roundabout. There is no preferred option for the Elagh Road re-alignment (sub-options 1 - 4) at Stage 2.

Water Quality

6.4.37 There are a number of watercourses within the vicinity of the four route options, including the River Foyle, Skeoge River, Ballymagrorty Stream and Pennyburn Stream as well as smaller field drains. Both the Skeoge River and the Ballymagrorty Stream are classified as salmonid waters under the Freshwater Fish Directive (FFD). The Skeoge River and Ballymagrorty Stream are included on the Protected Area Register (PAR) as economically significant waters, as a result of their salmonid interests.

6.4.38 All proposed route options for Pennyburn Roundabout to Skeoge roundabout section of the A2 upgrade have the potential to adversely affect the water environment. Potential impacts on the water environment are the same for each option: reductions in water quality, drainage and flood risk, changes to groundwater quality and flow, impacts on river/stream beds and/or banks and impacts on aquatic and riparian habitats.

6.4.39 The most significant constraints with respect to the Red, Blue and Purple options are the River Foyle at the eastern extent of the A2 corridor and the Skeoge River and its tributary the Ballymagrorty Stream, both classified as salmonid waters.

6.4.40 For the Pennyburn Roundabout to Skeoge Roundabout section of the scheme, the Red Route is preferred as the off-line sections of the Blue and Purple Routes will generate greater volumes of surface water runoff and put greater pressure on the drainage system.

6.4.41 The most significant constraints associated with the Navy Route are the network of drains and streams draining into the River Skeoge. Sub-options 2 and 3 would require construction of new watercourse crossings directly over the River Skeoge. Sub-options 1 and 4 cross a tributary of the Skeoge and a drain which discharges to the Skeoge respectively, however, these are preferable to direct crossings of the Skeoge River. Overall the preferred option for the re-alignment of Elagh Road is sub-option 1.

Geology

6.4.42 The nearest designated site to the proposed scheme is the Lough Foyle Area of Special Scientific Interest (ASSI), Special Protection Area (SPA) and Ramsar site, which extends along the River Faughan to the tidal limit. There are a number of known potential sources of contamination within the route corridor.

6.4.43 The proposed route options have the potential to cause slight adverse effects on geology, geomorphology and soils along the route corridor. Land take over the length of the route corridor would entail disruption of surface materials (drift and soils) during construction. There is no preferred route for the Pennyburn Roundabout to Skeoge Roundabout section of the scheme at Stage 2.

6.4.44 The main effect on geology and soils of the Navy Route is the loss of soil of agricultural value within the bounds of the new construction. None of the sub-options for the re-alignment of Elagh Road extend onto Best Most Versatile land; however, sub-option 1 has least impact on non Best Most Versatile agricultural land and is thus the preferred sub-option.

Policies and Plans

6.4.45 The cross-border road links are identified as key infrastructure within the Northern Ireland Regional Development Strategy 2025 and the Regional Transportation Strategy for Northern Ireland 2002-2012; and particularly for Londonderry as a regional town for the North West. This commitment to cross-border linkages from Londonderry to Donegal is also in the Republic of Ireland's National Spatial Strategy and the National Development Plan 2007-2013. All the options for this stage broadly comply with the policies and proposals of the Derry Area Plan 2011; specifically TR1 and TR2 relating to traffic management. The only non compliance

relates to the potential encroachment of greenbelt on the route section from the Skeoge Roundabout to the border with the RoI.

6.4.46 At Stage 2, for both the Pennyburn Roundabout to the Skeoge Roundabout and Skeoge Roundabout to the border with the RoI, there is no preferred option, nor is there is a preferred sub-option associated with the re-alignment of Elagh Road.

6.4.47 All route options in general comply with all policies at Stage 2.

6.5 Overall Conclusion

6.5.1 Table 6.1 shows each of the route options for the Pennyburn Roundabout to Skeoge Roundabout section of the scheme, ranked in terms of preference for each environmental study. The headings in italics are sub-headings of the main, bold headings immediately above.

6.5.2 Route option preference is indicated as (1) 'most preferred' through to (3) 'least preferred'.

Table 6.1 Summary of the Preferred Route Option (Pennyburn Roundabout to Skeoge Roundabout)

Section	Red	Blue	Purple	No Preference
Air Quality	1	3	2	
Cultural Heritage	1	2	2	
Disruption due to Construction	3	2	1	
Ecology and Nature Conservation				
Landscape Effects	3	2	1	
Land Use	2	2	1	
Traffic Noise and Vibration	3	2	1	
Pedestrians, Equestrians, Cyclists and Community Effects	3	2	1	
Vehicle Travellers	1	2	1	
Water Quality	1	2	2	
Geology and Soils				
Policy and Plans				

Overall Conclusion

6.5.3 At Stage 2, for the Pennyburn Roundabout to Skeoge Roundabout section, the Purple Route is most preferred for Disruption Due to Construction; Landscape Effects; Land Use; Traffic Noise and Vibration; and Pedestrians, Equestrians, Cyclists and Community Effects. In terms of Vehicle Travellers the Purple Route is equally preferred to the Red Route.

6.5.4 These preferences are generally for the reason that the Purple Route moves the road away from the population centre at Pennyburn and facilitates the retention of Collon Terrace. The Purple Route is not least preferred for any environmental aspects.

6.5.5 The Red and Blue Route perform equally second.

6.5.6 From the Skeoge Roundabout to RoI border section, only one route was assessed at Stage 2, the Navy Route. However four sub-options for the re-alignment of Elagh Road were assessed. Sub-option 1 was most preferred for Air Quality; Cultural Heritage; Disruption Due to Construction; Landscape Effects; Water Quality; and Geology and Soils. This is generally because it has the smallest footprint in comparison to the other three options. However, engineering, economic and land issues are expected to play a significant part in the choice of option, therefore it is recommended that all sub-options are examined in more detail in Stage 3. The final choice of sub-option will not compromise the Preferred Route decision between Skeoge Roundabout and the border with the RoI.

6.5.7 **In conclusion, the Purple Route is the most preferred option from an environmental perspective between Pennyburn Roundabout and Skeoge Roundabout, with Red and Blue being equally least preferred.**

6.5.8 **The Navy Route performs acceptably for the section between Skeoge Roundabout and the border with the RoI.**

7 Traffic and Economic Assessment

7 Traffic and Economic Assessment

7.1 Introduction

7.1.1 This section summarises the traffic operational performance of the four options, together with an estimate of accident and economic benefits in accordance with DMRB Volume 13 for the Stage 2 Scheme Assessment of the A2 Buncrana Road scheme. The four options described in Section 3 of this report have been assessed.

7.2 Summary of Traffic Surveys

7.2.1 Given the many influences on traffic flow in this area, data from traffic surveys undertaken over the past few years has been included in order to provide a picture of traffic volumes and conditions.

7.2.2 Manual classified junction turning counts were carried out between Tuesday 21st – Thursday 23rd November 2006 at separate locations along the route in two periods, 07:30 to 09:00 and 16:30 to 17:30. Queue length surveys were also undertaken together with vehicle occupancy surveys in the morning peak.

7.2.3 Vehicle categories were based on those contained in COBA V11 DMRB Volume 13, Table 8/1.

Traffic Flows

7.2.4 Average daily traffic flows on A2 Buncrana Road recorded in 2005 and 2006 are illustrated in Table 7.1.

Table 7.1 – 24 HR AADT

Source	Survey Location on A2 Buncrana Rd	Year	
		2005	2006
Roads Service Counter: 381	Northwest of Pennyburn Roundabout	14,630	-
Faber Maunsell Survey	75 metres west of Racecourse Road	-	17,754
Roads Service Counter: 383	North of Whitehouse Retail Centre	17,650	-
Faber Maunsell Survey	100 metres west of Benview Road	-	16,971

7.2.5 The data reveals that traffic flows on Buncrana Road in 2005/6 were in the region of 14,500 – 18,000 vehicles per day.

7.2.6 In terms of total peak-hour flows at the various junctions along A2 Buncrana Road, Table 7.2 illustrates the total inbound flows at each of the junctions along the route, recorded in 2006.

Table 7.2 – Peak Hour Flows at Junctions (2006 unless stated otherwise)

Location	AM Vehicles	PM Vehicles
Pennyburn Roundabout	2,838*	3,139
Pennyburn Pass / Buncrana Road	1,775	1,695
Maybrook Mews / Buncrana Road	1,790	1,631
Racecourse Rd / Pennyburn Ind Est / Buncrana Rd	1,678*	2,707
Shandon Park / Buncrana Road	1,259	1,453
St John's Park / Buncrana Road	1,524	1,323
Springtown Road / Buncrana Road	1,382*	1,704
St Columb's College / Buncrana Road	1,650	1,268

Location	AM Vehicles	PM Vehicles
Springtown Park / Buncrana Road	1,427	1,392
Disc Drive (Seagate) / Buncrana Road	1,406	1,323
Branch Roundabout	2,922*	3,483
Templegrove / Buncrana Road	1,416	1,775
Upper Galliagh Rd / Whitehouse Rd / Buncrana Rd	n/a	1,889
Elagh Road / Benview Road / Buncrana Road	1,073	1,376

**2002 survey data*

The above data reveals that there are significant traffic levels at each of the junctions on Buncrana Road, with the highest flows recorded at the Pennyburn Roundabout, Racecourse Road and Branch Road junctions.

Journey Times

7.2.7 Journey time surveys between Pennyburn Roundabout and the RoI border were undertaken in 2006 during the AM, Off and PM peaks, with the minimum journey times recorded as approximately 5 minutes 20 seconds in both directions (i.e. equivalent to an average speed of 30 mph). Eastbound, the morning peak hour average speed was recorded as 15.40 mph (journey time 11 minutes 15 seconds), with the evening peak hour average speed recorded as 25.56 mph (journey time 6 minutes 19 seconds). The westbound journey speeds were higher than eastbound, with the traffic speed mostly ranging from 21 mph to 32 mph. In the morning peak hour the westbound average speed was 27.26 mph (journey time 6 minutes 8 seconds), with the evening peak hour average speed recorded as 23.18 mph (journey time 7 minutes 12 seconds).

7.2.8 Eastbound, the longest recorded journey was recorded at 08:56, when the vehicle queued for 4 minutes 39 seconds out of a total journey time of 13 minutes 53 seconds (average speed 11.6 mph). Westbound, the longest recorded journey began at 17:30, when the vehicle queued for 2 minutes 10 seconds out of a total journey time of 8 minutes 28 seconds (average speed 19.0 mph).

Key Congestion Points

7.2.9 The route is congested during the morning and evening peak hours, with a number of junctions experiencing significant queuing.

7.2.10 During both the morning and evening peaks, the longest queues were recorded at the Pennyburn Roundabout, Racecourse Road and Branch Roundabout junctions. Considering all of the junctions along Buncrana Road, the maximum queues in the morning peak occurred at 08:45 with approximately 372 vehicles queued across the network. Pennyburn Roundabout experienced the highest level of queuing, with an average of 38 vehicles queued at any one time.

7.2.11 During the evening peak, the maximum queues occurred at 17:15 with approximately 214 vehicles queued across the network. The Racecourse Road junction experienced the highest level of queuing, with an average of 38 vehicles queued at any one time.

Vehicle Occupancy

7.2.12 The majority of vehicles in the morning peak period were single occupancy vehicles (73%), with 22% of all vehicles having two occupants and 5%three or more occupants. The overall average occupancy in the morning peak was 1.33 people per vehicle. Vehicle occupancy data was not recorded for the evening peak.

Cyclists

7.2.13 The number of cyclists recorded in both two-hour weekday peak periods at the junctions along Buncrana Road is illustrated in Table 7.3.

Table 7.3 – Cyclist Peak Hour Counts at Junctions (2006)

Location	AM Cyclists	PM Cyclists
Pennyburn Roundabout	n/a	2
Pennyburn Pass / Buncrana Road	3	4
Maybrook Mews / Buncrana Road	3	2
Racecourse Rd / Pennyburn Ind Est / Buncrana Rd	n/a	2
Shandon Park / Buncrana Road	1	2
St John's Park / Buncrana Road	5	4
Springtown Road / Buncrana Road	n/a	2
St Columb's College / Buncrana Road	3	3
Springtown Park / Buncrana Road	5	6
Disc Drive (Seagate) / Buncrana Road	5	8
Branch Roundabout	n/a	0
Templegrove / Buncrana Road	1	1
Upper Galliagh Rd / Whitehouse Rd / Buncrana Rd	n/a	0
Elagh Road / Benview Road / Buncrana Road	0	0

Additional Traffic Surveys (Post A515 Skeoge Link Opening)

7.2.14 In order to provide updated data for the Stage 2 assessments and also due to the opening of Skeoge Link which altered flows in the area, additional surveys were commissioned in May 2008; various Automatic Traffic Counts (ATCs) and junction Manual Classified Counts (MCCs) were undertaken. The locations of the various surveys are listed below.

- ATC1: A2 Buncrana Road, north of Branch Roundabout (10th–23rd May 2008);
- ATC2: Templemore Road, east of Branch Roundabout (10th–23rd May 2008);
- ATC3: A515 Skeoge Link, east of Skeoge Roundabout (10th–23rd May 2008);
- MCC1: Pennyburn Roundabout (Tues 20th May 2008: AM, Off & PM Peaks);
- MCC2: Branch Roundabout (Tues 20th May 2008: AM, Off & PM Peaks); and
- MCC3: Skeoge Roundabout (Tues 20th May 2008: AM, Off & PM Peaks).

7.2.15 Daily traffic flows are presented in Table 7.4.

Table 7.4 – ATC Data May 2008

Site	Average Two-way 24 Hour Count	
	5-Day	7-Day
ATC1: A2 Buncrana Rd, north of Branch Roundabout	20,389	19,279
ATC2: Templemore Road, east of Branch Roundabout	18,539	17,739
ATC3: A515 Skeoge Link, east of Skeoge Roundabout	9,184	9,047

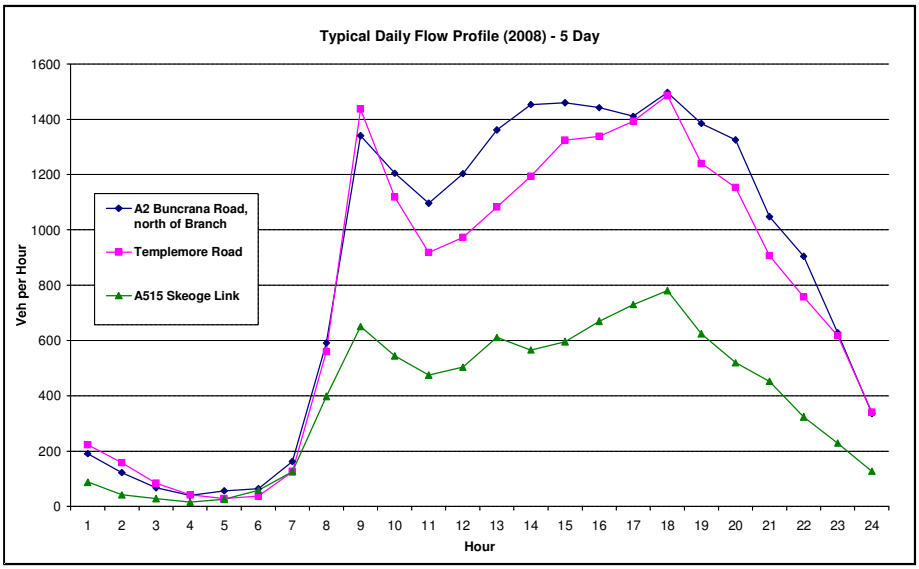
7.2.16 Table 7.5 details the peak hour eastbound flows in vehicles at the three junctions surveyed in 2008. Compared to the 2006 data in Table 7.2, the flows at Pennyburn and Branch Roundabouts show a reduction in flow from 2006 levels, particularly in the PM peak.

Table 7.5 – Peak Hour Flows at Junctions (2008)

Location	AM Vehicles	PM Vehicles
Pennyburn Roundabout	2,375	2,493
Branch Roundabout	3,084	3,302
Skeoge Roundabout	1,667	1,909

7.2.17 A plot of hourly traffic flows over a weekday at three locations shown in Chart 7.1 illustrates that traffic levels in the area remain fairly constant between the hours 08:00 – 21:00. Over a full seven day period, the profile is similar however with a slightly lower volume.

Chart 7.1 – Daily Profile 2008 (5-Day)



A515 Skeoge Link Opening

7.2.18 The A515 Skeoge Link was opened in mid-March 2008, with the intention of providing an alternative route for much of the cross-border traffic which travelled from the Foyle Bridge through the Galliagh estate and along the western portion of Buncrana Road. It forms a mainly dual carriageway link between the Ballyarnet and Skeoge Roundabouts and thereby provides an attractive alternative route for cross-border traffic, both travelling to and from the A2 at Limavady and the A6 at Dungiven.

7.2.19 Traffic surveys have indicated that the Skeoge Link appears to have removed in the region of 4,500 vehicles per day from Buncrana Road and approximately 6,000 vehicles from Templemore Road. Over 9,000 vehicles per day now use the Skeoge Link.

7.2.20 At Branch Roundabout, compared to the eastbound flows previously recorded, traffic levels on the Buncrana Road (N) and Templemore Road arms are noticeably lower. Overall, a decrease of 607 vehicles is seen at the junction in the PM peak compared to 2006, with a total of 6,135 vehicles recorded in 2008.

7.3 Traffic Modelling

Modelling Approach – Macro Level - Derry Model

7.3.1 The Derry Transport Model (DTM) is a strategic highway model that has been developed over several years to determine how traffic flows will change in the future due to various proposed residential and employment developments in combination with background traffic growth and forthcoming transport schemes within Londonderry city. The DTM includes all the major highway routes within the city, including the whole of Buncrana Road from Pennyburn Roundabout to the RoI border.

7.3.2 The DTM takes account of the significant housing development that is zoned in the north of the city. The “H1/H2” lands have been earmarked for the development in excess of 5,000 homes (number dependent on final agreed densities) in the Skeoge and Coshquin lands. The DTM

also takes into account the Buncrana Road improvements (assuming an additional lane in each direction), with some associated junction capacity improvements at various locations.

7.3.3 The DTM was updated for the west bank of the city for traffic work associated with the H1/H2 zoned residential development lands. Subsequent Roadside Survey Interviews (RSIs) were undertaken to incorporate the whole of the city into the Roads Service's Local Transport Study (LTS). The LTS in turn fed into the Derry Area Plan.

7.3.4 The Derry LTS includes the widening of Buncrana Road together with a Quality Bus Corridor (QBC), with aspirations to provide a high quality public transport link from Buncrana Road, through the city and across the river to the Waterside and Altnagelvin Hospital.

7.3.5 The DTM has a base year of 2004 and a forecast year of 2015 and is representative of the AM peak hour only.

7.3.6 The DTM was used to predict future demand by incorporating the following:

- Additional trips generated from the H1/H2 zoned development land calculated from the TRICS database, with some local data.
- Traffic distribution from H1/H2 determined from local characteristics of similar existing developments.
- Traffic growth from local available data.

7.3.7 The DTM was used to predict future (2015) traffic flow from three different road improvement scenarios:

- The "do minimum" – no improvements.
- The "DS2" test which assumed only improvements to Buncrana Road, Branch Road Roundabout and an additional lane at the Springtown Road junction.
- The "DE2B" test which was the "do everything" test and included the Buncrana Road widening, improvements at Pennyburn roundabout, signalisation of Springtown Road, a link road between Buncrana Road and Northland Road at Pennyburn Industrial Estate and a number of other improvements to junctions and links in the local area.

7.3.8 For each scenario, the trip matrix size remained the same with all DTM development trips included. This meant that as the level of highway improvement increased, the number of trips on the network would increase as more vehicles would be able to enter the network within the given peak hour.

7.3.9 Validation and calibration of the model was completed as part of the LTS process. Details of the process undertaken to produce the forecast flows is included in the Derry Local Transport Study Survey Report and Model Validation Report produced by WS Atkins.

Modelling Approach – Micro Level - Junction Modelling

7.3.10 There are a number of key junctions within the study area and in order to determine the impact of traffic associated with the proposed options, detailed junction models have been built for the following junctions:

- Buncrana Road / Racecourse Road / Pennyburn Industrial Estate;
- Buncrana Road / Springtown Road;
- Buncrana Road / Branch Road / Templemore Road.

7.3.11 Each junction has been assessed via the TRANSYT or LinSig software packages. The results of the assessments are detailed in Section 7.5.

7.4 Forecasting

7.4.1 The traffic surveys detailed in Section 7.2 have been used to inform the assessments of the junction operational performance along Buncrana Road. However these surveys have not been

converted to a bespoke transport model and therefore the DTM which incorporates future developments, road improvements and traffic growth (as stated in Section 7.3) provides the most appropriate set of forecast flows.

7.4.2 In March 2006 the AM peak 2015 turning movements predicted in the model were passed to Faber Maunsell for use in the Buncrana Road scheme.

7.4.3 To enable economic and environmental assessments for the options to be undertaken, the AM peak flows were factored using observed data to produce both 7-day 24 hour and 5-day 18 hour AADT flows. These daily flows are reproduced in Tables 7.6 and 7.7.

Table 7.6 – 2015 5-day 18hr AADT flows as derived from Derry Model (Vehicles)

Location	Direction	Derry Model Scenario		
		Do min A	DS2	DE2B
Buncrana Rd- between Pennyburn Rbt to Racecourse Rd	Eastbound	17,277	18,028	21,086
	Westbound	16,074	15,651	14,010
Buncrana Rd- between Racecourse Rd and Springtown Rd	Eastbound	9,328	12,506	10,730
	Westbound	11,256	12,247	9,463
Buncrana Rd- between Springtown Rd and Branch Rbt	Eastbound	13,867	16,726	20,210
	Westbound	11,620	11,459	15,177
Buncrana Rd- between Branch Roundabout and Whitehouse Rd	Eastbound	19,464	21,260	21,928
	Westbound	24,772	28,381	30,556
Buncrana Rd- between Whitehouse Rd and Skeoge Roundabout	Eastbound	28,096	29,353	33,932
	Westbound	27,682	29,481	25,665

Table 7.7 – 2015 7-day 24hr AADT flows as derived from Derry Model (Vehicles)

Location	Direction	Derry Model Scenario		
		Do min A	DS2	DE2B
Buncrana Rd- between Pennyburn Rbt to Racecourse Rd	Eastbound	13,765	13,765	16,801
	Westbound	12,950	12,950	11,287
Buncrana Rd- between Racecourse Rd and Springtown Rd	Eastbound	7,248	7,248	8,336
	Westbound	8,862	8,862	7,450
Buncrana Rd- between Springtown Rd and Branch Rbt	Eastbound	10,775	10,775	15,704
	Westbound	9,149	9,149	11,949
Buncrana Rd- between Branch Roundabout and Whitehouse Rd	Eastbound	16,411	16,411	18,487
	Westbound	21,895	21,895	27,007
Buncrana Rd- between Whitehouse Rd and Skeoge Roundabout	Eastbound	22,773	22,773	27,504
	Westbound	23,350	23,350	21,650

7.5 Junction Operation

7.5.1 Three key junctions within the length of Buncrana Road have been assessed using applicable modelling software. Analysis of each of the proposed revised layouts has been undertaken in significant detail, using various sets of traffic flows to assess future operational performance.

7.5.2 This report only details the impacts of flows from the most onerous DTM scenario in traffic terms, i.e. 'DE2B'.

Racecourse Road

7.5.3 For the three route options, individual models representing the junctions on the Red, Blue and Purple Routes have been built to compare the options. The Red Route has discrete junctions

and LinSig software was used to determine the operational performance at Racecourse Road. The new junction at Racecourse Road is adjacent to the existing signalised junction on Buncrana Road in the Blue and Purple Route options. These are 'linked' junctions, which requires the use of the TRANSYT software package. The results for each of the three options are presented within Tables 7.8 – 7.10.

Table 7.8 – Red Option LinSig Results: *Derry Model 2015 AM: DE2B*

Link	Name	Degree of Saturation (%)	Mean Max Queue (PCU)
1/1	Racecourse Rd: AH RT	64.6	6.5
1/2	Racecourse Rd: LT	74.1	10.7
2/1	Buncrana Road S	65.3	23.3
3/1	Pennyburn Ind Estate	71.4	14.5
4/1	Buncrana Road N	73.8	20.8
Practical Reserve Capacity ( )		21.4	
Total Junction Delay (PCUh)		38.1	

Table 7.9 – TRANSYT Results for Blue Option: *Derry Model 2015 AM: DE2B*

Link	Name	Degree of Saturation (%)	Mean Max Queue (PCU)
11	Buncrana Rd (Eastbound) @ Racecourse Rd	62	17
12	Racecourse Rd	64	19
13	Internal to Racecourse Rd	62	**14 ***
21	Buncrana Rd (Eastbound) @ Maybrook Mews	65	20
22	Maybrook Mews	49	2
23	Buncrana Rd (Westbound) RT to Maybrook Mews	25	1
24	Buncrana Rd (Westbound) @ Maybrook Mews	31	6
31	Buncrana Rd (Westbound) @ Racecourse Rd	54	**31 ***
32	Pennyburn Industrial Estate	55	12

** indicates queue is longer than link length.*

Table 7.10 – TRANSYT Results for Purple Option: *Derry Model 2015 AM: DE2B*

Link	Name	Degree of Saturation (%)	Mean Max Queue (PCU)
11	Racecourse Rd (Eastbound)	62	16
12	Collon Terrace	68	8
13	Internal to Racecourse Rd RT	5	0
14	Internal to Racecourse Rd AH / LT	38	2
15	Old Buncrana Rd (N) AH / RT / LT	64	7
21	Internal from Racecourse Rd RT / AH	34	5
22	Internal from Racecourse Rd LT	**102**	**46 ***
23	Buncrana Rd (S) RT	64	8
24	Buncrana Rd (S) AH / LT	**96**	35
25	Pennyburn Ind Est RT	**107**	**28 ***
26	Pennyburn Ind Est AH	76	7
27	Pennyburn Ind Est LT	20	3
28	Buncrana Rd (N) RT	46	4
29	Buncrana Rd (N) AH / LT	**98**	34

** indicates queue is longer than link length.*

7.5.4 The results above show that at Racecourse Road the Red Route performs best followed by the Blue then Purple Routes. In the Blue Route layout, analysis shows that the eastbound 'internal' link would have queues greater than the distance between the junctions. This will block the junctions. In the Purple layout, the westbound internal link would also be blocked and in addition some of the links are shown to form excessive queues, their degree of saturation being above 90%. The poor operational performance of the Purple Route at this location is one of the reason for low economic benefits reported in Section 7.6

Springtown Road

7.5.5 A similar approach has been used to model Springtown Road. LinSig models have been built for the Red and Purple Routes. For the Blue Route a TRANSYT model has been devised again because of the internal "link" caused by the close proximity of the two junctions. The results for each of the three options are presented within Tables 7.11 – 7.13.

Table 7.11 – LINSIG Results for Red Option: *Derry Model 2015 AM: DE2B*

Link	Name	Degree of Saturation (%)	Mean Max Queue (PCU)
1/1	Springtown Rd: LT	68.0	*7.9*
1/2	Springtown Rd: RT	34.5	*1.4*
2/1	A2 Buncrana Rd (N): AH / RT	87.6	*29.4*
3/1	A2 Buncrana Rd (S): LT / AH	87.9	*24.0*
Practical Reserve Capacity ( )		2.4 %	
Total Junction Delay (PCUh)		33.1 PCUh	

D.O.S. = Degree of Saturation. 100 sec cycle time modelled.

Table 7.12 – TRANSYT Results for Blue Option: *Derry Model 2015 AM: DE2B*

Link	Name	Degree of Saturation (%)	Mean Max Queue (PCU)
11	A2 Buncrana Rd SB: AH / RT	56	*3*
12	Internal from Springtown Rd: RT	45	*18*
21	Internal to Springtown Rd: AH / RT	**91**	***25 ****
22	A2 Buncrana Rd NB: LT / AH / RT	89	*31*
23	Springtown Rd: AH	8	*1*
24	Springtown Rd: LT	89	*19*

*D.O.S. = Degree of Saturation. 120 sec cycle time modelled. * denotes queue is longer than link length.*

Table 7.13 – LINSIG Results for Purple Option: *Derry Model 2015 AM: DE2B*

Link	Name	Degree of Saturation (%)	Mean Max Queue (PCU)
1/1	Buncrana Rd (S): RT	38.3	*1.6*
1/2	Buncrana Rd (S): LT / AH	**96.7**	***27.3***
2/1	Springtown Rd: AH / RT	70.3	*3.4*
2/2	Springtown Rd: LT	53.1	*7.1*
3/1	Buncrana Rd (N): RT	**101.3**	***25.0***
3/2	Buncrana Rd (N): AH / LT	38.1	*10.7*
4/1	From mini-roundabout: LT / AH / RT	75.8	*4.2*
Practical Reserve Capacity ( )		**-12.5**	
Total Junction Delay (PCUh)		49.1 PCUh	

D.O.S. = Degree of Saturation. 100 sec cycle time modelled.

7.5.6 The above results show that the Red Route performs best followed closely by the Blue Route. The Purple Route appears to struggle with the AM peak DE2B flows.

Branch Road

7.5.7 Layouts for the Branch Roundabout are identical for each of the proposed options.

7.5.8 Numerous designs have been considered for this junction, two are assessed within this report.

7.5.9 One option is a signalised 'gyratory' layout with an enlarged signalised roundabout. This would increase capacity, however the access to B&Q at the gyratory would have to be revised to an in-only arrangement in order to accommodate the signal staging.

7.5.10 The gyratory arrangement has been tested by building a TRANSYT model of the junction. The results in Table 7.14 show that the junction is over-capacity at the node where Templemore Road meets the roundabout. This is due to the considerable flows that converge at this location, particularly from Buncrana Road (N).

Table 7.14 – Branch 'Enlarged Gyratory' TRANSYT Results: *Derry Model 2015 AM: DE2B*

Link	Location	Degree of Saturation ( )	Mean Max Queue (PCU)
11	Buncrana Rd (N) left-lane	89	**46***
12	Buncrana Rd (N) right-lane	83	**41***
13	Circulatory @ Buncrana Rd (N) left-lane	85	13
14	Circulatory @ Buncrana Rd (N) right-lane	85	**29***
21	Templemore Rd approach left-lane	**103**	**69***
22	Templemore Rd approach right-lane	**96**	**32***
23	Circulatory @ Templemore Rd left-lane	**100**	**73***
24	Circulatory @ Templemore Rd right-lane	**100**	**74***
31	Buncrana Rd (S) approach left-lane	84	**30***
32	Buncrana Rd (S) approach right-lane	84	**30***
33	Circulatory @ Buncrana Rd (S) left-lane	84	**36***
34	Circulatory @ Buncrana Rd (S) right-lane	83	**45***
41	Branch Rd left-lane	69	25
42	Branch Rd right-lane	69	25
43	Circulatory @ Branch Rd left-lane	76	**26***
44	Circulatory @ Branch Rd right-lane	76	11
51	(S) Junction: Buncrana Rd (N) right-lane	47	15
52	(S) Junction: Buncrana Rd (N) centre-lane	47	4
53	(S) Junction: Buncrana Rd (N) left-lane	3	0
54	(S) Junction: B&Q access right-lane	61	5
55	(S) Junction: B&Q access left-lane	15	1
56	(S) Junction: Buncrana Rd (S) right-lane	3	0
57	(S) Junction: Buncrana Rd (S) centre-lane	31	4
58	(S) Junction: Buncrana Rd (S) left-lane	33	5
61	(E) Junction: Templemore Rd (W) right-lane	67	14
62	(E) Junction: Templemore Rd (W) left-lane	66	18
63	(E) Junction: Collon Lane	84	5
64	(E) Junction: Templemore Rd (E) right-lane	7	0
65	(E) Junction: Templemore Rd (E) left-lane	82	29
66	(E) Junction: B&Q Access: ahead/right-turners	64	7
67	(E) Junction: B&Q Access: left-turners	46	8
1444	Shared: Circulatory @ Buncrana Rd (N) right-lane	85	**29***
2414	Shared: Circulatory @ Templemore Rd right-lane	**100**	**74***
3324	Shared: Circulatory @ Buncrana Rd (S) left-lane	84	**36***
4434	Shared: Circulatory @ Branch Rd right-lane	76	11
5123	Shared: (S) Junction: Buncrana Rd (N) right-lane	47	15
5124	Shared: (S) Junction: Buncrana Rd (N) right-lane	47	15
5223	Shared: (S) Junction: Buncrana Rd (N) left-lane	47	4

** indicates queue is longer than link length.*

7.5.11 A further option considered was a 'through-about' or 'hamburger' layout, which attempts to remove the conflicts between 'high volume' right-turning movement from Buncrana Road (N). Removing this traffic would avoid the conflict with Templemore Road traffic.

7.5.12 The results of the analysis shown in Table 7.15 predicts that this layout would operate slightly better than the enlarged gyratory, although there are a few capacity issues at the northern edge of the junction.

Table 7.15 – Branch 'Through-about' TRANSYT Results: *Derry Model 2015 AM: DE2B*

Link	Location	Degree of Saturation (%)	Mean Max Queue (PCU)
11	Branch Road (all movements)	**97**	53
12	NB/WB Circulatory at Branch Road (from Buncrana Rd (S) etc)	**98**	**77***
13	WB Circulatory at Branch Road (from Buncrana Rd (N))	74	**18***
21	EB/SB Circulatory at Buncrana Rd (N) (from Branch Rd etc)	83	**30***
22	Buncrana Rd (N) (all movements)	89	56
31	SB Circulatory at Templemore Rd (from Buncrana Rd (N) etc)	81	**34***
32	Templemore Road (all movements)	79	28
33	Buncrana Road (S) (all movements)	83	35
51	(S) Junction: Buncrana Rd (N) right-lane	49	7
52	(S) Junction: Buncrana Rd (N) centre-lane	49	7
53	(S) Junction: Buncrana Rd (N) left-lane	3	0
54	(S) Junction: B&Q access right-lane	49	4
55	(S) Junction: B&Q access left-lane	12	1
56	(S) Junction: Buncrana Rd (S) right-lane	34	5
57	(S) Junction: Buncrana Rd (S) centre-lane	31	5
58	(S) Junction: Buncrana Rd (S) left-lane	1	0
61	(E) Junction: Templemore Rd (W) right-lane	32	3
62	(E) Junction: Templemore Rd (W) left-lane	44	4
63	(E) Junction: Collon Lane	43	3
64	(E) Junction: Templemore Rd (E) right-lane	2	0
65	(E) Junction: Templemore Rd (E) left-lane	64	25
66	(E) Junction: B&Q Access: ahead/right-turners	48	5
67	(E) Junction: B&Q Access: left-turners	60	9

** indicates queue is longer than link length.*

7.5.13 The above assessments have been undertaken using the worst case traffic scenario predicted by the DTM. Although both options exceed capacity, the 'through-about' would appear to perform considerably better.

7.5.14 The above findings demonstrate that with further refinement a workable solution should be achievable. Since the Branch Road junction layout would be identical in all three options (Red, Blue and Purple) an optimum solution can be resolved in Stage 3, and the final choice of layout does not affect the Preferred Route decision.

7.6 Economic Analysis

Introduction

7.6.1 The economic benefits from each of the Buncrana Road options has been assessed using the COBA analysis package, the standard package for assessing the economic benefits of a highway scheme. COBA calculates the following:

- Travel time costs;
- Delay costs on links and at junctions;
- Vehicles operating cost costs;
- Fuel consumption costs;

- Vehicle kilometre changes;
- Accident costs on links and at junctions; and
- Emissions costs.

7.6.2 COBA assesses each of these criteria and determines the change in cost for each option compared to the highway network without the improvements. The assessment period is 60 years from the opening year and the costs are discounted to 2002 prices. COBA amalgamates these benefits to produce the Present Value of Benefits (PVB).

7.6.3 The Present Value of Costs (PVC) are the total capital costs plus maintenance costs and these are discounted to 2002 prices. The Net Present Value (NPV) is the difference between the PVB and the PVC and the Benefit to Cost Ratio (BCR) is the ratio PVB / PVC. The BCR is a measure of "value for money"; the higher the BCR, the better the "value for money" the option provides.

7.6.4 The latest calculated scheme costs are included in Section 4.

Benefits

7.6.5 The COBA model was built using the 7-day 24 hour daily traffic flows factored from the DTM. The traffic flows between Pennyburn and Branch Roundabouts on the Red, Blue and Purple Routes were assumed to be similar. A manual adjustment was made to the Blue and Purple Routes to assign traffic from the off-line section onto the existing Buncrana Road. Local collision statistics over the past three years were also input into the model.

7.6.6 Each of the four options were modelled separately within COBA, with link and junction detail taken from the latest Stage 2 scheme designs for each route. This included junction data such as lane widths, signal staging and cycle times.

Table 7.16 – COBA Analyses for Red, Blue, Purple and Navy Routes (£000s)

Impact		Red	Blue	Purple	Navy
A	Consumer User Benefits *(£000s)*	£123,828	£119,590	£97,478	£60,882
B	Business User Benefits *(£000s)*	£121,580	£120,164	£96,007	£71,696
C	Private Sector Provider Impacts *(£000s)*	£1,746	£1,465	£1,351	£855
D	Accident Benefits *(£000s)*	-£1,479	-£24,508	-£14,329	£3,727
E	Emissions Benefits	£1,121	£914	£853	£1,906
F	Change to Indirect Tax revenues	-£9,739	-£7,941	-£7,426	-£16,264
G	Present Value of Benefits (PVB) *(= A + B + C + D + E + F)*	£237,057	£209,685	£173,934	£122,803
H	Present Value of Costs (PVC) *(with F subtracted)*	£23,748	£27,695	£31,185	£11,634
I	Net Present Value (NPV) *(£000s) (= G — H)*	£213,309	£181,990	£142,749	£111,169
J	Benefit to Cost Ratio (BCR) *(= G /H)*	**9.98**	**7.57**	**5.58**	**10.56**

Table 7.17 – COBA Analyses for Red, Blue, Purple all including Navy Routes (£000s)

Impact		Red + Navy	Blue + Navy	Purple + Navy
A	Consumer User Benefits *(£000s)*	£137,855	£126,661	£92,536
B	Business User Benefits *(£000s)*	£138,326	£131,025	£95,703
C	Private Sector Provider Impacts *(£000s)*	£1,842	£1,326	£994
D	Accident Benefits *(£000s)*	-£267	-£23,297	-£14,482
E	Emissions Benefits	£1,091	£744	£547
F	Change to Indirect Tax revenues	-£9,447	-£6,446	-£4,767
G	Present Value of Benefits (PVB) *(= A + B + C + D + E + F)*	£269,400	£230,013	£170,531
H	Present Value of Costs (PVC) *(with F subtracted)*	£35,513	£39,482	£42,997
I	Net Present Value (NPV) *(£000s) (= G — H)*	£233,887	£190,531	£127,534
J	Benefit to Cost Ratio (BCR) *(= G/H)*	**7.59**	**5.83**	**3.97**

Results - BCR

7.6.7 The results of the COBA analyses for each of the four routes assessed separately are illustrated in Table 7.16. In conclusion the Red Route performs best, with a BCR of 9.98. The Blue Route is second with a BCR of 7.57, and the Purple Route is lowest with a BCR of 5.58. The Navy (Skeoge to RoI border) Route also performs well, with a BCR of 10.56.

7.6.8 Table 7.17 details the results of the COBA analyses with the Red, Blue and Purple Routes each combined with the Navy Route. The results are again Red then Blue then Purple Routes. The latter appears to be due to a lower level of Consumer and Business User benefits (roughly half) compared to the other two routes, which is a function of the delays experienced at junctions in the Purple Route.

Results - Accidents

7.6.9 Tables 7.16 and 7.17 shows negative benefits for the Red, Blue and Purple Routes from category D; Accident Benefits. This is due to the way that COBA calculates the number of accidents over the 60 year appraisal. Within the COBA program, there are various accident models that calculate the number of accidents.

7.6.10 For links, these relate to link type. For junctions, the accident model takes account of both total flow and flows opposed by each other. The type of junction is also a factor in the calculations and COBA has various coefficients that alter according to junction type. Typically, the proportion of slight accidents at signalised junctions is slightly higher than for priority junctions, and since slight accidents represent between 80-90 of all accidents (nationally), COBA calculates increased accident costs at signalised junctions irrespective of the actual layout and the safety enhancements that can be incorporated. The additional number of junctions in some of the options also contributes to this increase in accident costs.

7.6.11 The accident disbenefits are noticeably lower for the Red Route in comparison to the other two routes. This is because the network changes very little in the Red Route; there are fewer new signalised junctions and there is also very little increase in the overall length of the network.

7.6.12 For the Navy Route, the model calculates positive accident benefits, and this is considered to be due to the provision of safer dual carriageway links in place of the existing single carriageway on this section of Buncrana Road.

7.6.13 For this Stage 2 analysis the non accident benefits are sufficiently positive to enable a Preferred Route to be selected; accident disbenefit mitigation would be investigated in Stage 3. No option is preferred.

Sensitivity Test

7.6.14 In order to ensure that the assessments being undertaken reflect a reasonable picture, sensitivity tests have been undertaken using an alternative set of future year flows.

7.6.15 These flows have been produced using recent traffic survey data in combination with NRTF Central growth rates. The traffic year was assigned as 2015 (same as Derry Model assessment), with 1,000 residential units assumed to be developed on the H1/H2 zoned lands.

7.6.16 The sensitivity test flows and COBA assessment results are presented within Appendix D. The results of this analysis again indicate that while each of the three 'competing' routes produce economic benefits, the Red Route performs best, followed by Blue and then Purple. This order is maintained when each of the routes is included with the Navy Route (which also performs acceptably in economic terms on its own).

Summary

7.6.17 On the basis of the COBA assessments, each of the routes appears to give positive benefits. The Red Route performs best and generates the higher benefits in comparison to capital outlay. This is followed by the Blue and then the Purple Routes. This hierarchy is replicated when the three routes are each included with the Navy Route as one model.

7.7 Additional Sub-Objectives

Safety - Security

7.7.1 This sub-objective reflects the level of security for road users, public transport passengers and non-motorised users. The aim of this sub-objective is to reflect both changes in security and the likely numbers of users affected.

7.7.2 All options offer road users reductions in time queued at signals, junctions or in lines of traffic and therefore less fear of attack while queuing.

7.7.3 The current lay-by at the RoI border would be replaced with a lay-by to current standards.

7.7.4 The urban section of the road would benefit by street lighting provided to current standards.

7.7.5 The design of the footways and areas surrounding the highway itself will be undertaken to ensure that there are no fully or partially concealed areas which would make pedestrians vulnerable to attack. Any such areas that currently exist will be examined and attempts made to remove them as part of the scheme.

7.7.6 All options are assessed to have Moderate Beneficial impact on Security.

Economy - Reliability

7.7.7 For journeys by private road vehicles it is reasonable to expect travellers to be aware of the average journey time, including variations caused by factors such as different traffic conditions at different times of the day. Reliability is defined as the variation in journey times that drivers would experience travelling along the road. This can arise due to the variations in day to day congestion or particular incidents that occur.

7.7.8 All options would deliver improved reliability to the users of Buncrana Road.

7.7.9 Reliability for public transport is defined as the difference between actual and timetabled arrival times. As benefits are expected for all vehicle types, public transport users will also experience improved reliability.

7.7.10 Each of the proposed options would provide Beneficial impacts in terms of Reliability, with the Purple giving Moderate and the other options Slight, the reasoning being the Purple Route offers a section of virtual bus priority on the old Buncrana Road.

Economy - Wider Economic Impacts

7.7.11 This sub-objective reflects the economic benefits that the improvements would bring to Derry and the surrounding area.

7.7.12 The improved infrastructure along Buncrana Road is considered to be an essential requirement in providing the housing developments proposed within the Derry Area Plan. An improved route into Londonderry would be essential for these developments to be fully viable.

7.7.13 The scheme also enhances cross-border links with the RoI, particularly with the Navy Route. Improving this link will not only reduce travel times and operating costs but it would also be a catalyst to improving investment within the Londonderry area. The scheme also provides the opportunity for improved public transport links between Londonderry, Buncrana and Letterkenny

7.7.14 Each of the proposed routes would provide Moderate Beneficial impacts in terms of the Wider Economic Impacts.

Accessibility - Option Values

7.7.15 This sub-objective is applicable to schemes which substantially change the availability of different transport modes within the study area. The scheme is considered as having a Neutral impact because no additional transport options are currently being offered by the scheme.

Accessibility - Severance

7.7.16 Severance particularly affects non-motorised users, especially pedestrians. This sub-objective featured strongly with residents along Buncrana Road. Buncrana Road already suffers from a high degree of severance, with the high traffic levels discouraging pedestrians from making movements across the road. This is particularly acute in the urban section, with evidence from previous consultation events suggesting that residents feel their neighbourhood is dominated by Buncrana Road.

7.7.17 This Stage 2 assessment has not included pedestrian movement surveys and therefore a detailed appreciation of pedestrian requirements cannot be determined at this stage. Assumptions have been made regarding existing desire lines together with existing crossing locations to enable each of the routes to be qualitatively assessed.

Red Route

7.7.18 Generally the Red Route would provide an additional lane in each direction which would have an adverse impact on severance. The pedestrian surveys to be undertaken in Stage 3 would take into account recorded pedestrian movements in order to ensure that pedestrian demand is suitably accommodated. The Stage 3 study would establish any increased distance that pedestrians would experience by crossing the road at the proposed dedicated crossing points as opposed to current movements.

7.7.19 The removal of properties at Collon Terrace and Collon Bar, proposed within the Red Route, would have a beneficial impact on severance since there would be less pedestrian movements across Buncrana Road. Overall the Red Route would have a Slight Adverse impact on severance.

Blue Route

7.7.20 The impact of severance to the on-line improvement of the Blue Route would be identical to the Red Route.

7.7.21 Severance across Buncrana Road on the off-line section of the Blue Route would be improved by the reduction in traffic from two way to one way. However, there would be a wider impact

with the off-line section because of the additional road at the rear of Collon Terrace and Collon Bar.

7.7.22 Pedestrians travelling along Racecourse Road and Springtown Road would benefit from the new pedestrian phases in the signals, however the enlarged nature of the junction would mean more crossings may have to be undertaken.

7.7.23 Taking into account the issues discussed above, the Blue Route is assessed as having a Slight Adverse impact in terms of severance.

Purple Route

7.7.24 The on-line improved sections of the Purple Route would have identical severance impacts as the Red Route.

7.7.25 The Purple Route offers a definite benefit to the residents of Buncrana Road within the off-line section. The removal of through traffic leaving the remaining Buncrana Road to carry only local traffic would significantly improve movements across the majority of the urban section of Buncrana Road.

7.7.26 Pedestrians travelling along Racecourse Road and Springtown Road would still have to cross the off-line section although they would experience the improved crossing facilities.

7.7.27 Taking the above into account, the Purple Route is assessed as having a Moderate Beneficial impact in terms of severance.

Navy Route

7.7.28 Severance on the Navy section of Buncrana Road is fairly limited at present since this section is predominantly rural and only the residents of Benview estate are affected. This section of the road is currently a single carriageway to the national speed limit.

7.7.29 However, with implementation of the developments included in the Derry Area Plan, much of the southern area in this section will be developed with residential properties. With these developments, severance would become more of an issue, and the crossing of Buncrana Road on foot would require careful consideration in terms of location and choice.

7.7.30 Pedestrian movements across Buncrana Road would increase as a result of the future developments but the ability to cross Buncrana Road with the Navy Route would be the same as the existing layout. The Navy Route is assessed as Neutral impact in terms of severance.

Accessibility - Access to the Transport System

7.7.31 This sub-objective concerns access to private and public transport. The options currently proposed do not include any improved access to transport systems. However the scheme does offer the potential for a park and ride facility should the bus lane improvements be included in future proposals. A park and ride scheme would improve access to public transport.

7.7.32 The scheme currently proposed is assessed as having Neutral benefits in terms of Access to Public transport.

Conclusion

7.7.33 Between Pennyburn Roundabout and Skeoge Roundabout, the Red Route offers the best economic return, with the Blue Route performing second, and the Purple Route performing worst.

7.7.34 In terms of the additional sub-objectives, all routes generally perform equally with the exception of Severance, where the Purple Route outperforms the other two options.

7.7.35 Between Skeoge Roundabout and the RoI border, the Navy Route provides acceptable economic returns, and generally performs well with regards to the additional sub-objectives.

8 Public Consultation

8 Public Consultation

8.1 Public Consultation April 2008

8.1.1 A Public Exhibition was held at the Ramada Da Vinci's Hotel from 1st to 3rd April 2008. This presented the public with the four proposed improvement options.

8.1.2 Prior to the event, approximately 800 letters and leaflets were distributed to both residential and commercial properties in the surrounding area. Notices advertising the event were displayed in local retail premises, and Roads Service prepared a news release to inform the local press, resulting in articles in both local newspapers and radio.

8.1.3 A series of presentation boards were displayed which included information about the need and impact of the proposal. Comments Sheets were distributed on the day to give the local community and businesses the opportunity to express their preferences.

8.1.4 A total of 36 responses were received from members of the public and other interested parties, representing a response rate of approximately 4.5 .

8.1.5 The exercise demonstrated a strong support for the Purple Route. Of the responses received, 53% (19no.) were in support of the Purple Route option, 28% (10no.) were in support of the Red Route, 11% (4no.) for the Blue Route and 8% (3no.) gave no indication of preference.

8.1.6 Further details on the event are contained within Faber Maunsell report entitled "Stage 2 Community Consultation Day Report".

8.2 Public Meeting April 2008

8.2.1 A public meeting was held immediately following the consultation on the evening of 3rd April 2008. This meeting was chaired by an independent facilitator.

8.2.2 At this meeting the public were given the opportunity to raise issues and indicate their preferences.

8.2.3 The Red Route was least favoured by those who attended because it would increase severance for the residents living along Buncrana Road and be a significant upheaval for the residents of Collon Terrace. The residents also foresaw increased difficulties turning right into the side roads.

8.2.4 The Blue Route also was not favoured because it was perceived that it did not offer any advantages over the Purple Route.

8.2.5 The Purple Route was the favoured option by attendees at the meeting as it does not require the demolition of Collon Terrace and removes through traffic from the urban section of Buncrana Road.

8.2.6 Further details on the event are contained within the report entitled "Report of Public Consultation Meeting on Proposed Improvements to Buncrana Road", prepared by the independent facilitator.

9 Recommendations

9 Recommendations

9.1 Summary

9.1.1 This report summarised the Stage 2 Scheme Appraisal for the improvement of the A2 Buncrana Road.

9.2 Pennyburn Roundabout to Skeoge Roundabout

9.2.1 Three routes have been developed between Pennyburn Roundabout and Skeoge Roundabout. These are Red Route (on-line widening), Blue Route (on-line widening with diversion for westbound traffic between Pennyburn Pass and Springtown Road) and Purple Route (on-line widening with diversion for all traffic between Pennyburn Pass and Springtown Road).

Red Route

9.2.2 This was the joint second favoured option environmentally along with Blue. It was the cheapest option, provided the best economic returns, and was second favourite choice with the local community.

Blue Route

9.2.3 This was the joint second favoured option environmentally along with Red. It was the second cheapest options to construct, and provided the second best economic returns. It was the option least favoured by the local community.

Purple Route

9.2.4 This was the favoured option environmentally. It was the most expensive option, and provided the lowest economic return. It was the option favoured by the local community.

9.3 Skeoge Roundabout to the Border With ROI

9.3.1 Only one option, the Navy Route, was considered along this section. The environmental assessment did not highlight any significant adverse issues. It provided acceptable economic returns, and was well received by the local community.

9.3.2 Four options were examined for a link between Elagh Road and Elagh Business Park. Sub–option 1 was the preferred option environmentally, however all four options will be considered in more detail in Stage 3.

9.4 Conclusions and Recommendations

Pennyburn Roundabout to Skeoge Roundabout

9.4.1 From an environmental perspective, Red was the favoured option on four of the main sub-headings, Purple was favoured on six of the main sub-headings and Blue was not the favoured option on any of the main sub-headings. This, added to the low support for the Blue Route from the community and its relatively poor economic performance compared to the Red option, means that it is recommended that the Blue Route is excluded from further study.

9.4.2 Although the Purple Route is the favoured option environmentally and was also favoured by the local community, its economic performance is the weakest of the three options considered. This is in part due to higher scheme costs for the Purple Route, but is largely caused by the poor performance of the Springtown Road and Racecourse Road junctions.

9.4.3 Given the significantly cheaper cost of the Red Route, the enhanced economic performance of the Red Route compared to the Purple Route and the fact that this poor economic performance is in fact largely caused by the poor performance of junction (in turn leading to delays and increased journey times), it is recommended that the Purple Route is excluded from further study and the Red Route be taken forward to Stage 3.

&

Skeoge Roundabout to the Border with RoI &

9.4.4 % **It is recommended that the Navy Route be taken forward for consideration in Stage 3, and that all sub-options for the re-alignment of Elagh Road are examined in more detail in Stage 3.**

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Appendix A – Appraisal Summary Tables

Appendix A – Appraisal Summary Tables

Appraisal Summary Tables (AST) A2 Buncrana Road Stage 2

Red Route Option

Table 1 Red Route Option Assessment Summary Table

Scheme Option – Buncrana Road – A2 **Red** Option		**Description –** On-line carriageway widening to provide two lanes of traffic in each direction from Pennyburn Roundabout to the Skeoge Roundabout.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
ENVIRONMENT	**Noise**	Qualitative noise impact assessment for WebTAG assessment will be undertaken at Stage 3.	No of Properties / Do Min / Scheme 0 – 100m: 340 / 340 100m – 200m: 356 / 356 200m – 300m: 312 / 312 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage.
	Local Air Quality	Qualitative air quality impact assessment for WebTAG assessment will be undertaken at Stage 3.	No of Properties / Do Min / Scheme 0 – 50m: 175 / 165 50m – 100m: 162 / 166 100m – 150m: 169 / 164 150m – 200m: 183 / 182 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage.
	Greenhouse Gases	Climate change assessment will be undertaken at Stage 3.	N/A	N/A at this stage.
	Landscape	N/A	N/A	N/A
	Townscape	The small section of traditional townscape at Collon Terrace would be lost. Setting of St Patrick's Church adversely affected by larger road at frontage. Trees that screen the industrial /commercial areas of Springtown would also be lost. There would be marginal encroachment on Templemore Sports Complex. Trees and front gardens may be lost in Messines Park area and west of Sports Complex. Replacement street tree planting may be possible along new footways/cycleways. Tree planting essential in demolition areas and along relocated boundary of Templemore Sports Complex.	N/A	Large Adverse
	Heritage of Historic Resources	Four archaeological sites will be impacted by the proposed scheme: a site associated with the Siege of Derry, a section of dismantled railway, a lamp post and there will be a visual impact on St Patrick's Church. The other sites are located sufficiently for enough away to remain unaffected.	N/A	Large Adverse
	Biodiversity	Field work in the area has confirmed that the environment surrounding the scheme contains few area of semi-natural vegetation or other areas with significant biodiversity. The most interesting ecological features along much of the route corridor are the semi-mature trees surrounding playing fields and planted screening between the road and adjacent industrial estates. In a few places areas of waste ground have begun to scrub over and this increases their biodiversity interest. Detailed vegetation survey, mammal surveys, hedgerow survey, breeding bird survey and wintering bird surveys have all been completed and no nationally or internationally protected species or habitats were recorded along the Red Route; although a badger sett has been recorded outside the study area to the north. The impact of this should be low if effectively mitigated through compensatory measures, such as a dedicated mammal crossing.	N/A	Moderate Adverse

Appraisal Summary Tables (AST) A2 Buncrana Road Stage 2

Scheme Option – Buncrana Road – A2 **Red** Option		**Description –** On-line carriageway widening to provide two lanes of traffic in each direction from Pennyburn Roundabout to the Skeoge Roundabout.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
	Water Environment	The Red Route Option would cross or is located adjacent to a number of watercourses including the River Foyle, Skeoge River, Ballymagrorty Stream and Pennyburn Stream as well as smaller streams and field drains. Construction works in the vicinity of these watercourses has the potential to release pollutants and sediments and thus impact upon the chemical and biological water quality of surface waters as well as impact on aquatic and riparian habitats. Adoption of appropriate mitigation measures as well as adherence to Pollution Prevention Guidance (PPGs) and the guidance contained within CIRIA Document C650 "Environmental Good Practice on Site" would maintain existing water quality and mitigate potential pollution impacts resulting from construction. During operation, the Red Route Option will increase the impermeable highway area and consequently generate greater volumes of surface runoff. In the absence of mitigation, increased runoff rates have the potential to impact on the existing hydrological regime and result in flooding and impact on riparian and aquatic habitats. In addition, surface runoff could contain oils, fuels and sediment. Drainage based on Sustainable Urban Drainage Systems (SUDS) would be installed to attenuate, treat and discharge carriageway runoff and minimise the significance of such effects. A number of watercourses in the study area are designated under the terms of the Drainage (Northern Ireland) Order 1973. Any works, for example installation of new culverts, extension of existing culverts or land drainage, that may affect surface watercourses will require the prior consent and approval of the Rivers Agency. In addition the discharge of surface water would require to be licensed with the Northern Ireland Environment Agency Water Management Unit (EHS WMU). Surface waters within the area are important salmonid waters; both the Skeoge River and Ballymagrorty Stream are designated salmonid under the Freshwater Fish Directive whilst the River Foyle is an important migratory route. The release of pollutants and sediments to these surface waters could adversely impact upon fish populations, however, the implementation of mitigation would reduce the potential for adverse effects. The overall effect of the scheme will be to increase the impermeable area along the A2 corridor, with resultant increases in surface water runoff and the potential for pollutant loaded runoff to enter watercourses. However, taking into account the proposed mitigation measures to be incorporated during construction and operation, the overall impact is considered to be reduced to low significance.	N/A	Low Significance
	Physical Fitness	The on-line widening of the A2 would be unlikely to encourage further movements by pedestrians and cyclists, nor is it likely to discourage such movements. The route is provided for motorised transport to get into Londonderry from the west and the proposed widening may make it unattractive and more hazardous for pedestrians and cyclists to use. However, careful design may improve crossing facilities which may encourage pedestrian movements between residential areas on the one side of the carriageway and the commercial, employment and education facilities on the other. Likewise, cycle lanes may be provided to encourage continued / new cycle use of the area.	N/A	Neutral
	Journey Ambience	Any road improvements will have a neutral effect on travellers stress because road improvements will be in pace with projected traffic growth. The improvements will impact on more than 10,000 motorists, the effect being largely beneficial.	N/A	Large Beneficial
SAFETY	**Accidents**	Pedestrian facilities at junctions and wider footways / cycleways will improve safety for pedestrians and cyclists. However, accident disbenefits are likely to arise due to additional and revised junctions to signalised layouts.	-£1.48m	Moderate Negative
	Security	Reduced fear at stop-lines, removal of 'partially concealed' areas.	N/A	Moderate Beneficial

Appraisal Summary Tables (AST) A2 Buncrana Road Stage 2

Scheme Option – Buncrana Road – A2 **Red** Option		**Description –** On-line carriageway widening to provide two lanes of traffic in each direction from Pennyburn Roundabout to the Skeoge Roundabout.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
ECONOMY	**Public Accounts**	The Red Route performs well, despite a PVC of £23.7m, a high BCR and NPV is achieved.	BCR 9.98 NPV £213.3m	Moderate Beneficial
	Business Users & Providers	Benefits in terms of time savings, delay savings and vehicle operating costs.	£121.6m	Moderate Beneficial
	Consumer Users	Benefits in terms of time savings, delay savings and vehicle operating costs.	£123.8m	Moderate Beneficial
	Reliability	Improved reliability as widened road will provide more capacity and hence more consistent journey times. Performs first out of three routes in terms of junction operation at Racecourse Rd & Springtown Rd junctions.	N/A	Slight Beneficial
	Wider Economic Impacts	Assists delivery of Area Plan developments and enhances Cross-Border links.	N/A	Moderate Beneficial
ACCESSIBILITY	**Option values**	No significant change.	N/A	Neutral
	Severance	Additional lane in each direction may make crossing Buncrana Road more difficult for pedestrians but this is offset to a certain extent by improved provision for pedestrians.	N/A	Slight Negative
	Access to the Transport System	No significant change.	N/A	Neutral
INTEGRATION	**Transport Interchange**	No significant change.	N/A	Neutral
	Land-Use Policy	The A2 is designated as a protected route transport corridor. The study area is a mix of residential, commercial, industrial, agricultural, amenity and green belt land uses. At local and regional level, planning policies advocate the protection of lands within the greenbelt but there is also an emphasis on updating transport links to improve infrastructure so that sustainable transport policies can be created. The on-line Red option will improve regional transport links between Northern Ireland and the Republic of Ireland in the north west. However, in the section from Pennyburn Roundabout to the Skeoge Roundabout, the widening of the road would be detrimental to the surrounding residential and commercial environment.	N/A	Beneficial
	Other Government Policies	The scheme facilitates the 'Shaping Our Future – Regional Development Strategy For Northern Ireland 2025' in relation to improving infrastructure to turn Londonderry into a hub city for the North West. The Regional Development Strategies promotes improved rural integration and development of transport routes, including public transport route. The scheme may develop public transport routes by ensuring consistent journey times, however, it is possible that community severance will be increased if community crossings are not integrated into road design.	N/A	Beneficial Effect

Blue Route Option

Table 2 Blue Route Option Assessment Summary Table

Scheme Option – Buncrana Road – A2 **Blue** Option		**Description –** Predominantly on-line carriageway widening from Pennyburn Roundabout to the Skeoge Roundabout to provide two lanes of traffic in each direction with an off-line diversion between Pennyburn Pass and Springtown Road for west (country) bound traffic.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
ENVIRONMENT	**Noise**	Qualitative noise impact assessment for WebTAG assessment will be undertaken at Stage 3.	No of Properties / Do Min / Scheme **0 – 100m** 340 340 100m – 200m 356 356 200m – 300m 312 312 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage
	Local Air Quality	Qualitative air quality impact assessment for WebTAG assessment will be undertaken at Stage 3.	No of Properties / Do Min / Scheme **0 – 50m** 175 177 50m – 100m 162 180 100m – 150m 169 178 150m – 200m 183 200 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage
	Greenhouse Gases	Climate change assessment will be undertaken at Stage 3.	N/A	N/A
	Landscape	N/A	N/A	N/A
	Townscape	New section of one-way road through industrial area increases the spread of major roads. Environment on existing road from Collon Terrace to Springtown Road would improve due to reduced traffic, however with new impacts to rear of buildings. Setting of St Patrick's Church adversely affected by larger road at frontage. Roadside trees that screen the industrial /commercial areas of Springtown would be lost. Probable loss of some trees and front gardens on Buncrana Road west of Templemore Sports Complex. Replacement street tree planting may be possible along new footways/cycleways.	N/A	Moderate Adverse
	Heritage of Historic Resources	Four archaeological sites will be impacted by the proposed scheme: a site of the Siege of Derry, a section of the dismantled railway and a lamp post and there will be a visual impact on St Patrick's Church. The other sites are located sufficiently distant to remain unaffected.	N/A	Large Adverse
	Biodiversity	Field work in the area has confirmed that the environment surrounding the scheme contains few area of semi-natural vegetation or other areas with significant biodiversity. The most interesting ecological features along much of the route corridor are the semi-mature trees surrounding playing fields and planted screening between the road and adjacent industrial estates. In a few places areas of waste ground have begun to scrub over and this increases their biodiversity interest. Detailed vegetation survey, mammal surveys, hedgerow survey, breeding bird survey and wintering bird surveys have all been completed and no nationally or internationally protected species or habitats were recorded along the Blue Route. Although a badger sett has been recorded outside the study area to the north. The impact of this should be low if effectively mitigated through compensatory measures, such as a dedicated mammal crossing.	N/A	Moderate Adverse

Appraisal Summary Tables (AST) A2 Buncrana Road Stage 2

Scheme Option – Buncrana Road – A2 **Blue** Option		**Description –** Predominantly on-line carriageway widening from Pennyburn Roundabout to the Skeoge Roundabout to provide two lanes of traffic in each direction with an off-line diversion between Pennyburn Pass and Springtown Road for west (country) bound traffic.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
	Water Environment	The Blue Route Option would cross or is located adjacent to a number of watercourses including the River Foyle, Skeoge River, Ballymagrorty Stream and Pennyburn Stream as well as smaller streams and field drains. Construction works in the vicinity of these watercourses has the potential to release pollutants and sediments and thus impact upon the chemical and biological water quality of surface waters as well as impact on aquatic and riparian habitats. Adoption of appropriate mitigation measures as well as adherence to Pollution Prevention Guidance (PPGs) and the guidance contained within CIRIA Document C650 "Environmental Good Practice on Site" would maintain existing water quality and mitigate potential pollution impacts resulting from construction. During operation, the Blue Route Option will increase the impermeable highway area and consequently generate greater volumes of surface runoff. In the absence of mitigation, increased runoff rates have the potential to impact on the existing hydrological regime and result in flooding and impact on riparian and aquatic habitats. In addition, surface runoff could contain oils, fuels and sediment. Drainage based on Sustainable Urban Drainage Systems (SUDS) would be installed to attenuate, treat and discharge carriageway runoff and minimise the significance of such effects. A number of watercourses in the study area are designated under the terms of the Drainage (Northern Ireland) Order 1973. Any works, for example installation of new culverts, extension of existing culverts or land drainage, that may affect surface watercourses will require the prior consent and approval of the Rivers Agency. In addition the discharge of surface water would require to be licensed with the Northern Ireland Environment Agency Water Management Unit (EHS WMU). Surface waters within the area are important salmonid waters; both the Skeoge River and Ballymagrorty Stream are designated salmonid under the Freshwater Fish Directive whilst the River Foyle is an important migratory route. The release of pollutants and sediments to these surface waters could adversely impact upon fish populations, however, the implementation of mitigation would reduce the potential for adverse effects. The overall effect of the scheme will be to increase the impermeable area along the A2 corridor, with resultant increases in surface water runoff and the potential for pollutant loaded runoff to enter watercourses. The increase in impermeable area is slightly greater for the Blue Route due to construction of the one-way off-line section and as a result it will generate slightly more runoff. However, taking into account the proposed mitigation measures to be incorporated during construction and operation, the overall impact is considered to be reduced to low significance.	N/A	Low Significance
	Physical Fitness	The widening of the A2, utilising part of the road as one of the carriageways would result in the present non motorised user situation to remain, however it may result in an improved safety perceptions because it will have all the traffic moving in one direction around the residential areas. The on-line section of widening of the A2 would be unlikely to encourage further movements by pedestrians and cyclists, nor is it likely to discourage such movements. The route is provided for motorised transport to get into Londonderry from the west and the proposed widening may make it unattractive and more hazardous for pedestrians and cyclists to use. However, careful design may improve crossing facilities which may encourage pedestrian movements between residential areas on the one side of the carriageway and the commercial, employment and education facilities on the other. Likewise, cycle lanes may be provided to encourage continued / new cycle use of the area.	N/A	Neutral
	Journey Ambience	Any road improvements will have a neutral effect on travellers stress because road improvements will be in pace with projected traffic growth. The improvements will impact on more than 10,000 motorists, the effect being largely beneficial	N/A	Large Beneficial

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Scheme Option – Buncrana Road – A2 **Blue** Option		**Description –** Predominantly on-line carriageway widening from Pennyburn Roundabout to the Skeoge Roundabout to provide two lanes of traffic in each direction with an off-line diversion between Pennyburn Pass and Springtown Road for west (country) bound traffic.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
SAFETY	**Accidents**	Pedestrian facilities at junctions and wider footways / cycleways will improve safety for pedestrians and cyclists. However, accident disbenefits due to additional and revised junctions to signalised layouts	-£24.5m	Moderate Negative
	Security	Reduced fear at stop-lines, removal of 'partially concealed' areas	N/A	Moderate Beneficial
ECONOMY	**Public Accounts**	The Blue Route performs fairly well, despite a PVC of £27.7m, a moderate BCR and NPV is achieved.	BCR 7.57 NPV £181.9m	Moderate Beneficial
	Business Users & Providers	Benefits in terms of time savings, delay savings and vehicle operating costs.	£120.2m	Moderate Beneficial
	Consumer Users	Benefits in terms of time savings, delay savings and vehicle operating costs.	£119.6m	Moderate Beneficial
	Reliability	Improved reliability as widened road will provide more capacity and hence more consistent journey times. Performs second out of three routes in terms of junction operation at Racecourse Rd & Springtown Rd junctions.	N/A	Slight Beneficial
	Wider Economic Impacts	Assists delivery of Area Plan developments and enhances Cross-Border links.	N/A	Moderate Beneficial
ACCESSIBILITY	**Option values**	No significant change	N/A	Neutral
	Severance	Increased severance at Collon Terrace. Length of walk and cycle distances increased. Additional pedestrian crossings at signalised junctions improve wait times.	N/A	Slight Negative
	Access to the Transport System	No significant change	N/A	Neutral
INTEGRATION	**Transport Interchange**	No significant change	N/A	Neutral
	Land-Use Policy	The A2 is designated as a protected route transport corridor. The study area is a mix of residential, commercial, industrial, agricultural, amenity and green belt land uses. At local and regional level, planning policies advocate the protection of lands within the greenbelt but there is also an emphasis on updating transport links to improve infrastructure so that sustainable transport policies can be created. The Blue option will improve regional transport links between Northern Ireland and the Republic of Ireland in the north west.	N/A	Beneficial
	Other Government Policies	The scheme facilitates the 'Shaping Our Future – Regional Development Strategy For Northern Ireland 2025' in relation to improving infrastructure to turn Londonderry into a hub city for the North West. The Regional Development Strategies promotes improved rural integration and development of transport routes, including public transport route. The scheme may develop public transport routes by ensuring consistent journey times, however, it is possible that community severance will be increased if community crossings are not integrated into road design.	N/A	Beneficial

Purple Route Option

Table 3 Purple Route Option Assessment Summary Table

Scheme Option – Buncrana Road – A2 **Purple** Option		**Description –** Predominantly on-line carriageway widening from the Pennyburn Roundabout to the Skeoge Roundabout to provide two lanes of traffic in each direction with on off-line diversion between Pennyburn Pass and Springtown Road for two way traffic.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
ENVIRONMENT	**Noise**	Qualitative noise impact assessment for webTAG assessment will be undertaken at Stage 3.	No of Properties / Do Min / Scheme **0 – 100m** 18 18 100m – 200m 46 46 200m – 300m 30 30 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage
	Local Air Quality	Qualitative air quality impact assessment for webTAG assessment will be undertaken at Stage 3.	No of Properties / Do Min / Scheme **0 – 50m** 175 118 50m – 100m 162 176 100m – 150m 169 164 150m – 200m 183 221 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage
	Greenhouse Gases	Climate change assessment will be undertaken at Stage 3.	N/A	N/A at this stage
	Landscape	N/A	N/A	N/A
	Townscape	New dual carriageway through industrial area, but environment on existing road from Collon Terrace to Springtown Road would greatly improve due to removal of through traffic. Potential for landscape measures to further improve the streetscape. Roadside trees that screen the industrial /commercial areas of Springtown would be lost. Probable loss of some trees and front gardens on Buncrana Road west of Templemore Sports Complex. Replacement street tree planting may be possible along new footways/cycleways. Setting of St Patrick's Church adversely affected by larger road at frontage.	N/A	Minor Adverse
	Heritage of Historic Resources	Four archaeological sites will be impacted by the proposed scheme: a site associated with the Siege of Derry, the route of the dismantled railway, a lamp post and there will be a visual impact on St Patrick's Church. The other sites are located sufficiently for enough away to remain unaffected.	N/A	Large Adverse
	Biodiversity	Field work in the area has confirmed that the environment surrounding the scheme contains few areas of semi-natural vegetation or other areas with significant biodiversity. The most interesting ecological features along much of the route corridor are the semi-mature trees surrounding playing fields and planted screening between the road and adjacent industrial estates. In a few places areas of waste ground have begun to scrub over and this increases their biodiversity interest. Detailed vegetation survey, mammal surveys, hedgerow survey, breeding bird survey and wintering bird surveys have all been completed and no nationally or internationally protected species or habitats were recorded along the Purple Route. Although a badger sett has been recorded outside the study area to the north. The impact of this should be low if effectively mitigated through compensatory measures, such as a dedicated mammal crossing.	N/A	Moderate Adverse

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Scheme Option – Buncrana Road – A2 **Purple** Option		**Description –** Predominantly on-line carriageway widening from the Pennyburn Roundabout to the Skeoge Roundabout to provide two lanes of traffic in each direction with on off-line diversion between Pennyburn Pass and Springtown Road for two way traffic.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
	Water Environment	The Purple Route Option would cross or is located adjacent to a number of watercourses including the River Foyle, Skeoge River, Ballymagrorty Stream and Pennyburn Stream as well as smaller streams and field drains. Construction works in the vicinity of these watercourses has the potential to release pollutants and sediments and thus impact upon the chemical and biological water quality of surface waters as well as impact on aquatic and riparian habitats. Adoption of appropriate mitigation measures as well as adherence to Pollution Prevention Guidance (PPGs) and the guidance contained within CIRIA Document C650 "Environmental Good Practice on Site" would maintain existing water quality and mitigate potential pollution impacts resulting from construction. During operation, the Purple Route Option will increase the impermeable highway area and consequently generate greater volumes of surface runoff. In the absence of mitigation, increased runoff rates have the potential to impact on the existing hydrological regime and result in flooding and impact on riparian and aquatic habitats. In addition, surface runoff could contain oils, fuels and sediment. Drainage based on Sustainable Urban Drainage Systems (SUDS) would be installed to attenuate, treat and discharge carriageway runoff and minimise the significance of such effects. A number of watercourses in the study area are designated under the terms of the Drainage (Northern Ireland) Order 1973. Any works, for example installation of new culverts, extension of existing culverts or land drainage, that may affect surface watercourses will require the prior consent and approval of the Rivers Agency. In addition the discharge of surface water would require to be licensed with the Northern Ireland Environment Agency Water Management Unit (EHS WMU). Surface waters within the area are important salmonid waters; both the Skeoge River and Ballymagrorty Stream are designated salmonid under the Freshwater Fish Directive whilst the River Foyle is an important migratory route. The release of pollutants and sediments to these surface waters could adversely impact upon fish populations, however, the implementation of mitigation would reduce the potential for adverse effects. The overall effect of the scheme will be to increase the impermeable area along the A2 corridor, with resultant increases in surface water runoff and the potential for pollutant loaded runoff to enter watercourses. The increase in impermeable area is greatest for the Purple Route due to construction of the two-way off-line section and as a result it will generate slightly more runoff. However, whilst of all the Options, the Purple Route is likely to generate the greatest volume of runoff and also has a greater potential for pollutant loaded runoff to enter surface waters it is considered that with the adoption of appropriate mitigation measures, the overall impact can be reduced to low significance.	N/A	Low Significance
	Physical Fitness	The off line widening of the A2 would encourage non motorised users to use the existing/on-line section. However for the on-line section of the widening non motorised users would be dissuaded from using the main carriageway. The route is provided for motorised transport to get into Londonderry from the west and the proposed widening may make it unattractive and more hazardous for pedestrians and cyclists to use. However, careful design may improve crossing facilities which may encourage pedestrian movements between residential areas on the one side of the carriageway and the commercial, employment and education facilities on the other. Likewise, cycle lanes may be provided to encourage continued / new cycle use of the area.	N/A	Neutral
	Journey Ambience	Any road improvements will have a neutral effect on travellers stress because road improvements will be in pace with projected traffic growth. The improvements will impact on more than 10,000 motorists, the effect being largely beneficial	N/A	Large Beneficial
SAFETY	**Accidents**	Pedestrian facilities at junctions and wider footways / cycleways will improve safety for pedestrians and cyclists. However, accident disbenefits will result due to junctions revised to signalised layouts.	-£14.3m	Moderate Negative

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Scheme Option – Buncrana Road – A2 **Purple** Option		**Description –** Predominantly on-line carriageway widening from the Pennyburn Roundabout to the Skeoge Roundabout to provide two lanes of traffic in each direction with on off-line diversion between Pennyburn Pass and Springtown Road for two way traffic.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
	Security	Reduced fear at stop-lines, removal of 'partially concealed' areas.	N/A	Moderate Beneficial
ECONOMY	**Public Accounts**	The Purple Route performs poorly.	BCR 5.58 NPV £142.7m	Slight Beneficial
	Business Users & Providers	Benefits in terms of time savings, delay savings and vehicle operating costs.	£96.0m	Slight Beneficial
	Consumer Users	Benefits in terms of time savings, delay savings and vehicle operating costs.	£97.5m	Slight Beneficial
	Reliability	Improved reliability as widened road will provide more capacity and hence more consistent journey times. Performs third out of three routes in terms of junction operation at Racecourse Rd & Springtown Rd junctions. Section of 'old' Buncrana Road would improve reliability for bus services.	N/A	Slight Beneficial
	Wider Economic Impacts	Assists delivery of Area Plan developments and enhances Cross-Border links.	N/A	Moderate Beneficial
ACCESSIBILITY	**Option values**	No significant change	N/A	Neutral
	Severance	Removes much of the existing traffic away from the 'old' Buncrana Road. Slight increase in pedestrian walk/cycling distances.	N/A	Slight Beneficial
	Access to the Transport System	No significant change	N/A	Neutral
INTEGRATION	**Transport Interchange**	No significant change	N/A	Neutral
	Land-Use Policy	The A2 is designated as a protected route transport corridor. The study area is a mix of residential, commercial, industrial, agricultural, amenity and green belt land uses. At local and regional level, planning policies advocate the protection of lands within the greenbelt but there is also an emphasis on updating transport links to improve infrastructure so that sustainable transport policies can be created. The Purple option will improve regional transport links between Northern Ireland and the Republic of Ireland in the north west.	N/A	Beneficial
	Other Government Policies	The scheme facilitates the 'Shaping Our Future – Regional Development Strategy For Northern Ireland 2025' in relation to improving infrastructure to turn Londonderry into a hub city for the North West. The Regional Development Strategies promotes improved rural integration and development of transport routes, including public transport routes. The scheme may develop public transport routes by ensuring consistent journey times, however, it is possible that community severance will be increased if community crossings are not integrated into road design.	N/A	Beneficial Effect

Navy Route Option

Table 4 Navy Route Option Assessment Summary Table

Scheme Option – Buncrana Road – A2 **Navy** Option		**Description –** Predominantly on-line carriageway widening between the Skeoge Roundabout to the border with the Republic of Ireland to provide two lanes of traffic in each direction with a roundabout at the entrance of Elagh Business Park.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
ENVIRONMENT	**Noise**	Qualitative noise impact assessment for WebTAG assessment will be undertaken at Stage 3.	No of Properties: Do Min / Scheme **0 – 100m** 18 / 18 100m – 200m 46 / 46 200m – 300m 30 / 30 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage
	Local Air Quality	Qualitative air quality impact assessment for WebTAG assessment will be undertaken at Stage 3.	No of Properties: Do Min / Scheme **0 – 50m** 2 / 2 50m – 100m 16 / 16 100m – 150m 19 / 19 150m – 200m 27 / 27 Further quantitative assessment will be undertaken at Stage 3.	N/A at this stage
	Greenhouse Gases	Climate change assessment will be undertaken at Stage 3.	N/A	N/A
	Landscape	Most of the area between Londonderry and the Border has been zoned for development in Derry Area Plan 2011. Widening Buncrana Road would make a slight adverse effect on the landscape of this attractive valley, but the proposed Elagh Roundabout and link to Coshquin Road are sited on one of the remaining sections of Green Belt land between the city and the Border.	N/A	Moderate Adverse
	Townscape	N/A	N/A	N/A
	Heritage of Historic Resources	Five archaeological sites will be impacted by the proposed scheme, three direct impacts the possible location of a flax dam, the location of a small building and a stone bridge and two visual impacts on the gardens of Glengalliagh House and the scheduled monument of Castle Aileach. The context of a souterrain will also be negatively impacted. The other sites are located sufficiently far enough away to remain unaffected.	N/A	Large Adverse
	Biodiversity	Field work in the area has confirmed that the environment surrounding the scheme contains a few areas of semi-natural vegetation or other areas with significant biodiversity. The most interesting ecological features along much of the route corridor are the semi-mature trees along filed margins and streams. Adjacent to the Elagh Business park, waste ground has begun to scrub over and this has increased the biodiversity interest of this site. Detailed vegetation survey, mammal surveys, hedgerow survey, breeding bird survey and wintering bird surveys have all be completed and a number of nationally or internationally protected species we recorded along the route. Since Stage 1 newts have been recorded as occurring in the ponds to the west of the Elagh Road and bats from the trees along the Elagh stream and mature trees near Benview Road. Newts are protected under the Wildlife (Northern Ireland) Order 1985 and bats are protected under the Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 and The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2007.	N/A	Moderate Adverse

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Scheme Option – Buncrana Road – A2 **Navy** Option		**Description –** Predominantly on-line carriageway widening between the Skeoge Roundabout to the border with the Republic of Ireland to provide two lanes of traffic in each direction with a roundabout at the entrance of Elagh Business Park.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
	Water Environment	The Navy Route Option would cross or is located adjacent to a number of watercourses including the Skeoge River and Ballymagrorty Stream as well as smaller streams and field drains. Construction works in the vicinity of these watercourses has the potential to release pollutants and sediments and thus impact upon the chemical and biological water quality of surface waters as well as impact on aquatic and riparian habitats. Adoption of appropriate mitigation measures as well as adherence to Pollution Prevention Guidance (PPGs) and the guidance contained within CIRIA Document C650 "Environmental Good Practice on Site" would maintain existing water quality and mitigate potential pollution impacts resulting from construction. During operation, the Navy Route Option will increase the impermeable highway area and consequently generate greater volumes of surface runoff. In the absence of mitigation, increased runoff rates have the potential to impact on the existing hydrological regime and result in flooding and impact on riparian and aquatic habitats. In addition, surface runoff could contain oils, fuels and sediment. Drainage based on Sustainable Urban Drainage Systems (SUDS) would be installed to attenuate, treat and discharge carriageway runoff and minimise the significance of such effects. The Navy Option will require significant earthworks and as such an earthworks management plan will form the basis of mitigation to prevent sediment entering surface watercourses. A number of watercourses in the study area are designated under the terms of the Drainage (Northern Ireland) Order 1973. Any works, for example installation of new culverts, extension of existing culverts or land drainage, that may affect surface watercourses will require the prior consent and approval of the Rivers Agency. In addition the discharge of surface water would require to be licensed with the Environment and Heritage Service Water Management Unit (EHS WMU). Surface waters within the area are important salmonid waters; both the Skeoge River and Ballymagrorty Stream are designated salmonid under the Freshwater Fish Directive. The release of pollutants and sediments to these surface waters could adversely impact upon fish populations, however, the implementation of mitigation would reduce the potential for adverse effects. The overall effect of the scheme will be to increase the impermeable area along the A2 corridor, with resultant increases in surface water runoff and the potential for pollutant loaded runoff to enter watercourses. The increase in impermeable area is slightly greater for the Navy Route due to construction of the one-way off-line section and as a result it will generate slightly more runoff. However, taking into account the proposed mitigation measures to be incorporated during construction and operation, the overall impact is considered to be reduced to low significance.	N/A	Low Significance
	Physical Fitness	The on-line dualling and off-line roundabout placement would dissuade non motorised users from using the carriageway. The route is provided for motorised transport to get into Londonderry from the west and the proposed dualling may make it unattractive and more hazardous for pedestrians and cyclists to use. However, careful design may improve crossing facilities which may encourage pedestrian movements between residential areas on the one side of the carriageway and the commercial, employment and education facilities on the other. Likewise, cycle lanes may be provided to encourage continued / new cycle use of the area.	N/A	Neutral
	Journey Ambience	Any road improvements will have a neutral effect on travellers stress because road improvements will be in pace with projected traffic growth. The improvements will impact on more than 10 000 motorists, the effect being largely beneficial	N/A	Large Beneficial

Appraisal Summary Tables (AST) A2 Buncrana Road Stage 2

Scheme Option – Buncrana Road – A2 **Navy** Option		**Description –** Predominantly on-line carriageway widening between the Skeoge Roundabout to the border with the Republic of Ireland to provide two lanes of traffic in each direction with a roundabout at the entrance of Elagh Business Park.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
SAFETY	**Accidents**	Improvement in the form of central reservation and left-in/left-out junctions, better standard of road.	£3.7m	Moderate Beneficial
	Security	No significant change	N/A	Neutral
ECONOMY	**Public Accounts**	The Navy Route performs well, despite a PVC of £11.6m, a high BCR and NPV is achieved.	BCR 10.56 NPV £111.2m	Moderate Beneficial
	Business Users & Providers	Benefits in terms of time savings, delay savings and vehicle operating costs.	£71.7m	Moderate Beneficial
	Consumer Users	Benefits in terms of time savings, delay savings and vehicle operating costs.	£60.9m	Moderate Beneficial
	Reliability	Improved reliability as widened road will provide more capacity and hence more consistent journey times.	N/A	Slight Beneficial
	Wider Economic Impacts	Assists delivery of Area Plan developments and enhances Cross-Border links.	N/A	Moderate Beneficial
ACCESSIBILITY	**Option values**	No significant change	N/A	Neutral
	Severance	Limited severance at present may be worsened by development of Area Plan zones with increased pedestrian demand.	N/A	Slight Negative
	Access to the Transport System	No significant change	N/A	Neutral
INTEGRATION	**Transport Interchange**	No significant change	N/A	Neutral
	Land-Use Policy	The A2 is designated as a protected route transport corridor. The study area is a mix of residential, commercial, industrial, agricultural, amenity and green belt land uses. At local and regional level, planning policies advocate the protection of lands within the greenbelt but there is also an emphasis on updating transport links to improve infrastructure so that sustainable transport policies can be created. The Navy option will allow better access into the existing industrial lands and residential communities which are adjacent to Buncrana Road, it will however, infringe upon the area of green belt which is to the east of the study area.		Beneficial
	Other Government Policies	The scheme facilitates the 'Shaping Our Future – Regional Development Strategy For Northern Ireland 2025' in relation to improving infrastructure to turn Londonderry into a hub city for the North West. The Regional Development Strategies promotes improved rural integration and development of transport routes, including public transport routes. The scheme may develop public transport routes by ensuring consistent journey times, however, it is possible that community severance will be increased if community crossings are not integrated into road design.		Beneficial Effect

Worksheet 1: Appraisal Summary Tables (AST) A2 Buncrana Road Stage 2

Existing Route Option

Table 5 Do Nothing Option Assessment Summary Table

Scheme Option – Buncrana Road – A2 **Existing Option**		**Description –** Existing single carriageway from Pennyburn Roundabout to the RoI border.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
ENVIRONMENT	**Noise**	Qualitative noise impact assessment will be undertaken at Stage 2.	No of Properties / Do Min / Scheme **0 – 100m** 340 100m – 200m 356 340 200m – 300m 312 356 312	Neutral
	Local Air Quality	Qualitative local air quality assessment will be undertaken at Stage 2.	No of Properties / Do Min / Scheme **0 – 50m** 175 50m – 100m 162 175 100m – 150m 169 162 150m – 200m 183 169 183	Neutral
	Greenhouse Gases	Climate change assessment will be undertaken at Stage 3.	N/A	N/A
	Landscape	Most of the area between Londonderry and the Border has been zoned for development in Derry Area Plan. The immediate landscape effect of the Do Nothing option is No Change. In future years, traffic on the Buncrana Road could become busier and more congested, and this may result in a minor adverse impact on the landscape and local views.	N/A	Neutral
	Townscape	Most of the area between Londonderry and the Border has been zoned for development in Derry Area Plan. The immediate landscape effect of the Do Nothing option is No Change. In future years, traffic on the Buncrana Road could become busier and more congested, and this may result in a minor adverse impact on the landscape and local views.	N/A	Neutral
	Heritage of Historic Resources	Under existing conditions there is a slight adverse impact on the context of a souterrain.	N/A	Slight Adverse
	Biodiversity	Biodiversity impacts will only relate to an increased number of collisions between animals traversing the road resulting from the higher projected traffic flow along the road.	N/A	Slight Adverse
	Water Environment	The water environment will only be affected if increased traffic results in unattenuated road runoff and spillages resulting from collisions brought on by increased traffic.	N/A	Slight Adverse
	Physical Fitness	Non motorised road users would still have their existing amenities. There are existing pedestrian facilities on the A2 Buncrana Road, however if there is a projected increase in traffic, non motorised users may be dissuaded from using the carriageway.	N/A	Neutral
	Journey Ambience	Any road improvements will have a neutral effect on travellers stress because road improvements will be in pace with projected traffic growth. More than 10,000 motorists will be affected by not upgrading the Buncrana Road infrastructure.	N/A	Large Adverse
SAFETY	**Accidents**	The existing route has a relatively high recorded rate of collisions.	N/A	Moderate Adverse
	Security	Traffic congestion on the existing route leads to fear for road users and non-motorised users crossing the road.	N/A	Moderate Adverse
ECONOMY	**Public Accounts**	Congestion on the road has a cost to the government in terms of lost working hours and an environmental cost in terms of noise and air pollution.	N/A	Moderate Adverse

Worksheet 1: Appraisal Summary Tables (AST) A2 Buncrana Road Stage 2

Scheme Option – Buncrana Road – A2 **Existing Option**		**Description –** Existing single carriageway from Pennyburn Roundabout to the RoI border.	**Problems –** Existing single carriageway lacks capacity becoming congested at peak hours.	**Present Value Cost £**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
	Business Users & Providers	Business users particularly experience cost due to delays and operating costs due to congestion, as their value of time is higher than for Consumer users.	N/A	Moderate Adverse
	Consumer Users	Consumer users (typically commuters) experience costs in the form delays and operating costs.	N/A	Moderate Adverse
	Reliability	Road users suffer from poor journey reliability due to congestion and occasional incidents.	N/A	Moderate Adverse
	Wider Economic Impacts	The local and wider economy suffers as a result of poor transport conditions along the corridor.	N/A	Moderate Adverse
ACCESSIBILITY	**Option values**	Transport options are fairly limited to private car use along the corridor.	N/A	Moderate Adverse
	Severance	Communities along the corridor suffer from a degree of severance due to traffic congestion and limited opportunities for pedestrians to cross the road.	N/A	Moderate Adverse
	Access to the Transport System	Very few public transport services on Buncrana Road severely limit access for people who do not have access to a car.	N/A	Moderate Adverse
INTEGRATION	**Transport Interchange**	Not applicable.	N/A	N/A
	Land-Use Policy	The A2 is designated as a protected route transport corridor. The study area is a mix of residential, commercial, industrial, agricultural, amenity and green belt land uses. At local and regional level, planning policies advocate the protection of lands within the greenbelt but there is also an emphasis on updating transport links so that a better infrastructure can exist so that sustainable transport policies can be created.	N/A	Neutral
	Other Government Policies	The existing road does not enhance regional development.	N/A	Neutral

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Appendix B – Figures

Appendix B – Figures

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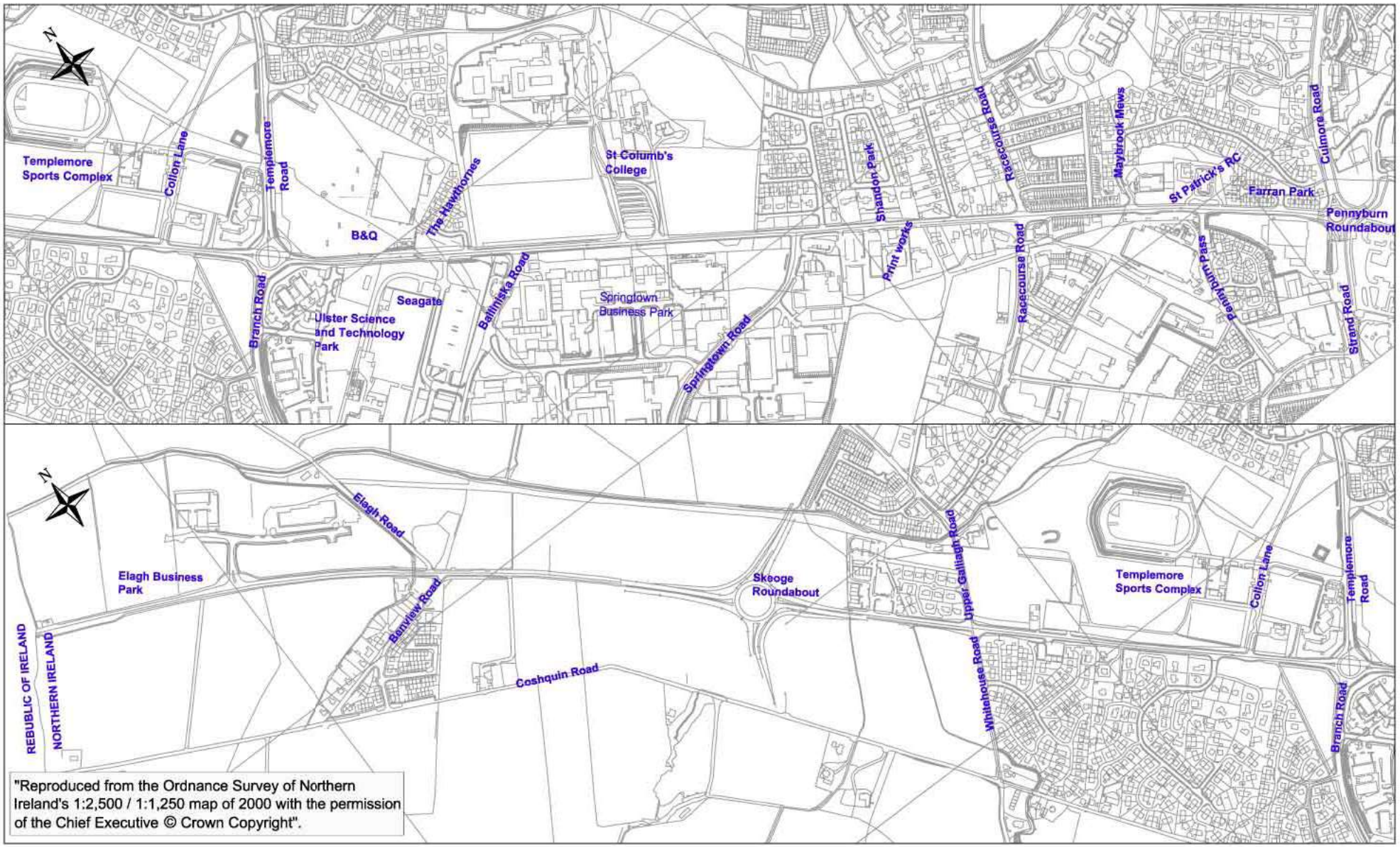
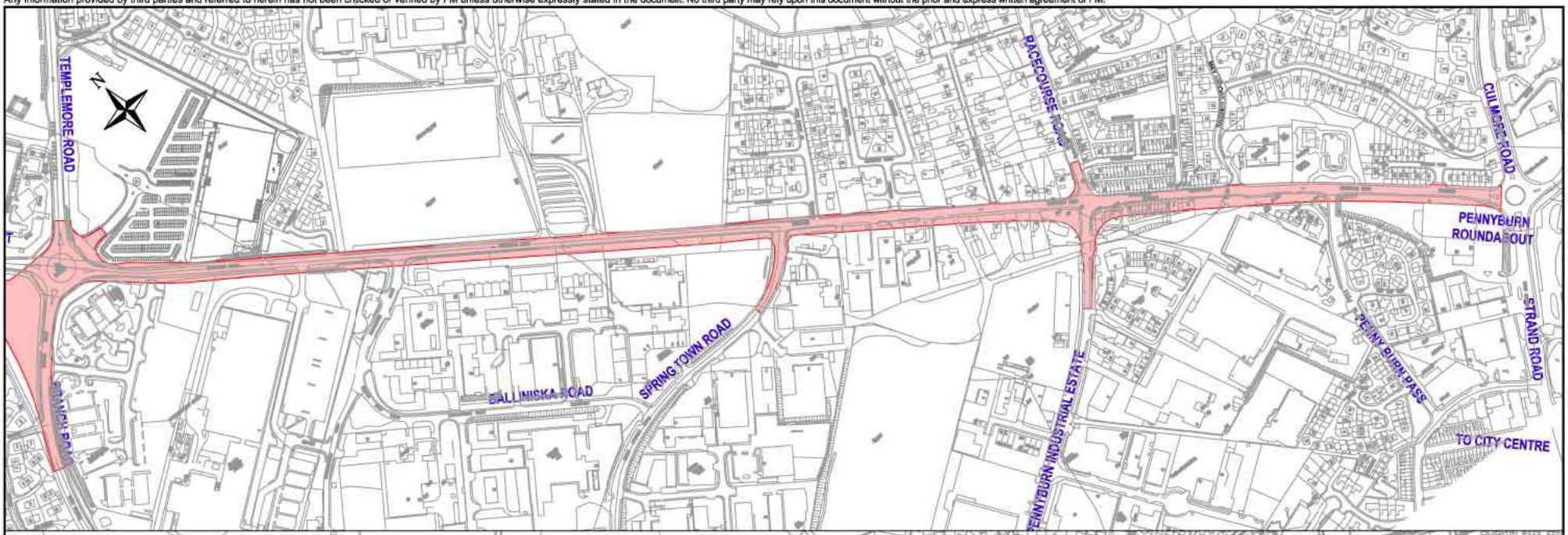
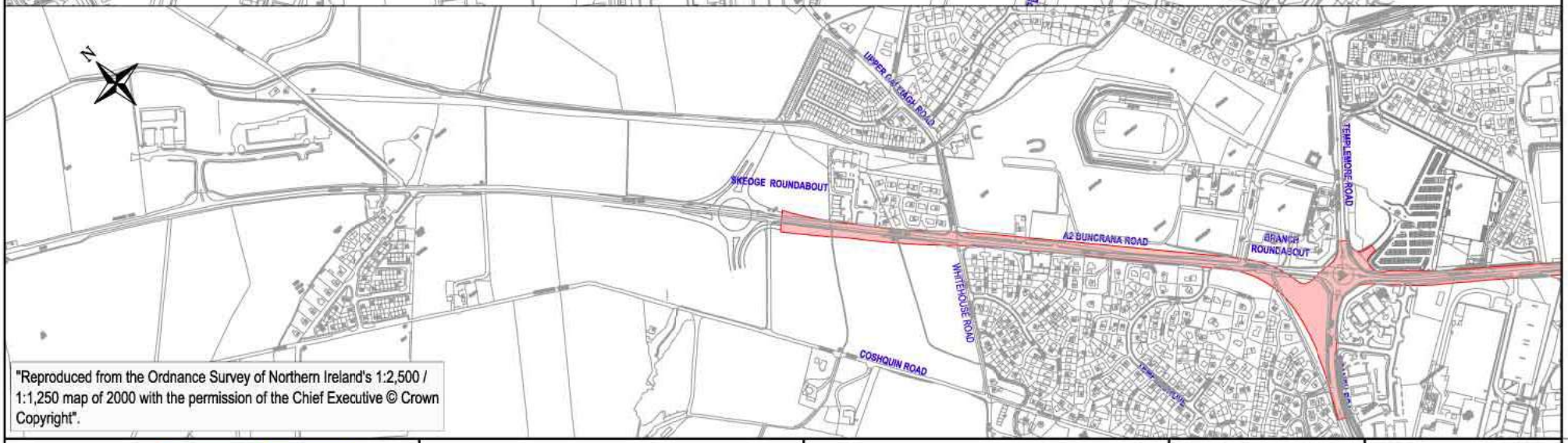
- Figures 9.1 (Sheets 1 & 2), 9.2 (Sheets 1 & 2), 9.3 (Sheets 1 to 4) - Landscape and Visual
- Figures 10.1 & 10.2 - Land Use
- Figures 11.1 to 11.4 - Traffic Noise and Vibration
- Figure 12.1 - Pedestrians, Cyclists, Equestrians and Community Effects
- Figure 14.1 - Water Quality and Drainage
- Figures 15.1 to 15.4 - Geology and Soils



Client: Regional Development / ROADS Service	Title: Stage 2 Scheme Assesment Report Existing Route Layout	FABER MAUNSELL | AECOM	Design: JR · CAD: CB · Chk'd: BB · App'd: TMcK · Date: Sept 08 · Scale: NTS
Project: 49675MGLH A2 Buncrana Road		225 Bath Street, Glasgow, G2 4GZ · Tel: +44 (0) 141 222 6400 · Fax: +44 (0) 141 222 6499 · www.fabermaunsell.com	No. Figure 2.1 · Rev: 0 · cm · A3





Client: Regional Development; ROADS Service

Project:
49675 MGLH
A2 Buncrana Road

Title:
Stage 2 Scheme Assessment Report
Red Route
Pennyburn Roundabout to Skeoge Roundabout

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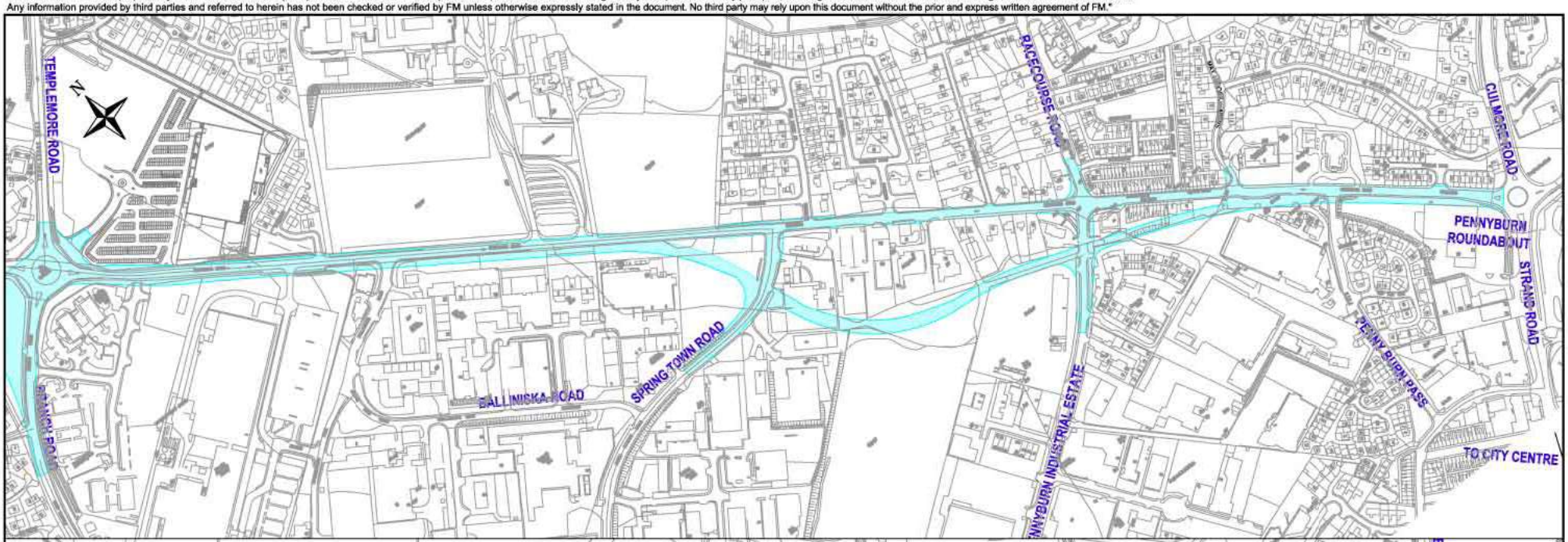
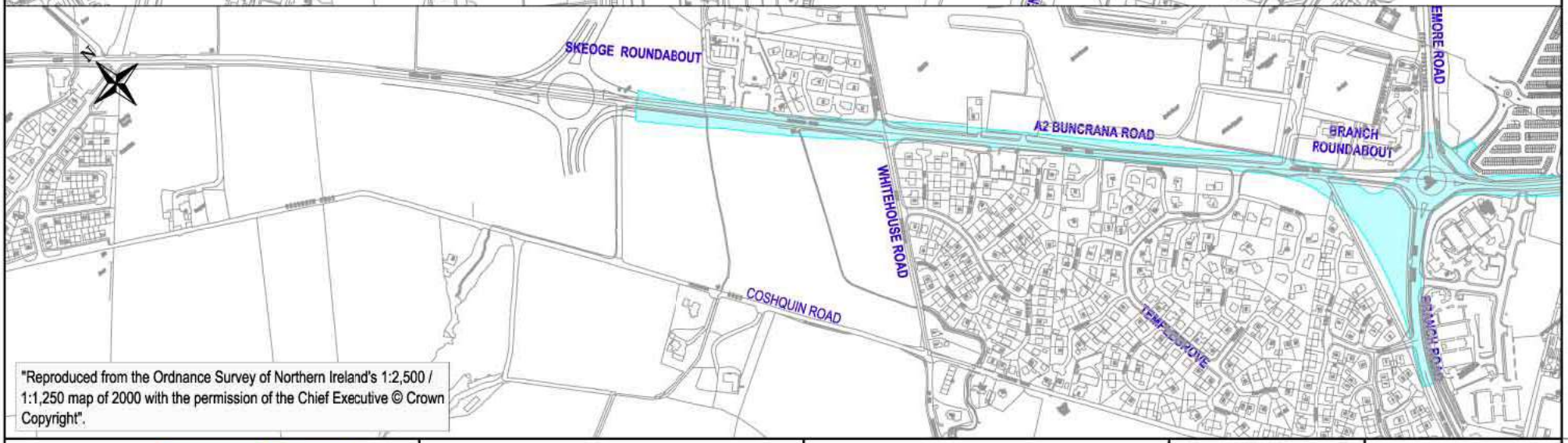
Date:	Sept 08	Scale:	NTS

No. Figure 3.1 Rev: 0

cm A3





Client: Regional Development / ROADS Service

Project:
49675 MGLH
A2 Buncrana Road

Title:
Stage 2 Scheme Assessment Report
Blue Route
Pennyburn Roundabout to Skeoge Roundabout

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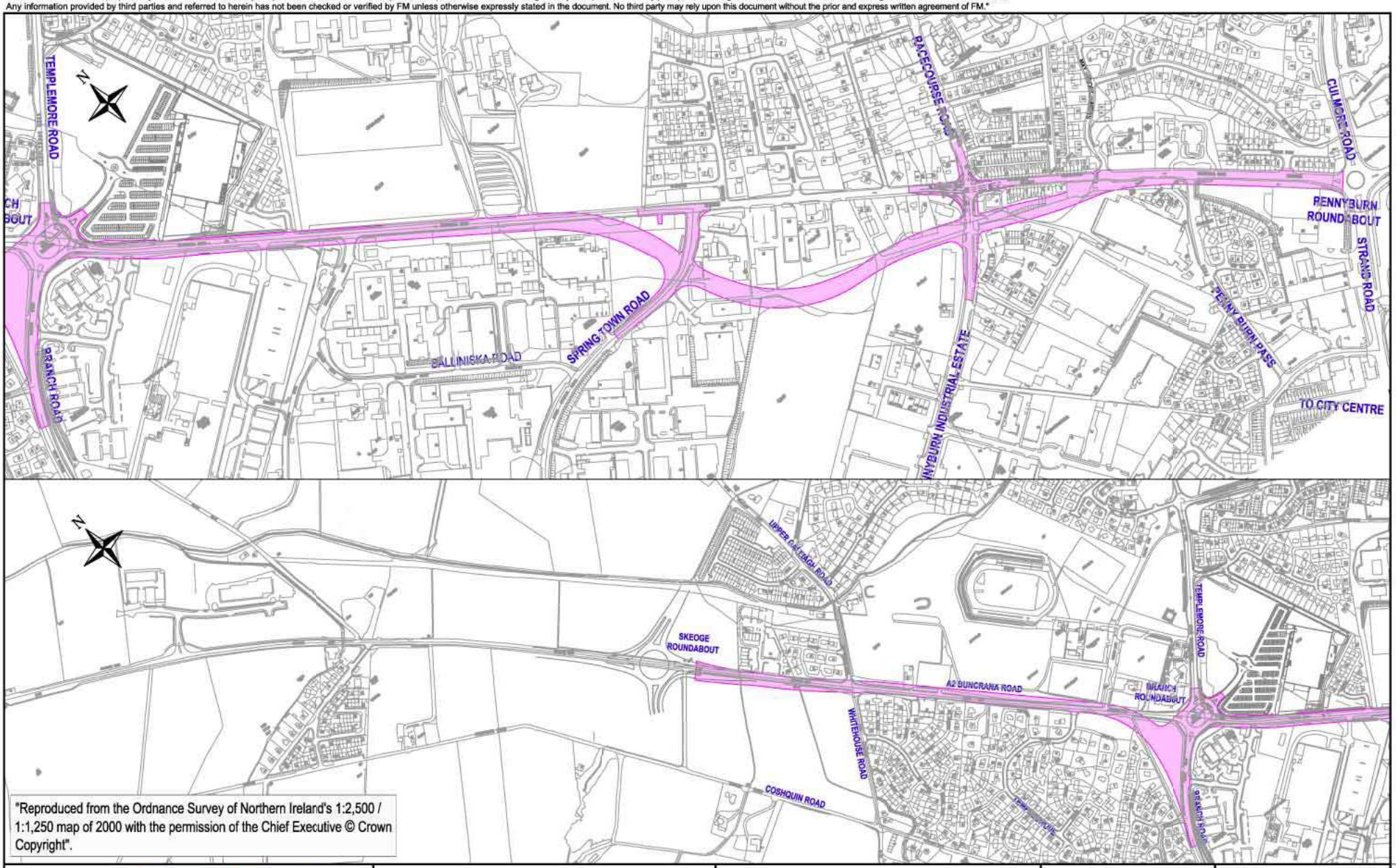
Date: Sept 08		Scale: NTS	
No. Figure 3.2			Rev: 0

cm | A3



Client: Regional Development; ROADS Service

Project:
49675 MGLH
A2 Buncrana Road

Title:
Stage 2 Scheme Assesment Report
Purple Route
Pennyburn Roundabout to Skeoge Roundabout

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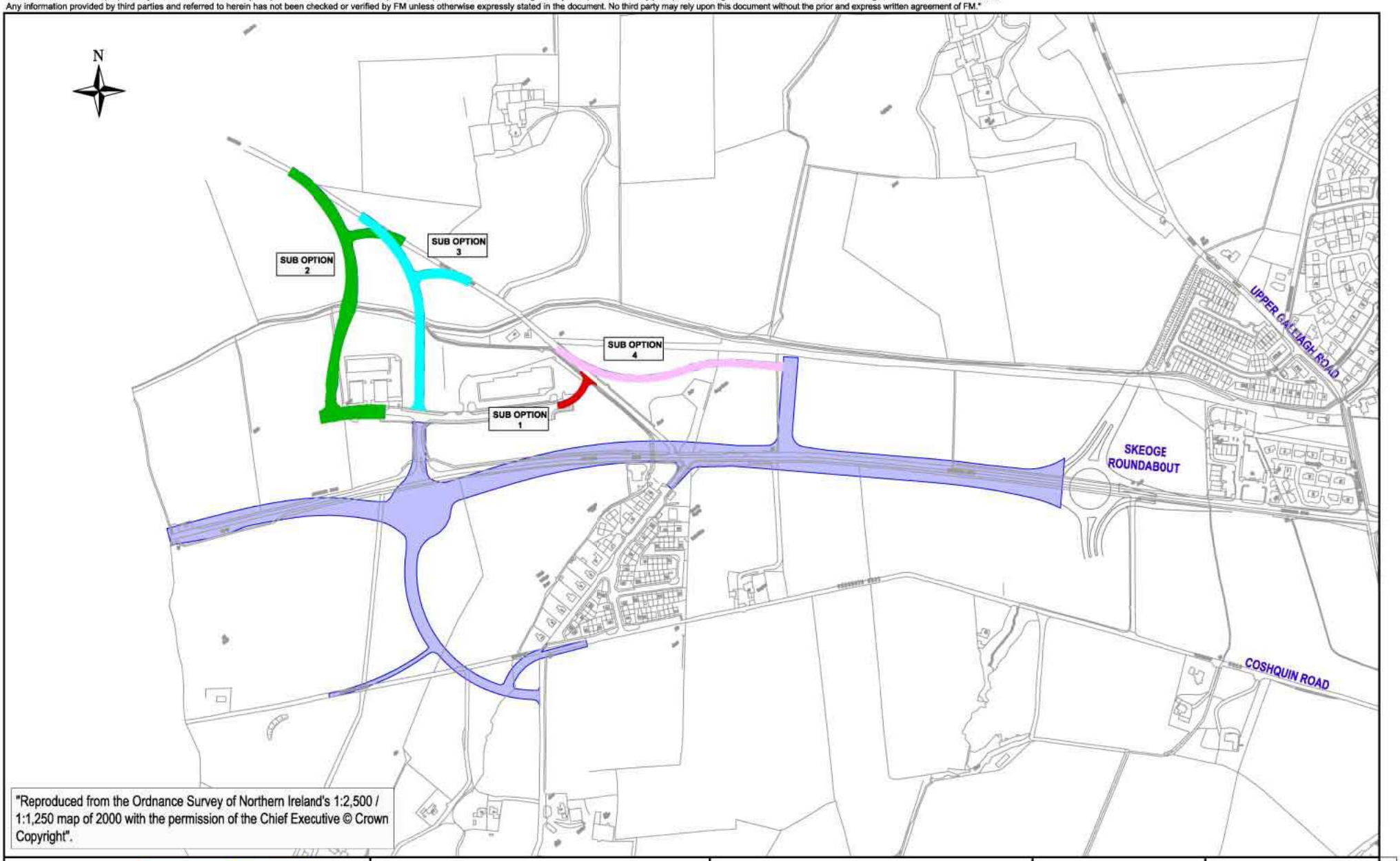
Date: Sept 08		Scale: NTS	
No. Figure 3.3			Rev: 0

cm A3



Client: Regional Development; ROADS Service

Project:
49675 MGLH
A2 Buncrana Road

Title:
Stage 2 Scheme Assessment Report
Navy Route
Skeoge Roundabout to ROI Border

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Date: Sept 08		Scale: NTS	
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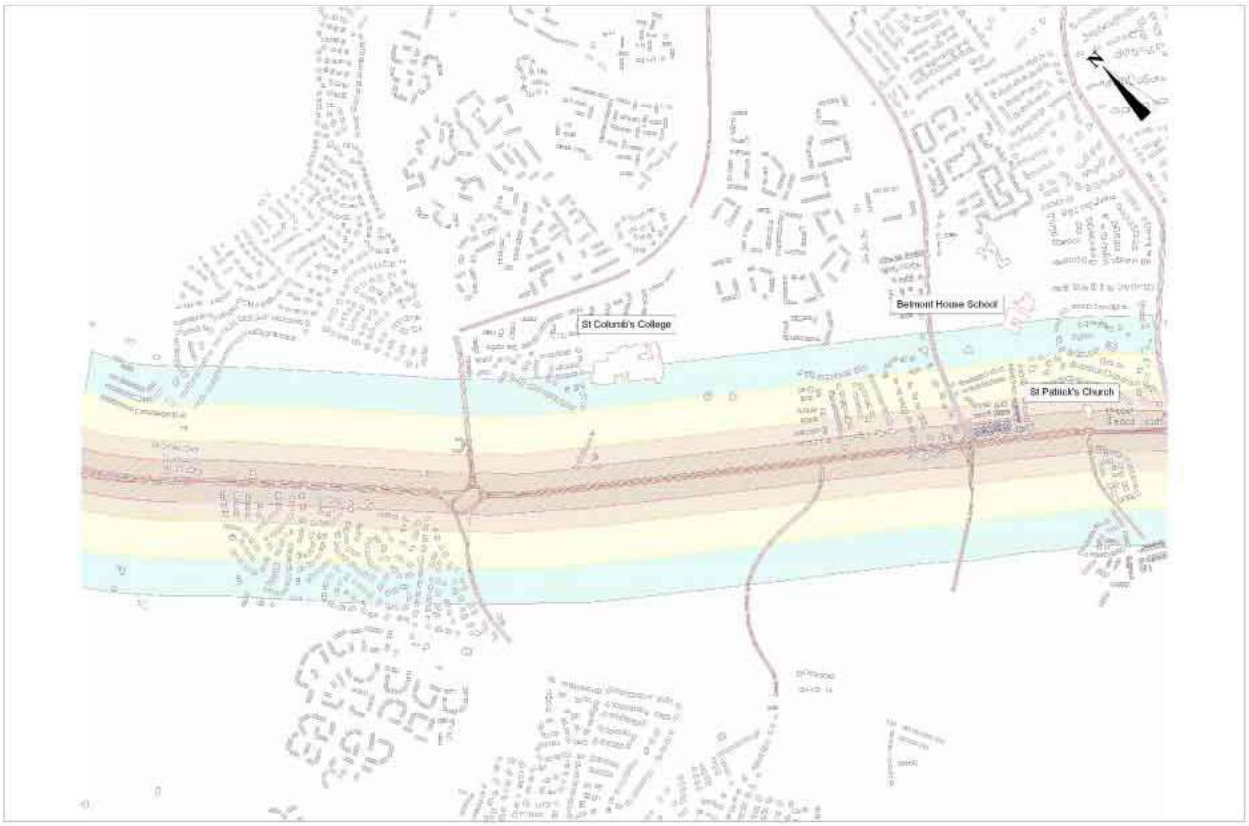


Figure 5.1 Affected Residential Properties – Red Route (Pennyburn Roundabout to Skeoge Roundabout)

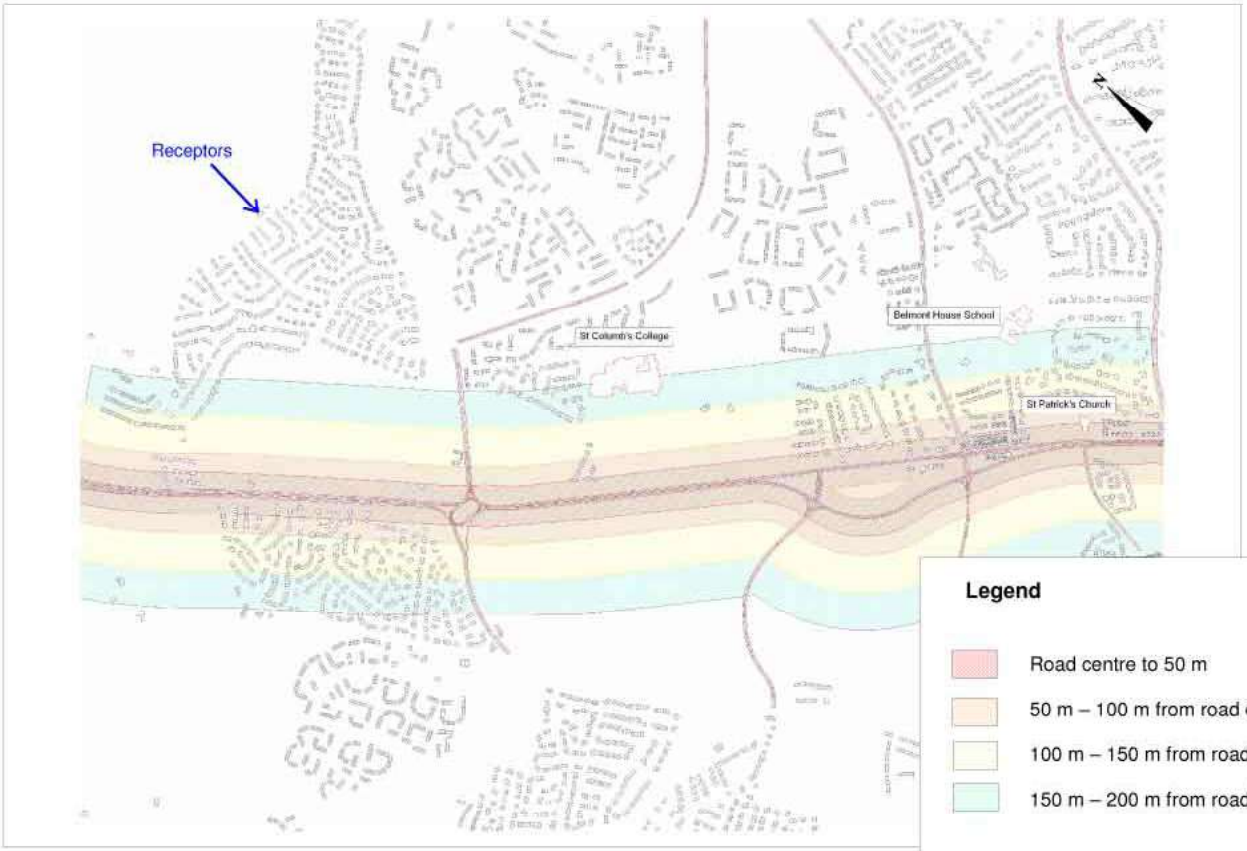


Figure 5.2 Affected Residential Properties – Blue Route (Pennyburn Roundabout to Skeoge Roundabout)

Client: ROADS Service	Title: Stage 2 Environmental Assessment Air Quality Assessment	FABER MAUNSELL | AECOM 24 Linenhall Street, Belfast, BT2 8BG Tel: +44 (0) 28 9043 4900 Fax: +44 (0) 28 9043 4900 www.fabermaunsell.com	Design: AM | Mapinfo: AM Chk'd: MM | App'd: CD Date: 06.05.08 | Scale: Not to scale No: Figures 5.1 & 5.2
Project: 49675 IBLE A2 Buncrana Road			

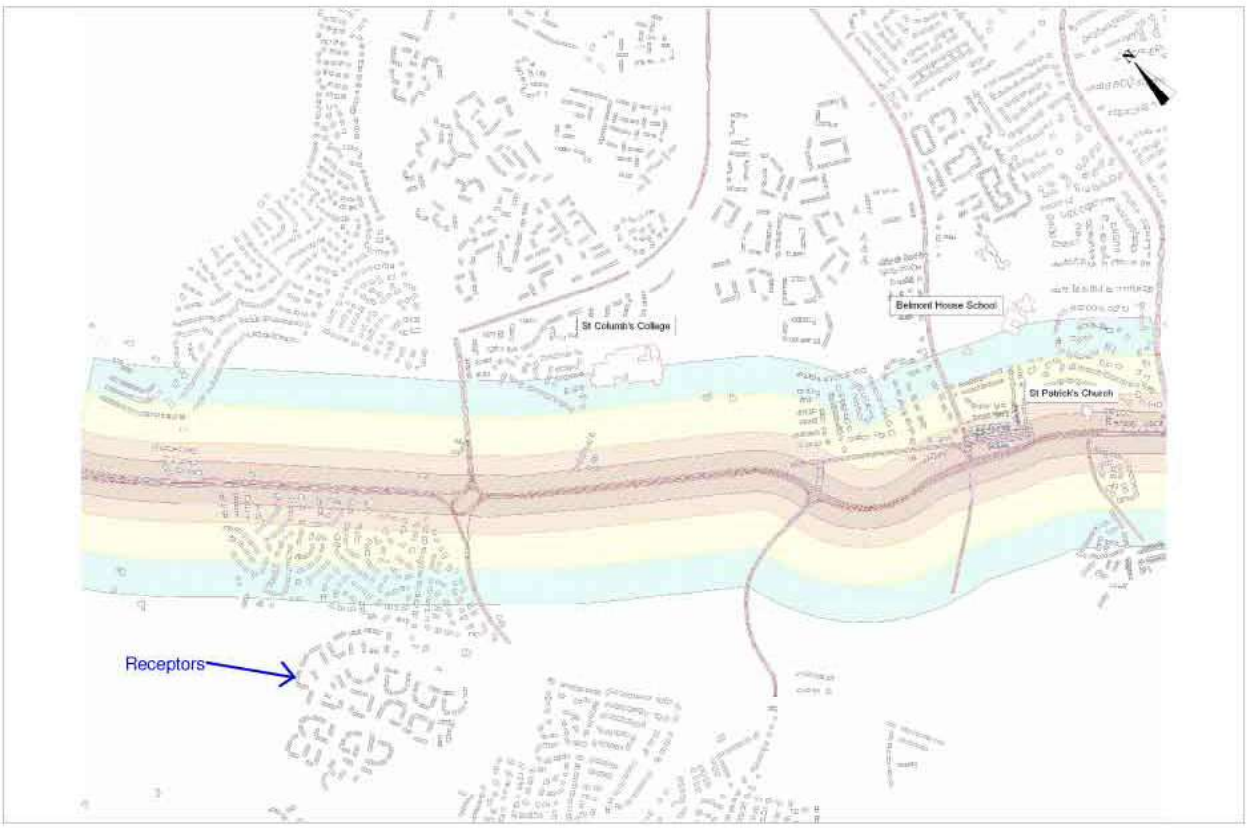


Figure 5.3 **Affected Residential Properties – Purple Route (Pennyburn Roundabout to Skeoge Roundabout)**

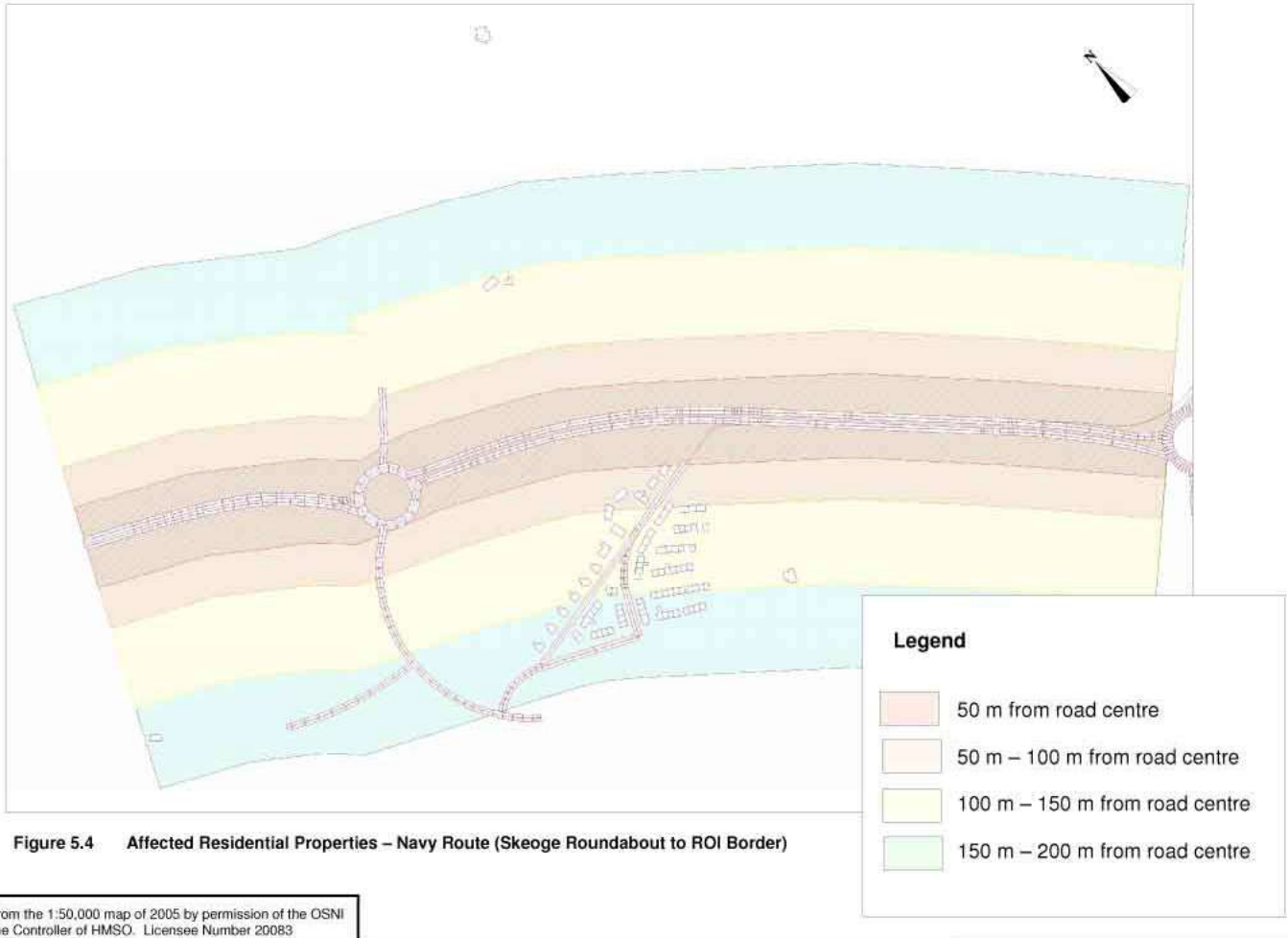
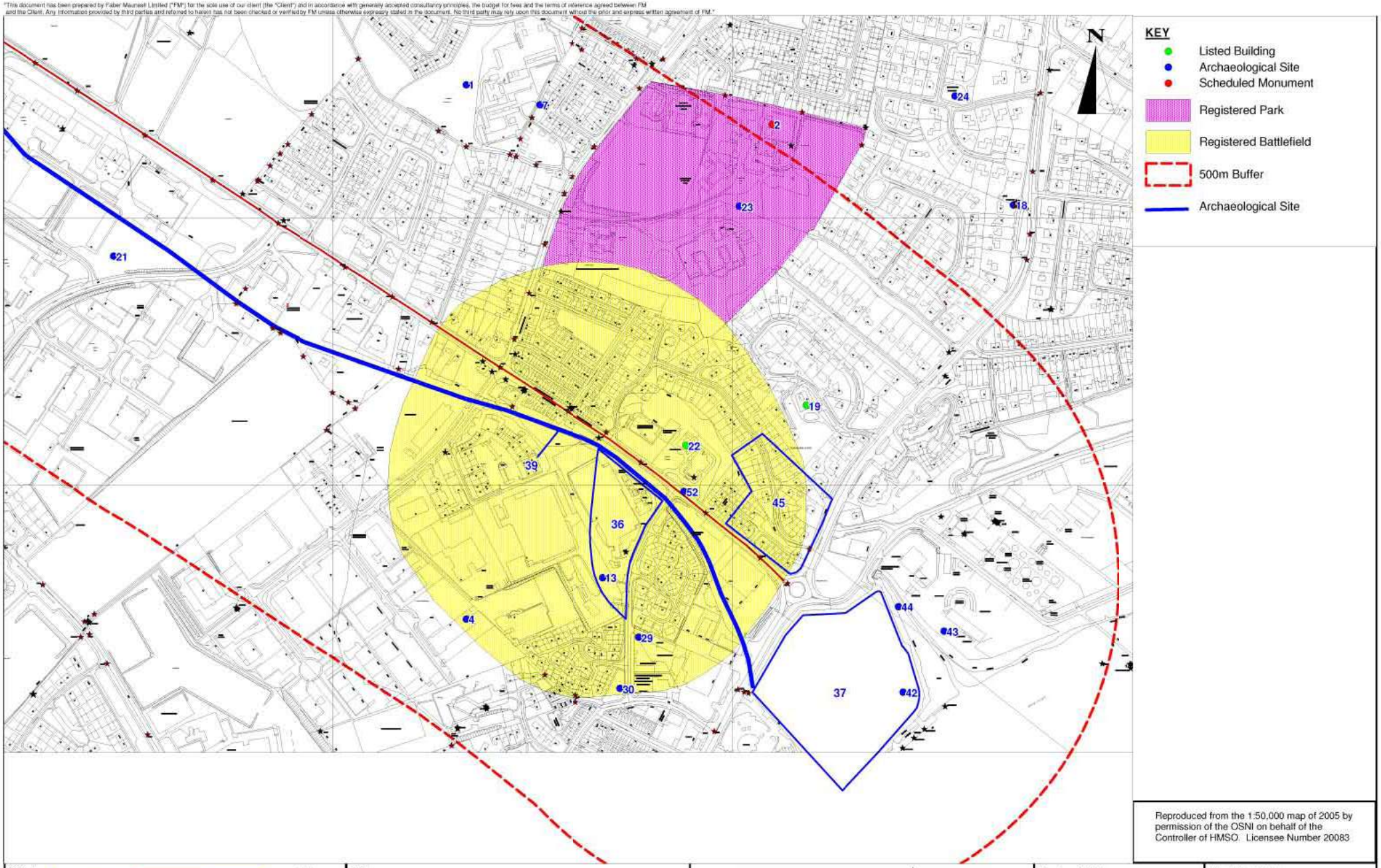


Figure 5.4 **Affected Residential Properties – Navy Route (Skeoge Roundabout to ROI Border)**

Client: ROADS Service	Title: Stage 2 Environmental Assessment Air Quality Assessment	FABER MAUNSELL | AECOM 24 Linenhall Street, Belfast, BT2 8BG Tel: +44 (0) 28 9043 4900 Fax: +44 (0) 28 9043 4900 www.fabermaunsell.com	Design: AM | Mapinfo: AM Chk'd: MM | App'd: CD Date: 06.05.08 | Scale: Not to scale No: Figures 5.3 & 5.4
Project: 49675 IBLE A2 Buncrana Road			



Client: Regional Development; ROADS Service; Investor in People

Project: 49675 IBLE A2 Buncrana Road

Title: **Stage 2 Environmental Assessment Known Archaeology Map 1 of 4**

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Fax: +44 (0) 28 9043 4909
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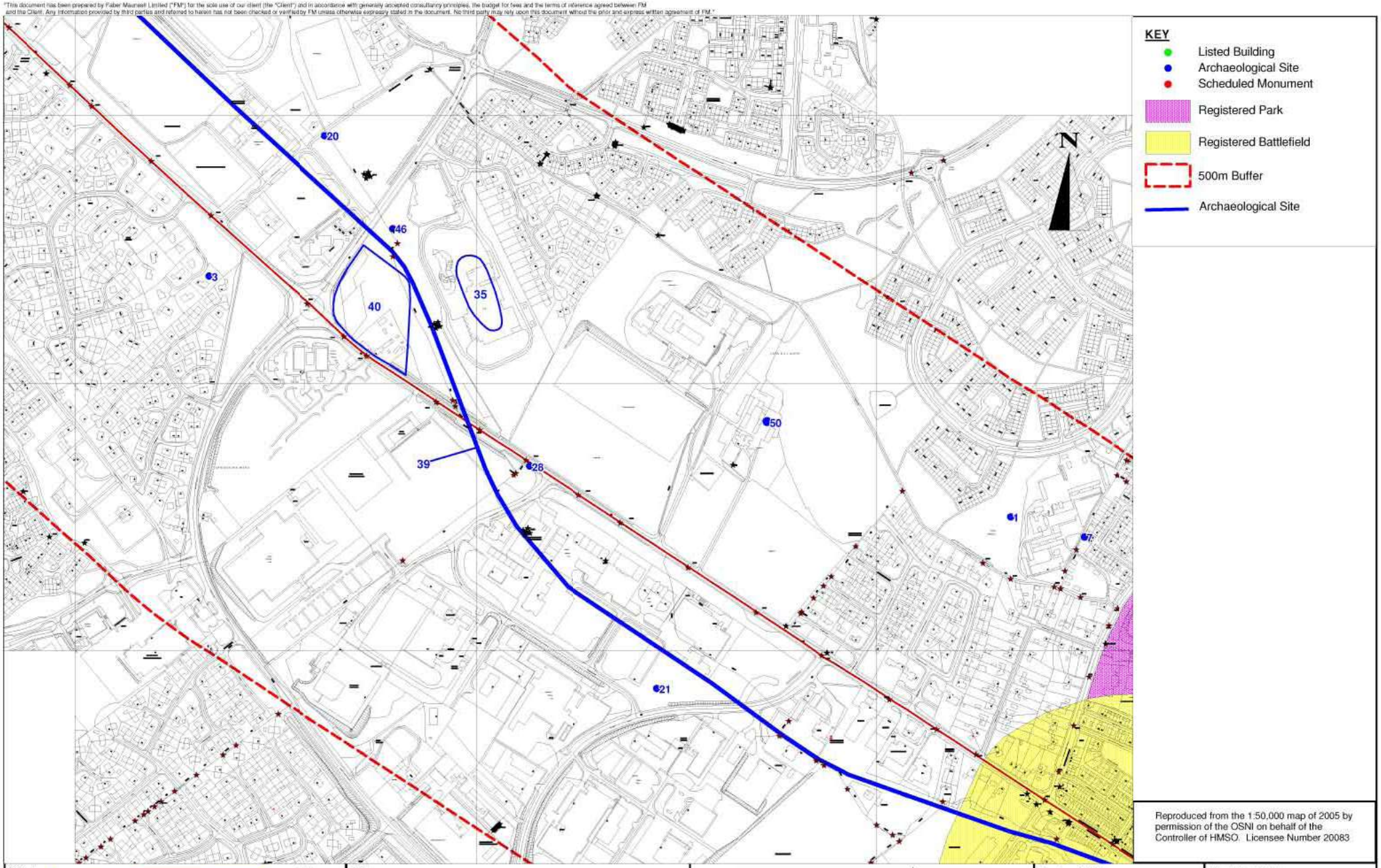
Design: DAM	Mapinfo: DAM
Chk'd: FL	App'd: HRM
Date: April 08	Scale: 1:5000

No. Figure 6.1



Client: Regional Development; ROADS Service; Investor in People

Project: 49675 IBLE A2 Buncrana Road

Title: **Stage 2 Environmental Assessment Known Archaeology Map 2 of 4**

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Design: DAM	Mapinfo: DAM
Chk'd: FL	App'd: HRM
Date: April 08	Scale: 1:5000

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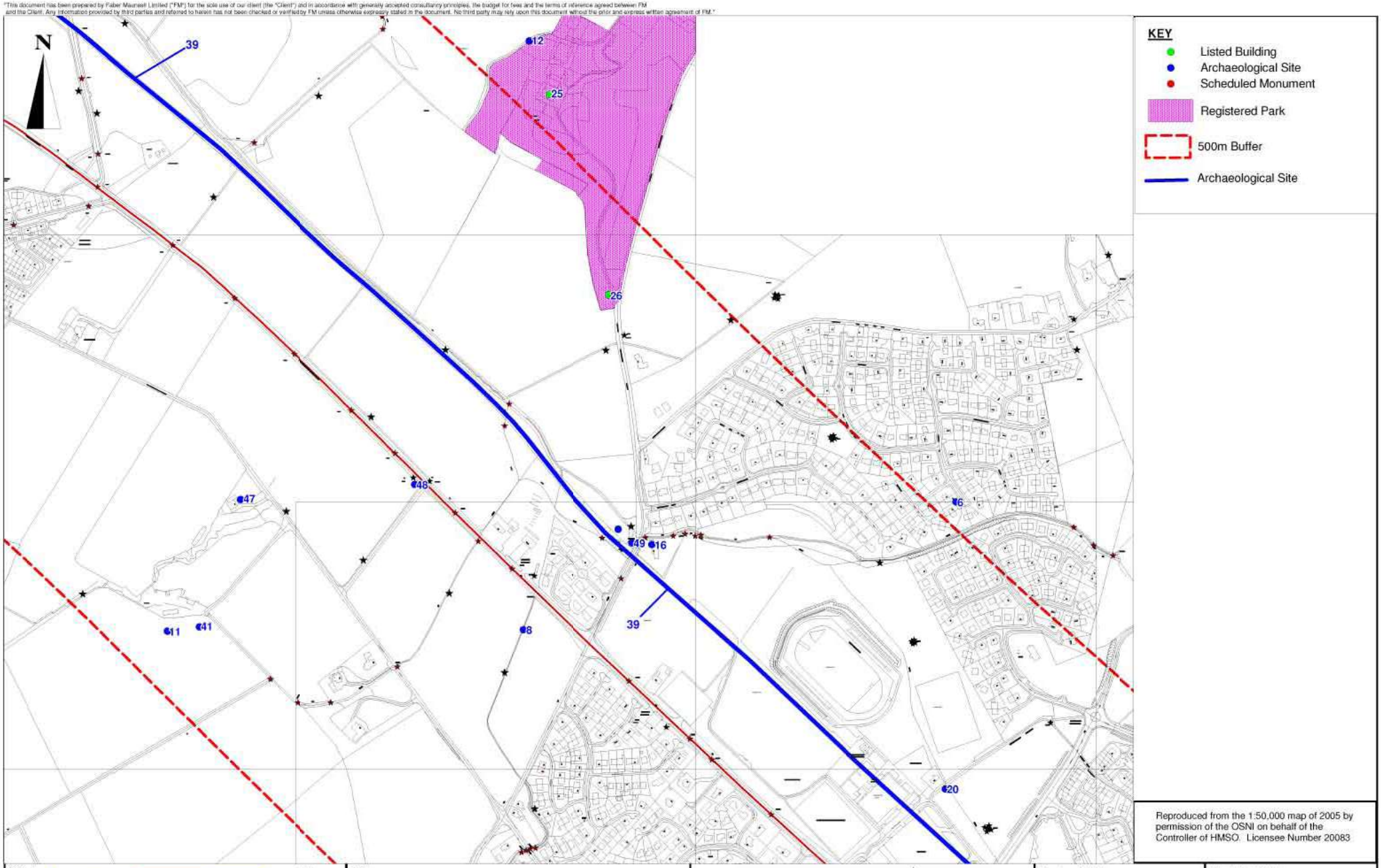

Client: Regional Development; ROADS Service; Investor in People

Project: 49675 IBLE A2 Buncrana Road

Title: **Stage 2 Environmental Assessment Known Archaeology Map 3 of 4**

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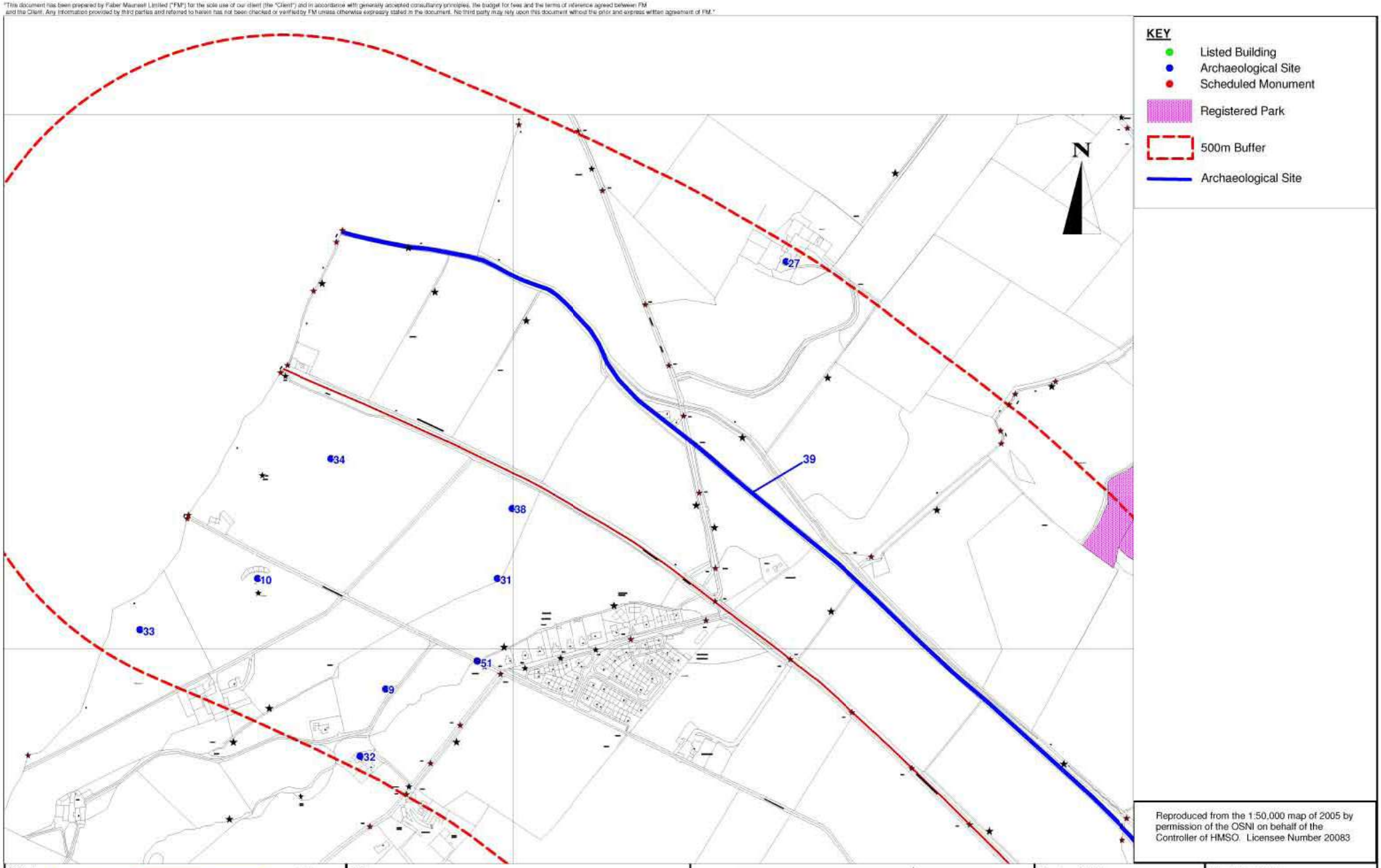
Design: DAM	Mapinfo: DAM
Chk'd: FL	App'd: HRM
Date: April 08	Scale: 1:5000

No. Figure 6.3



Client: Regional Development; ROADS Service; Investor in People

Project: 49675 IBLE A2 Buncrana Road

Title: **Stage 2 Environmental Assessment Known Archaeology Map 4 of 4**

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Tel: +44 (0) 28 9043 4900
Fax: +44 (0) 28 9043 4909
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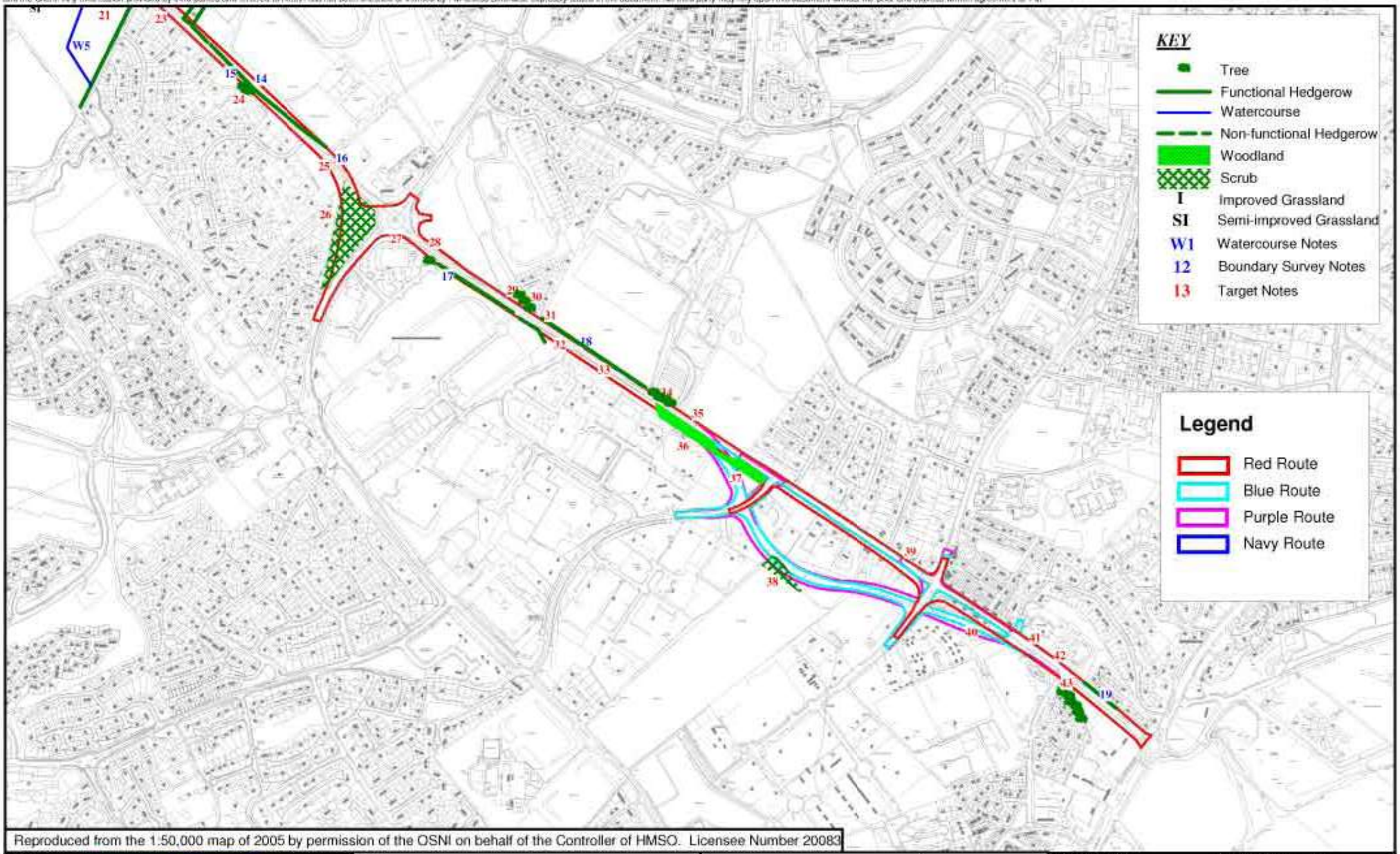
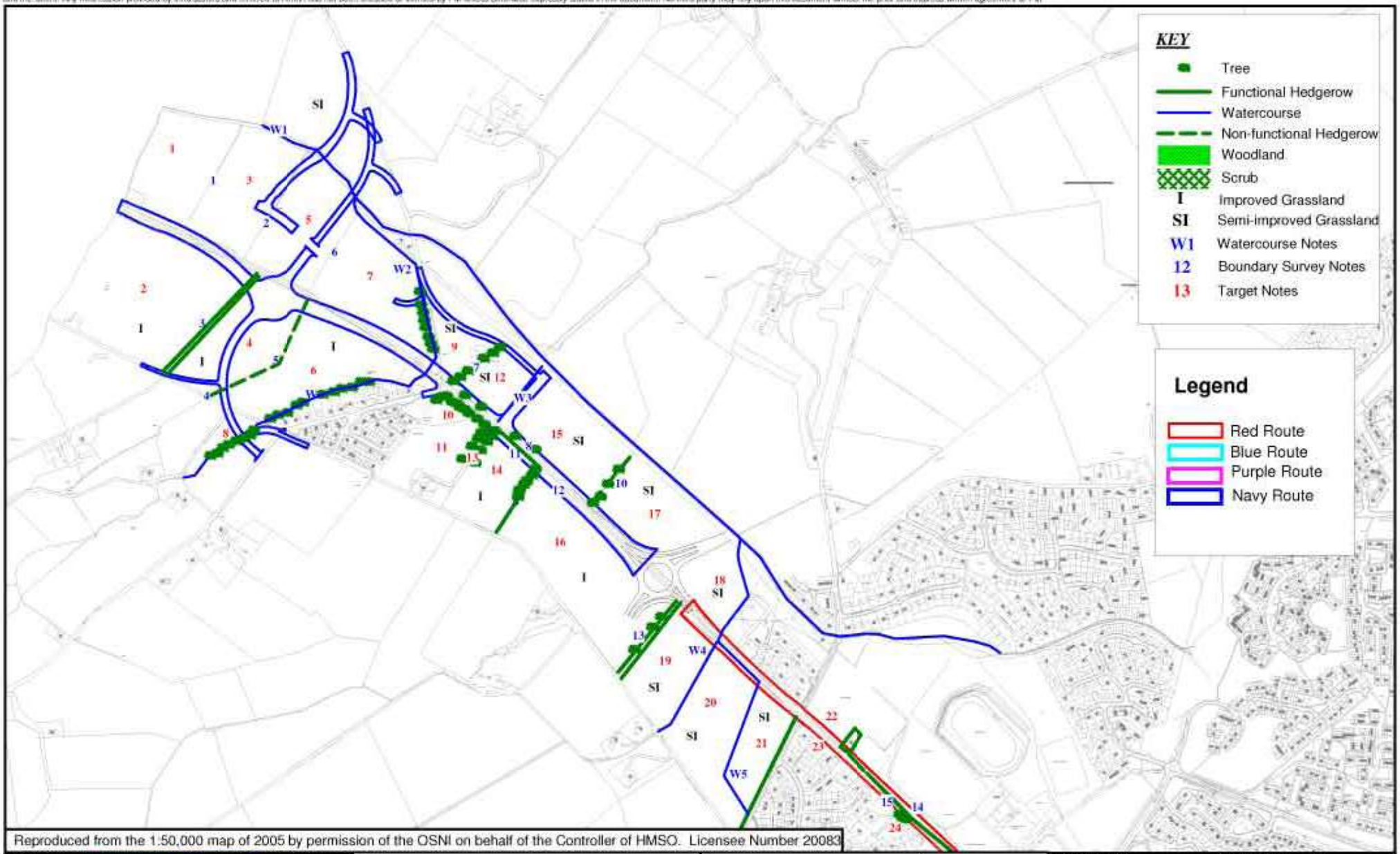
Design: DAM	Mapinfo: DAM
Chk'd: FL	App'd: HRM
Date: April 08	Scale: 1:5000

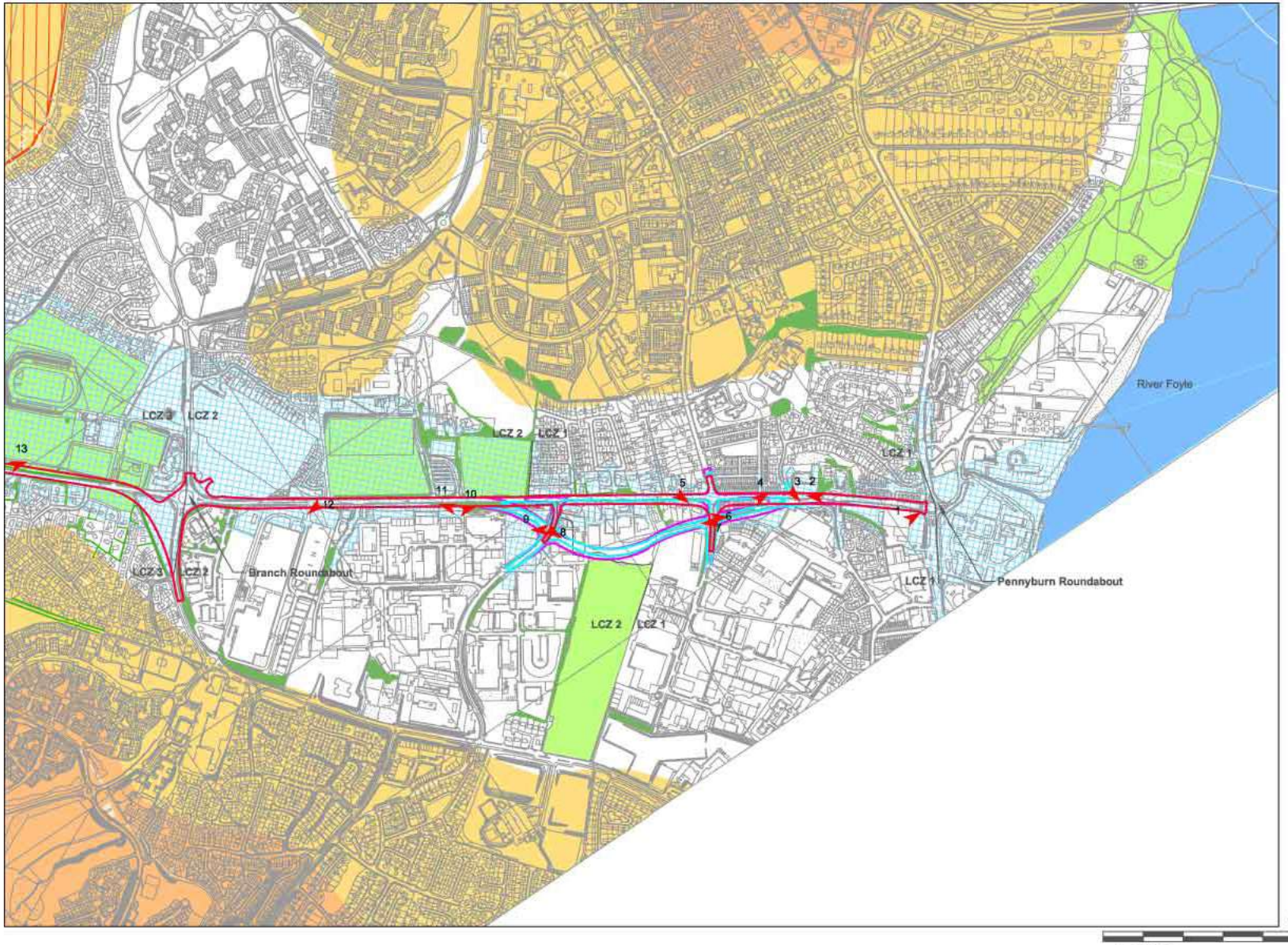
No. Figure 6.4



Client: ROADS Service	Title: **Stage 2 Environmental Assessment Phase 1 Habitat Survey Map**	FABER MAUNSELL | AECOM	Design: CL / Mapinfo: CL
Project: **A2 Buncrana Road**		24 Linenhall Street, Belfast, BT2 8BG Tel: +44 (0) 28 9043 4900 Fax: +44 (0) 28 9043 4900 www.fabermaunsell.com	Chk'd: MM / App'd: CD Date: 02/06/08 / Scale: NTS No: **Figure 8.1.1**



Client: ROADS Service	Title: **Stage 2 Environmental Assessment Phase 1 habitat Survey Map**	FABER MAUNSELL | AECOM	Design: CL / Mapinfo: CL
Project: **A2 Buncrana Road**		24 Linenhall Street, Belfast, BT2 8BG Tel: +44 (0) 28 9043 4900 Fax: +44 (0) 28 9043 4900 www.fabermaunsell.com	Chk'd: MM / App'd: CD Date: 02/06/08 / Scale: 1: 10000 No: **Figure 8.1.2**



Key

- Red Route
- Blue Route
- Purple Route
- Recreation land
- Approximate Visual Envelope of the existing A2 Buncrana Road
- Water
- Elevation 40m AOD and higher
- Elevation 20m AOD and higher
- Existing Trees
- Existing Hedges
- Numbered photograph view location
- Local Character Zones (LCZ)

Please Note:
Blue Route & Purple Route are the same as the Red Route from Springtown Road to Skeoge roundabout.

N

500m 1km

scale 1/10000

Client: Regional Development; ROADS Service

Project: 49675IBLE
A2 Buncrana Road Improvements

Title: Stage 2 Environmental Assessment
Landscape and Visual
Townscape Character Context

FABER MAUNSELL | AECOM
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EH4 3TP
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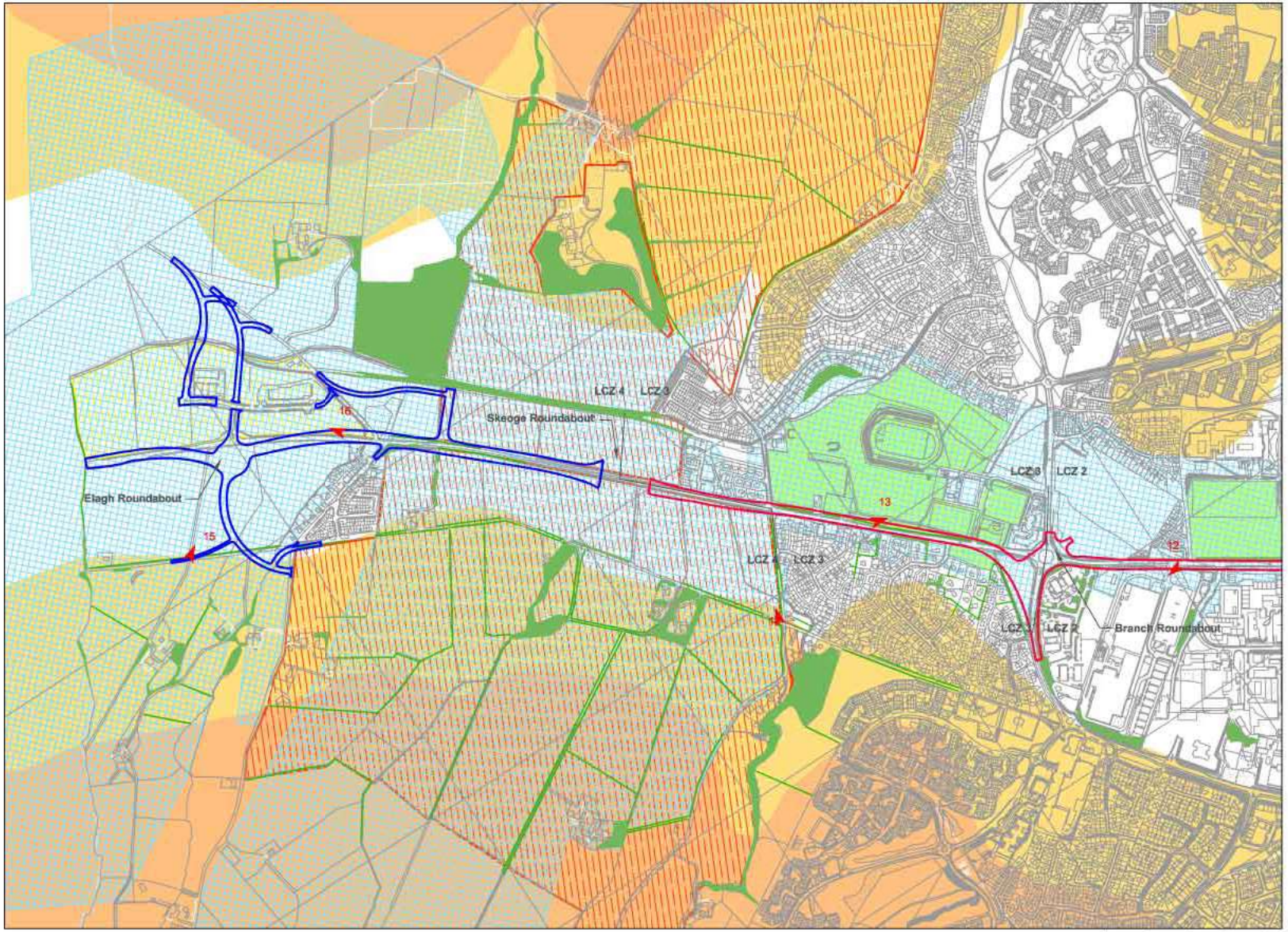
Fax: +44 (0) 131 311 4090
www.fabermaunsell.com

Design:	C. Doyle	CAD:	C. Hall
Chk'd:	R.Kirby	App'd:	J. McDowell
Date:	28 April 2008	Scale:	1:10000

No. Fig 9.1 (Sheet 1 of 2) Rev:

cm A3



Key

- Red Route
- Navy Route
- Rural land zoned for housing
- Land zoned for industry
- Recreation land
- Approximate Visual Envelope of the existing A2 Buncrana Road
- Water
- Elevation 40m AOD and higher
- Elevation 20m AOD and higher
- Existing Trees
- Existing Hedges
- Numbered photograph view location
- Local Character Zones (LCZ)

Please Note:
Blue Route & Purple Route are the same as the Red Route from Springtown Road to Skeoge roundabout. Purple & Blue Routes not shown.

N

Client: Regional Development; ROADS Service

Project:
49675IBLE
A2 Buncrana Road Improvements

Title:
Stage 2 Environmental Assessment
Landscape and Visual
Townscape Character Context

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Date:	28 April 08	Scale:	1:10000

No. Fig 9.1 (Sheet 2 of 2) Rev:

cm A3


Photograph 1: View east across Pennyburn Roundabout

Photograph 2: Collon Terrace looking towards the Racecourse Road junction


Photograph 3: View towards Arntz Belting


Photograph 4: St. Patrick's Terrace and the crow step gabling feature with the church beyond

Photograph 5: Racecourse Road junction and the distinctive Collon Bar


Photograph 6: Racecourse Road junction looking to the east

Photograph 7: Racecourse Road junction looking to the north west

Client: Regional Development / ROADS Service / Investor in People	Title: STAGE 2 ENVIRONMENTAL ASSESSMENT Landscape and Visual Townscape/Landscape Photographs	FABER MAUNSELL | AECOM Dunedin House 25 Ravelston Terrace Edinburgh EH4 3TP Tel: +44 (0) 131 311 4000 Fax: +44 (0) 131 311 4090 www.fabermaunsell.com	Design: C Doyle; CAD: V Bennett Chk'd: R Kirby; App'd: J McDowell Date: 28/04/08; Scale: n/a
Project: 49675IBLE A2 Buncrana Road Improvements			Figure 9.2 (Sheet 1 of 2)

Photograph 8: Springtown Road junction looking to the south east

Photograph 9: Green space adjacent to Springtown Road

Photograph 10: Tree lined section of Buncrana Road adjacent to St. Columb's College

Photograph 11: Entrance to St Columb's College showing vegetation along Buncrana Road

Photograph 12: Prominent Seagate building

Photograph 13: View across Templemore Sports Complex

Photograph 14: View north overlooking Skeoge roundabout to the hills in Donegal in the distance

Photograph 15: View east towards Elagh roundabout

Photograph 16: Industrial units at Elagh Business Park to the north east of Buncrana Road

Client: Regional Development (www.drdni.gov.uk) — ROADS Service — INVESTOR IN PEOPLE

Project: 49675IBLE
A2 Buncrana Road Improvements

Title: STAGE 2 ENVIRONMENTAL ASSESSMENT
Landscape and Visual
Townscape/Landscape Photographs

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Date	28/04/08	Scale	n/a

Figure 9.2 (Sheet 2 of 2)

Client: Regional Development; ROADS Service

Project:
49675IBLE
A2 Buncrana Road Improvements

Title:
STAGE 2 ENVIRONMENTAL ASSESSMENT
Visual Receptors
Visual Impacts (Red Route)

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EH4 3TP
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Date:	28 April 08	Scale:	1:5000

No. Fig 9.3 Sheet (1 of 4) Rev:

cm A3

Client: Regional Development; ROADS Service

Project:
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Title:
STAGE 2 ENVIRONMENTAL ASSESSMENT
Visual Receptors
Visual Impacts (Blue Route)

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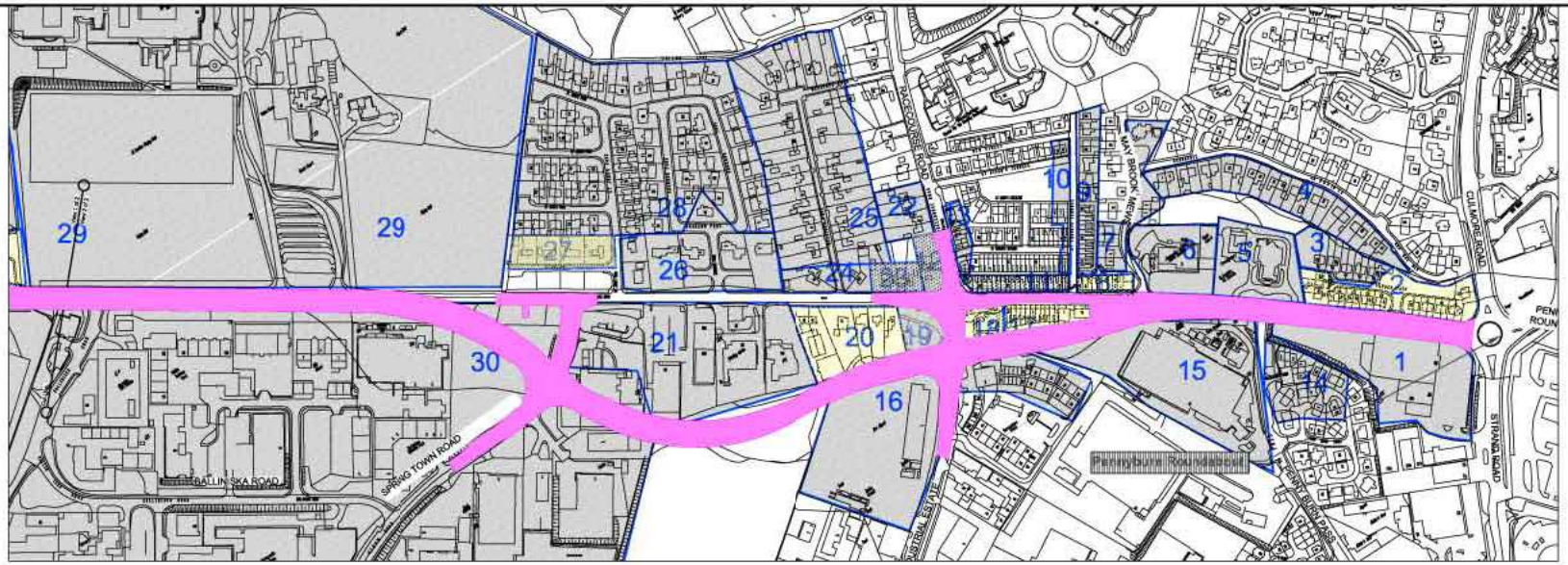
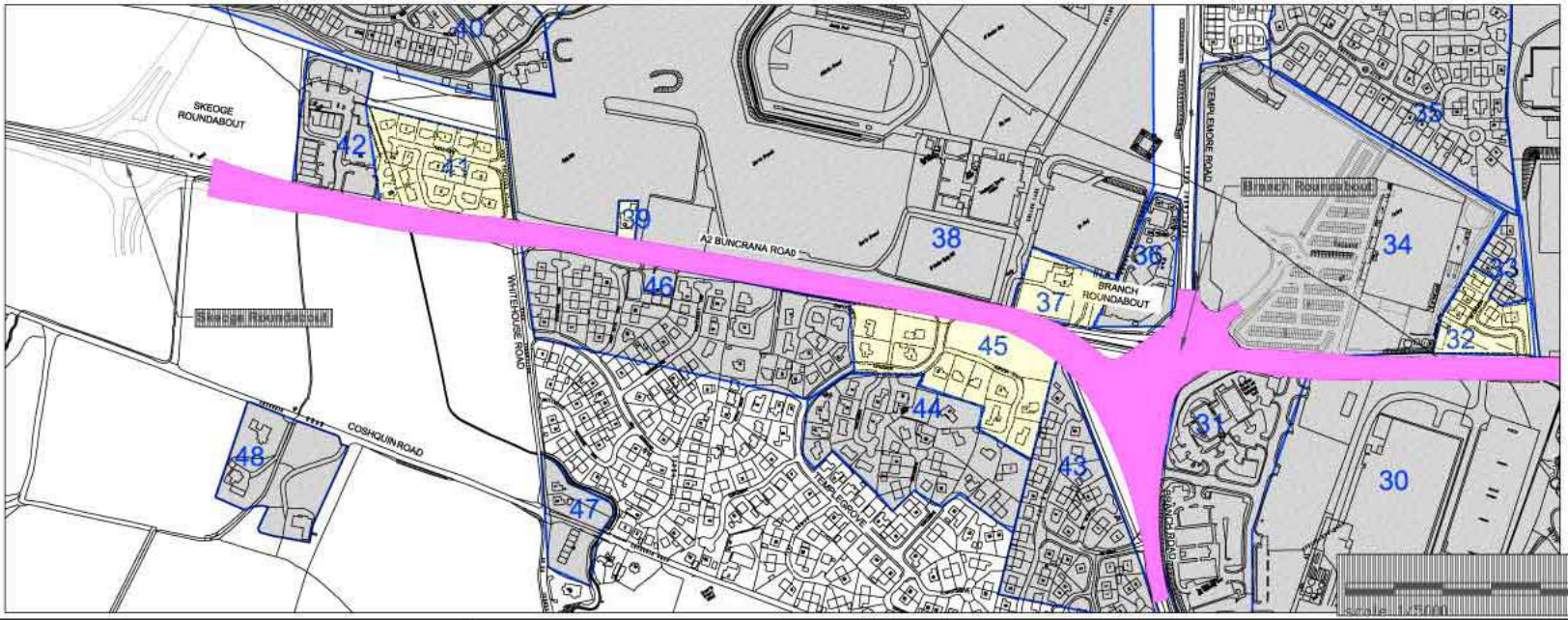
Chk'd:	R. Kirby	App'd:	J. McDowell
Date:	28 April 08	Scale:	1:5000

No. Fig 9.3 Sheet (2 of 4) Rev:

cm A3





Key

- Purple Route
- 1 Key Visual Receptors
- Potential for Significant (moderate or major) Visual Impacts at Year 1 with no mitigation
- Potential for Non Significant (minor/ neutral) Visual Impacts at Year 1 with no mitigation

Client: Regional Development; ROADS Service

Project:
49675IBLE
A2 Buncrana Road Improvements

Title:
STAGE 2 ENVIRONMENTAL ASSESSMENT
Visual Receptors
Visual Impacts (Purple Route)

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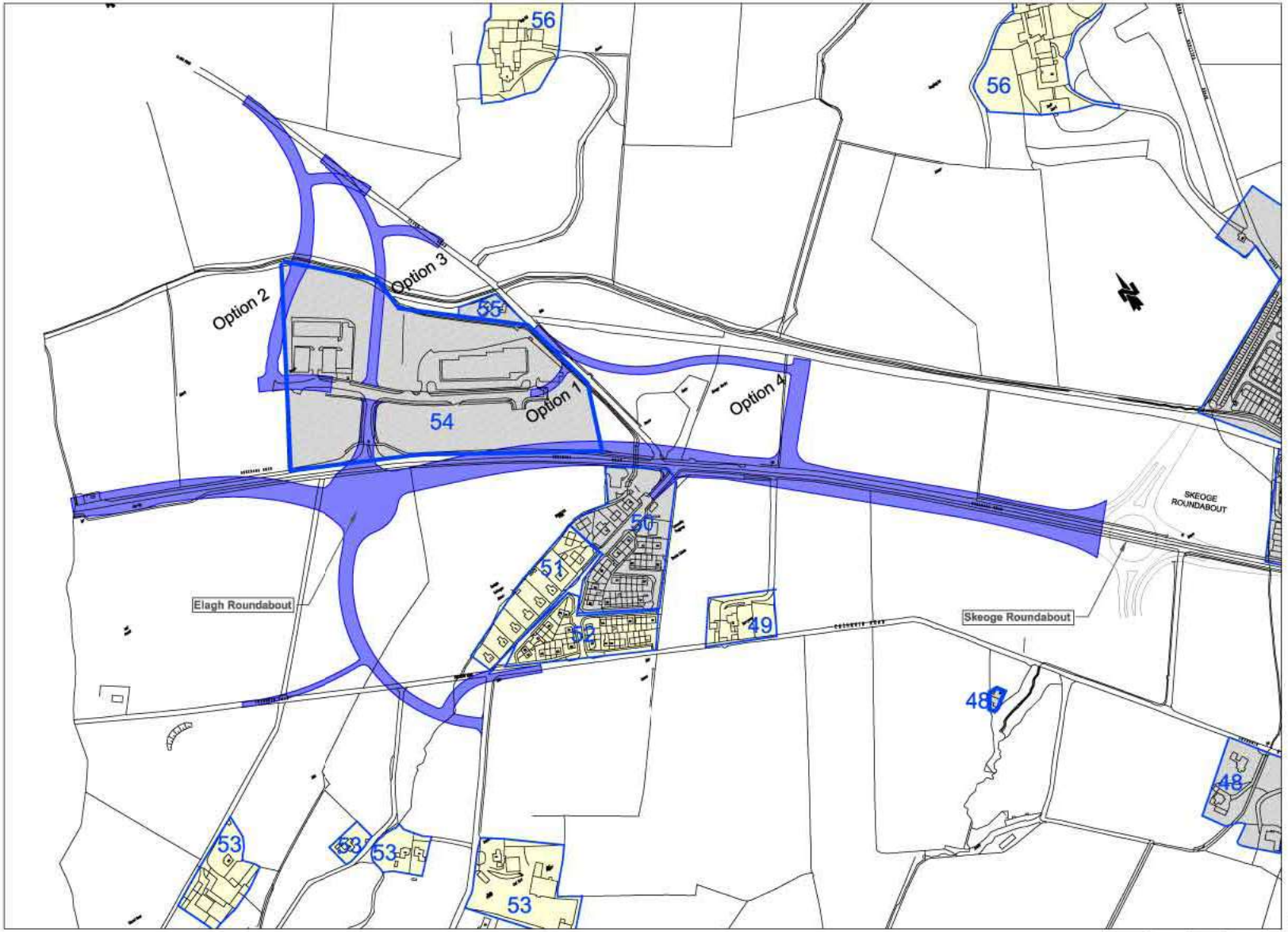
Date:	28 April 08	Scale:	1:5000

No. Fig 9.3 Sheet (3 of 4) Rev:

cm A3



Client: Regional Development; ROADS Service

Project:
49675IBLE
A2 Buncrana Road Improvements

Title:
STAGE 2 ENVIRONMENTAL ASSESSMENT
Visual Receptors
Visual Impacts (Navy Route)

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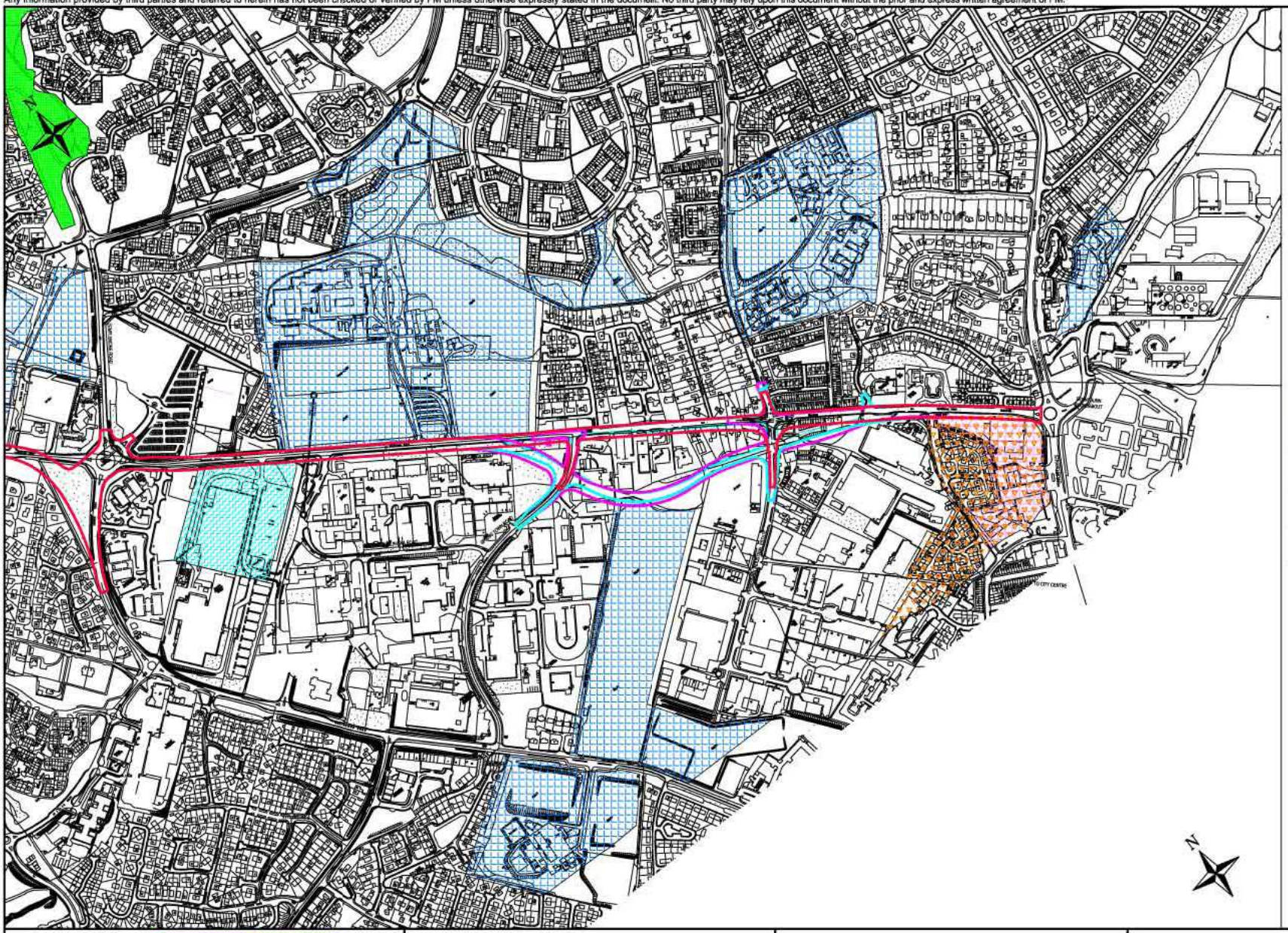
Date:	28 April 08	Scale:	1:5000

No. Fig 9.3 Sheet (4 of 4) Rev:

cm A3



Legend

- Community Woodland
- Central Area
- Mixed Use
- Recreation & Open Space
- Zoned for Industrial Use
- Blue Route Option
- Red Route Option
- Purple Route Option

Please Note:
Blue & Purple Route Options are the same as Red Option from Springtown Road to Skeoge roundabout.

Client: Regional Development / ROADS Service

Project:
49675 IBLE
A2 Buncrana Road

Title:
Stage 2 Environmental Assessment
Landuse & Planning Designations

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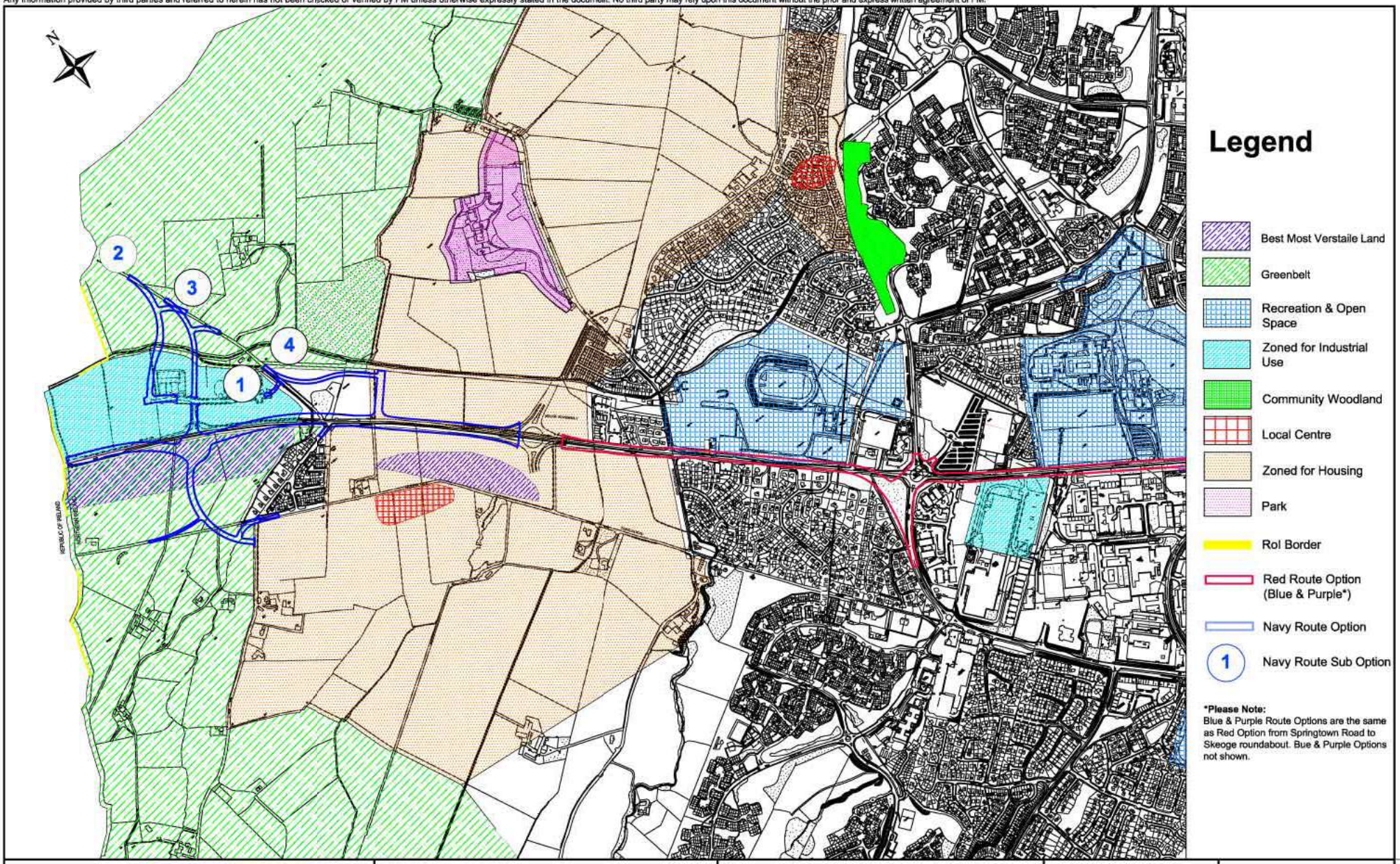
No. Figure 10.1			Rev: 0
cm			A3



Client: Regional Development, ROADS Service

Project: 49675 IBLE
A2 Buncrana Road

Title: Stage 2 Environmental Assessment
Landuse & Planning Designations

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Chk'd: MM		App'd: CD	
Date: 06.05.08		Scale: 1:10000	
No. Figure 10.2			Rev: 0
cm			A3

Figure 11.1 Predicted Red Route Impact - Pennyburn Roundabout to Branch Roundabout

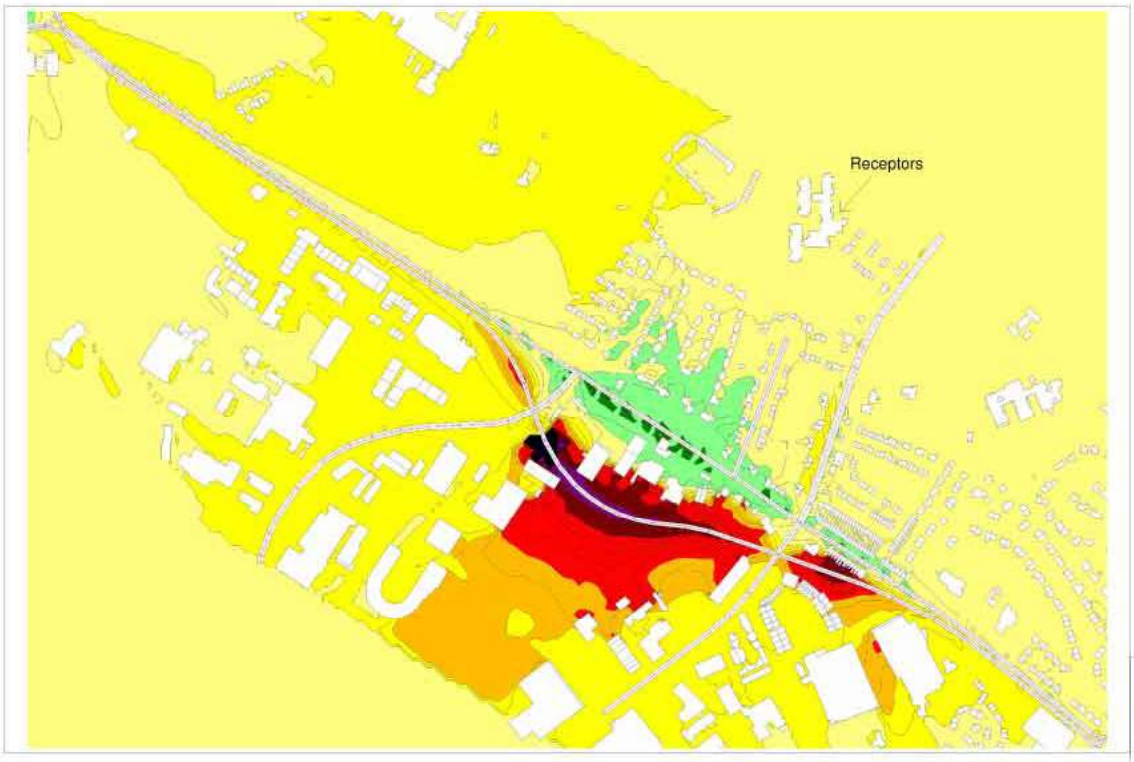


Figure 11.2 Predicted Blue Route Impact - Pennyburn Roundabout to Branch Roundabout

KEY:

- > -10.0 dB
- > -5.0 dB
- > -3.0 dB
- > -1.0 dB
- > 1.0 dB
- > 3.0 dB
- > 5.0 dB
- > 10.0 dB
- > 15.0 dB
- > 20.0 dB
- > 25.0 dB
- > 30.0 dB

Client: ROADS Service	Title: Stage 2 Environmental Assessment Noise Assessment	FABER MAUNSELL | AECOM	Design: SP	Mapinfo: SP
Project: 49675 IBLE A2 Buncrana Road		24 Linenhall Street, Belfast, BT2 8BG Tel: +44 (0) 28 9043 4900 Fax: +44 (0) 28 9043 4900 www.fabermaunsell.com	Chk'd: SP	App'd: SP
			Date: 06.05.08	Scale: Not to scale
			No: Figures 11.1 & 11.2	

Figure 11.3 Predicted Purple Route Impact - Pennyburn Roundabout to Branch Roundabout

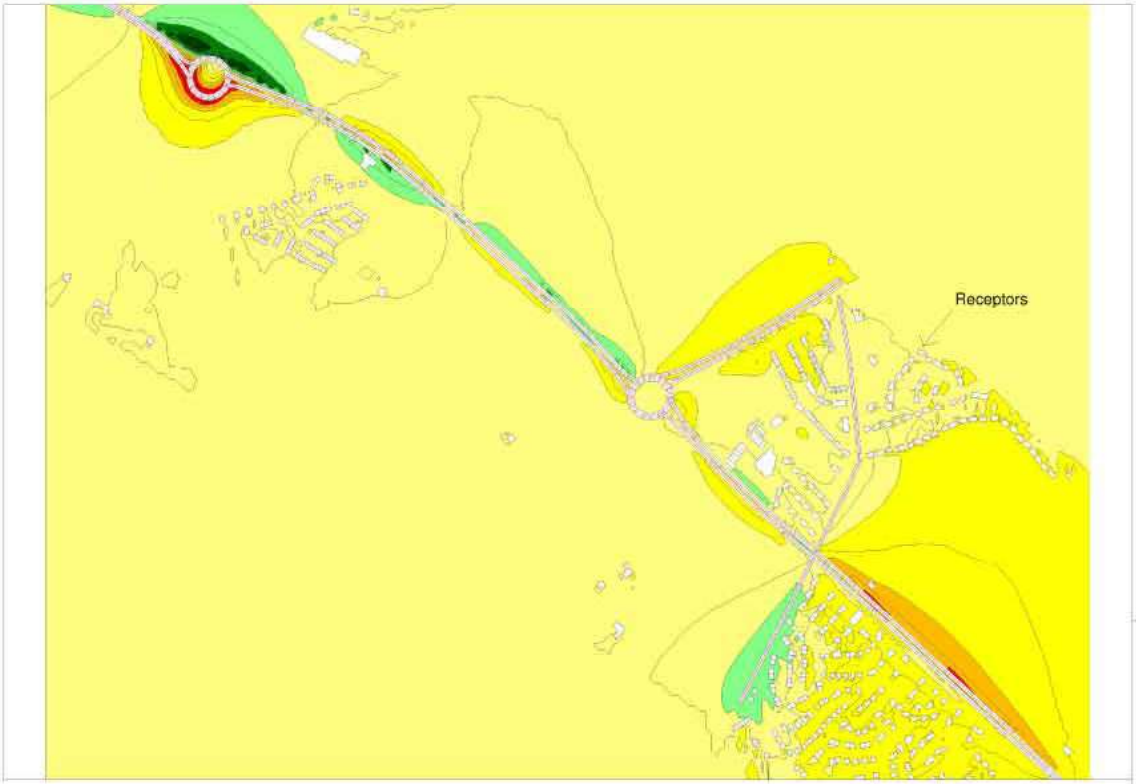
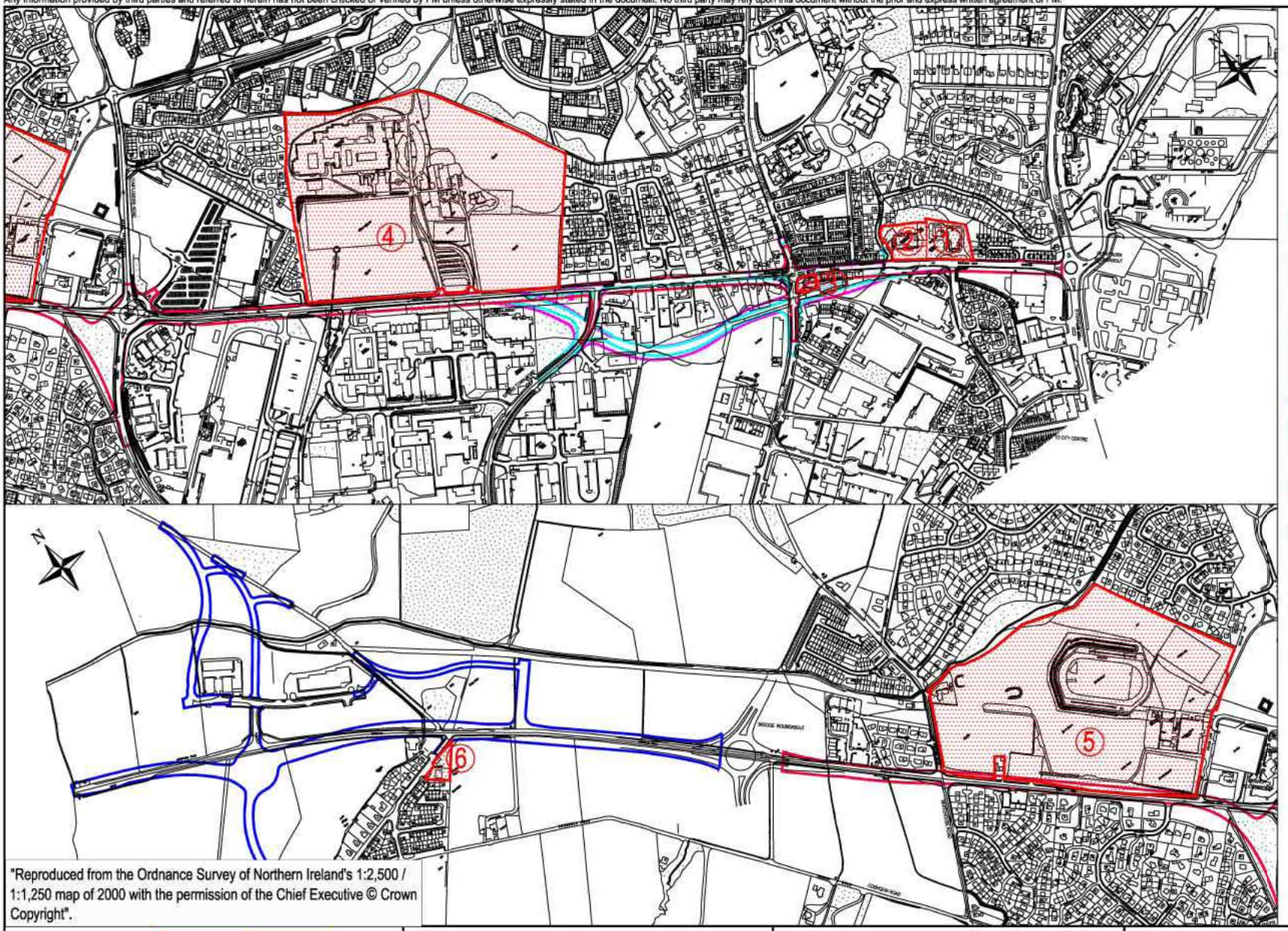


Figure 11.4 Predicted Navy Route Impact - Skeoge Roundabout to RoI Border

KEY:

- > -10.0 dB
- > -5.0 dB
- > -3.0 dB
- > -1.0 dB
- > 1.0 dB
- > 3.0 dB
- > 5.0 dB
- > 10.0 dB
- > 15.0 dB
- > 20.0 dB
- > 25.0 dB
- > 30.0 dB

Client: Regional Development ROADS Service	Title: Stage 2 Environmental Assessment Noise Assessment	FABER MAUNSELL | AECOM	Design: SP	Mapinfo: SP
Project: 49675 IBLE A2 Buncrana Road		24 Linenhall Street, Belfast, BT2 8BG Tel: +44 (0) 28 9043 4900 Fax: +44 (0) 28 9043 4900 www.fabermaunsell.com	Chk'd: SP	App'd: SP
			Date: 06.05.08	Scale: Not to scale
			No: Figures 11.3 & 11.4	



Legend

1. St. Patrick's RC Church
2. Community & Youth Centre
3. Housing Executive Office
4. St. Columb's College
5. Templemore Sports Complex
6. Community Playgroup

Blue Route Option

Red Route Option

Purple Route Option

Navy Route Option

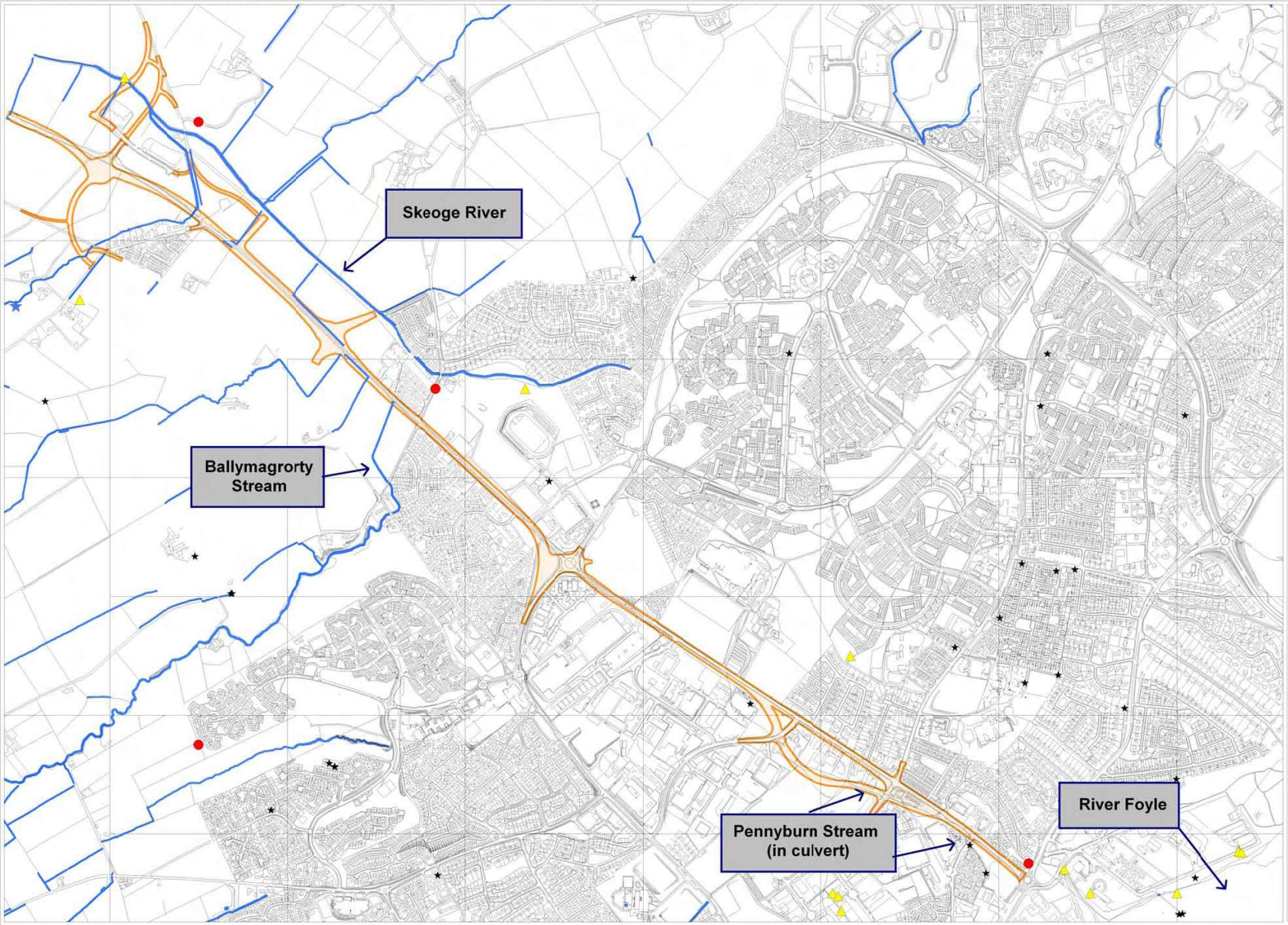
Client: Regional Development / ROADS Service

Project: 49675 IBLE
A2 Buncrana Road

Title: Stage 2 Environmental Assessment
Location of Community Facilities

FABER MAUNSELL | AECOM
24 Linenhall Street
BELFAST
BT2 8BG
Tel: +44 (0) 28 9060 7200
Fax: +44 (0) 28 9060 7399
www.fabermaunsell.com

Design: AM		CAD: AM	
Chk'd: MM		App'd: CD	
Date: 06.05.08		Scale: 1:7500	
No. Figure 12.1			Rev: 0
cm			A3



Maximum Development Area

Surface Water Features (inc. rivers, streams & drains)

Well

General Quality Assessment Monitoring Points (provided by EHS)

Consented Discharges (provided by EHS)

Note: Maximum development area illustrates the overall footprint of all the options and sub-options.

Client: An Agency within the Department for Regional Development (www.drdni.gov.uk); ROADS Service; INVESTOR IN PEOPLE

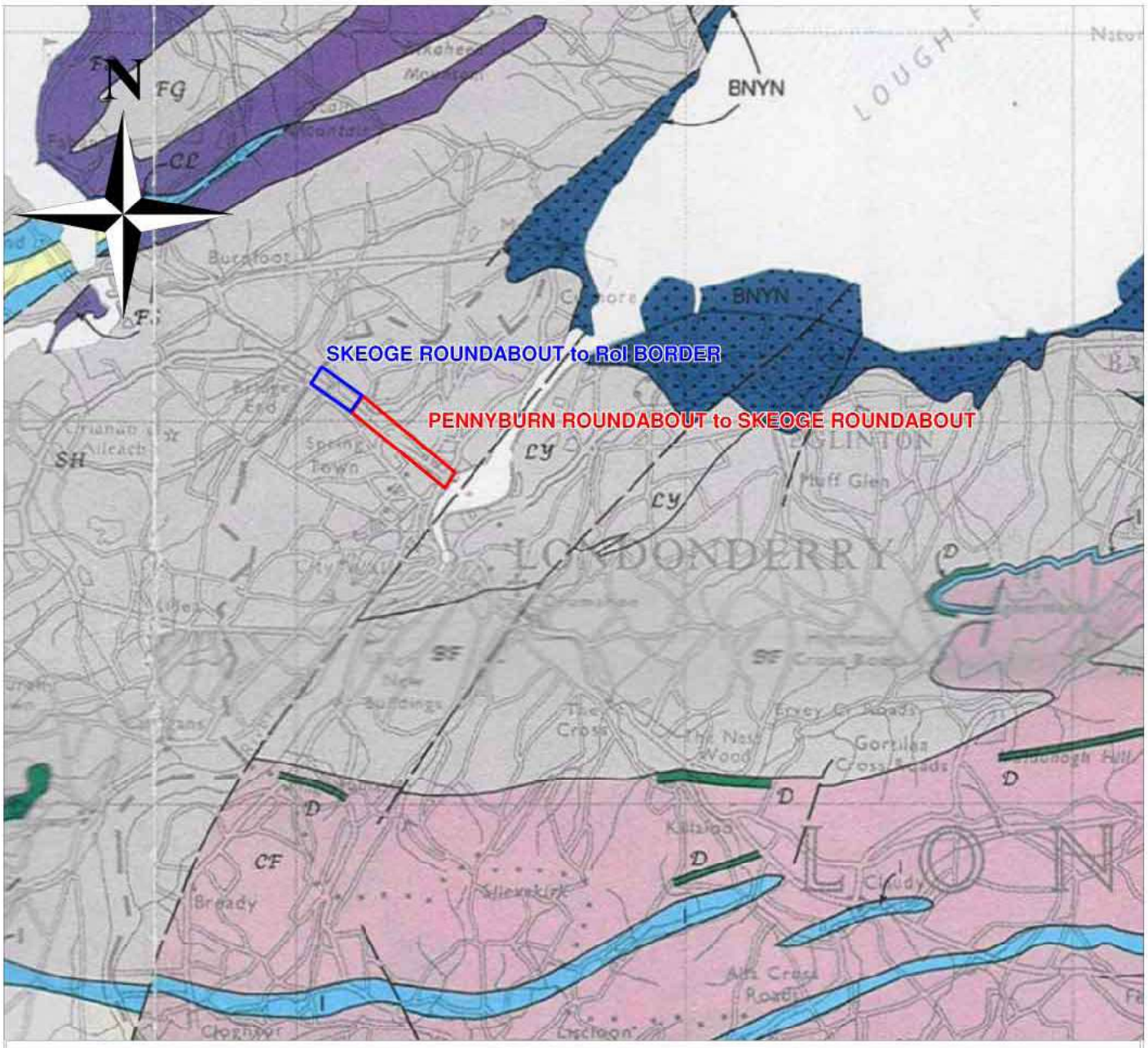
Project: 49675IBLE
A2 Buncrana Road Improvements

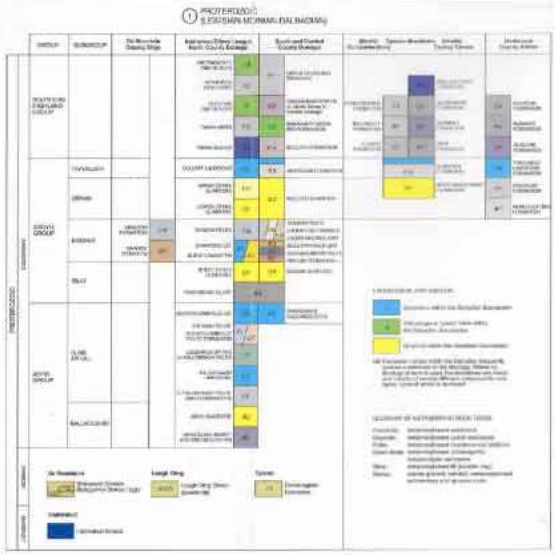
Title: STAGE 2 ENVIRONMENTAL ASSESSMENT
Water Quality and Drainage Constraints

FABER MAUNSELL | AECOM
Dunedin House
25 Ravelston Terrace
Edinburgh
EH4 3TP
Tel: +44 (0) 131 311 4000
Fax: +44 (0) 131 311 4090
www.fabermaunsell.com

Design	D Ritchie	CAD	D Ritchie
Chk'd	R Kirby	App'd	J McDowell
Date	29/04/08	Scale	1: 13,000

Figure 14.1





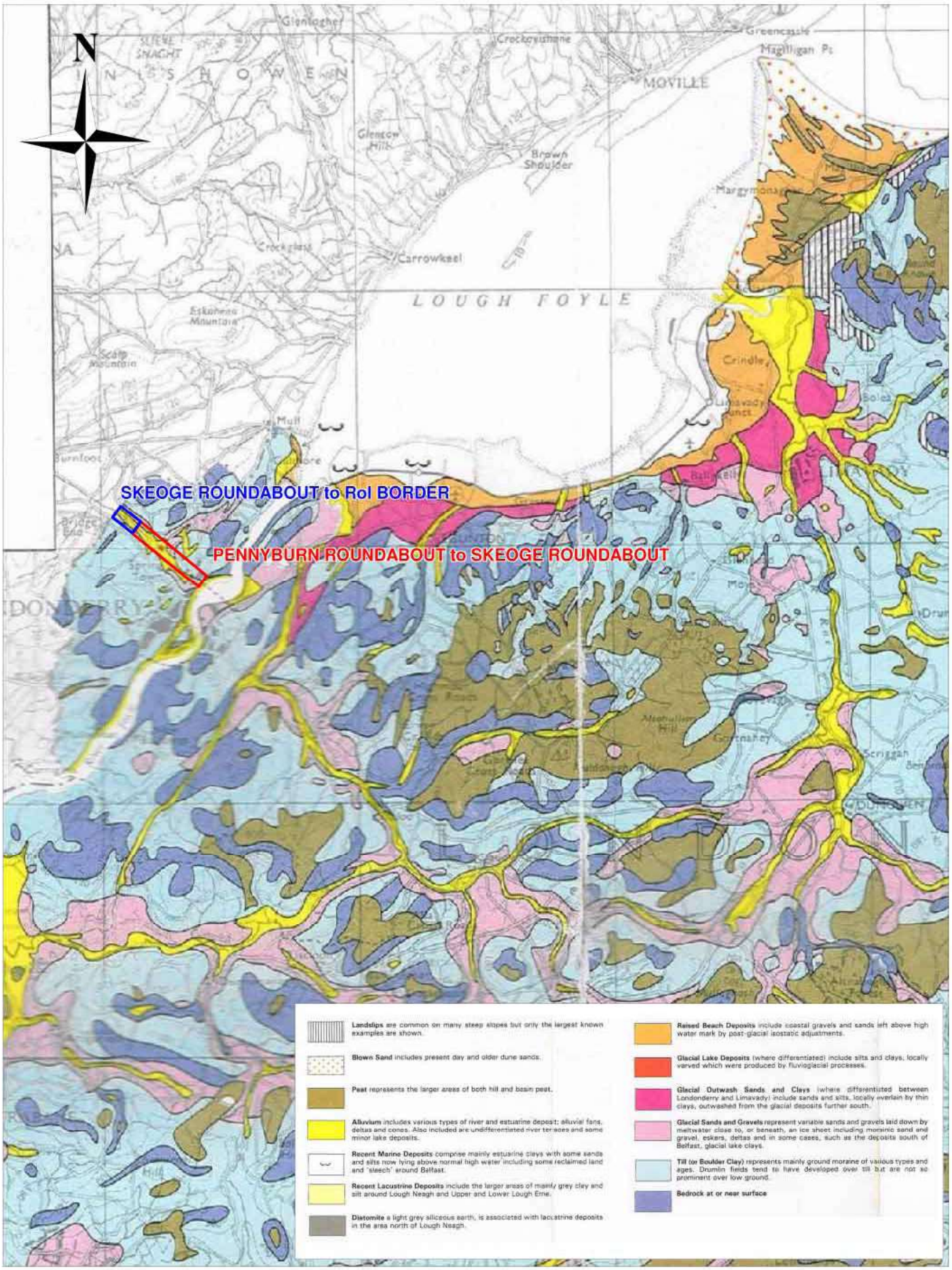
Client: ROADS Service

Project: 49675 IBLE A2 Buncrana Road

Title: Stage 2 Environmental Assessment
Solid Geology Map

FABER MAUNSELL | AECOM
24 Linenhall Street, Belfast, BT2 8BG
Tel: +44 (0) 28 9043 4900
Fax: +44 (0) 28 9043 4900
www.fabermaunsell.com

Design: N/A		Mapinfo: AM	
Chk'd: MM		App'd: CD	
Date: 06.05.08		Scale: Not to scale	
No: Figure 15.1			Rev 0



Client: ROADS Service

Project: 49675 IBLE A2 Buncrana Road

Title: Stage 2 Environmental Assessment
Drift Geology Map

FABER MAUNSELL | AECOM
24 Linenhall Street, Belfast, BT2 8BG
Tel: +44 (0) 28 9043 4900
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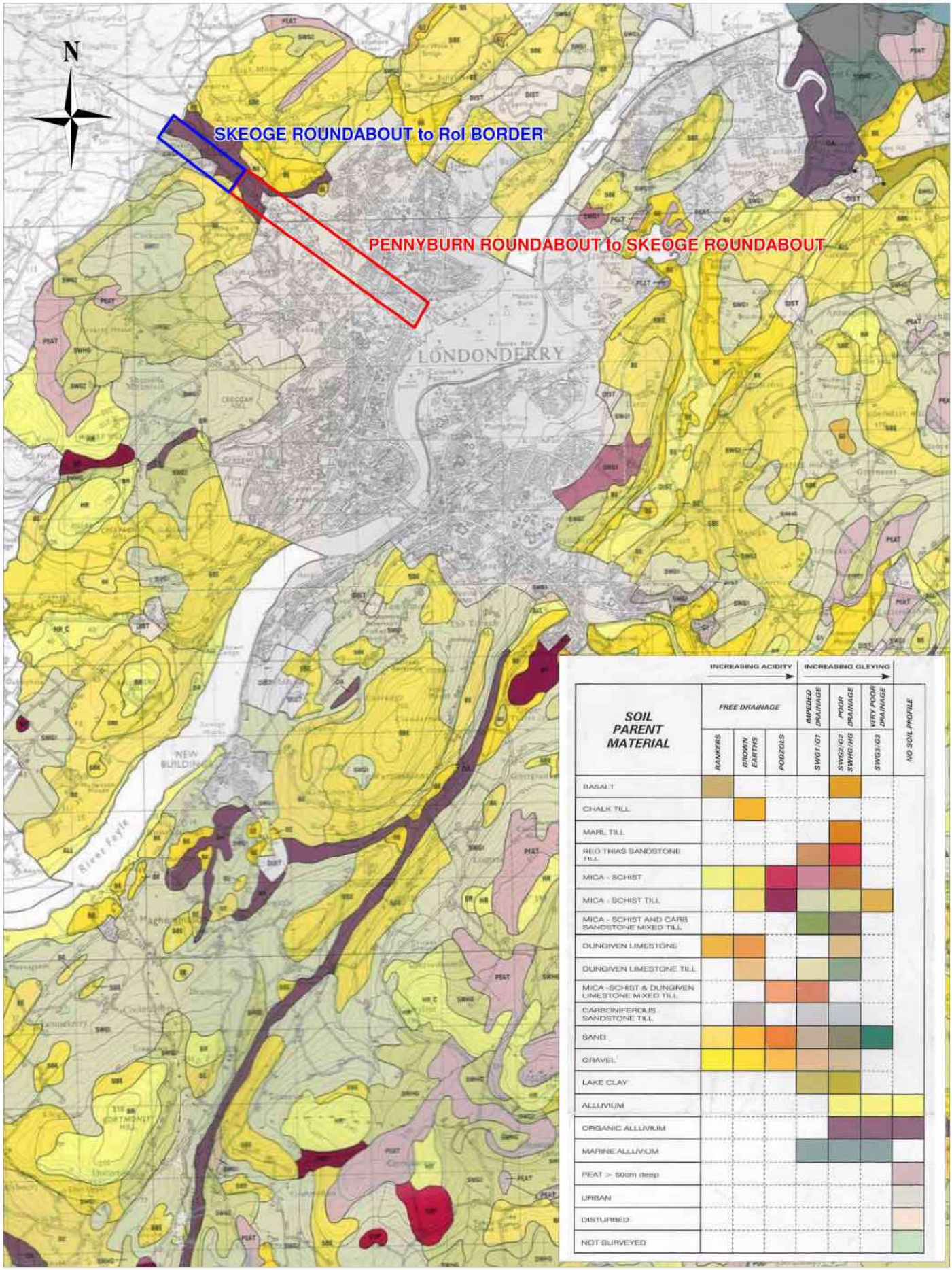
www.fabermaunsell.com

Design: N/A		Mapinfo: AM	
Chk'd: MM		App'd: CD	
Date: 06.05.08		Scale: Not to scale	
No: Figure 15.2			Rev 0



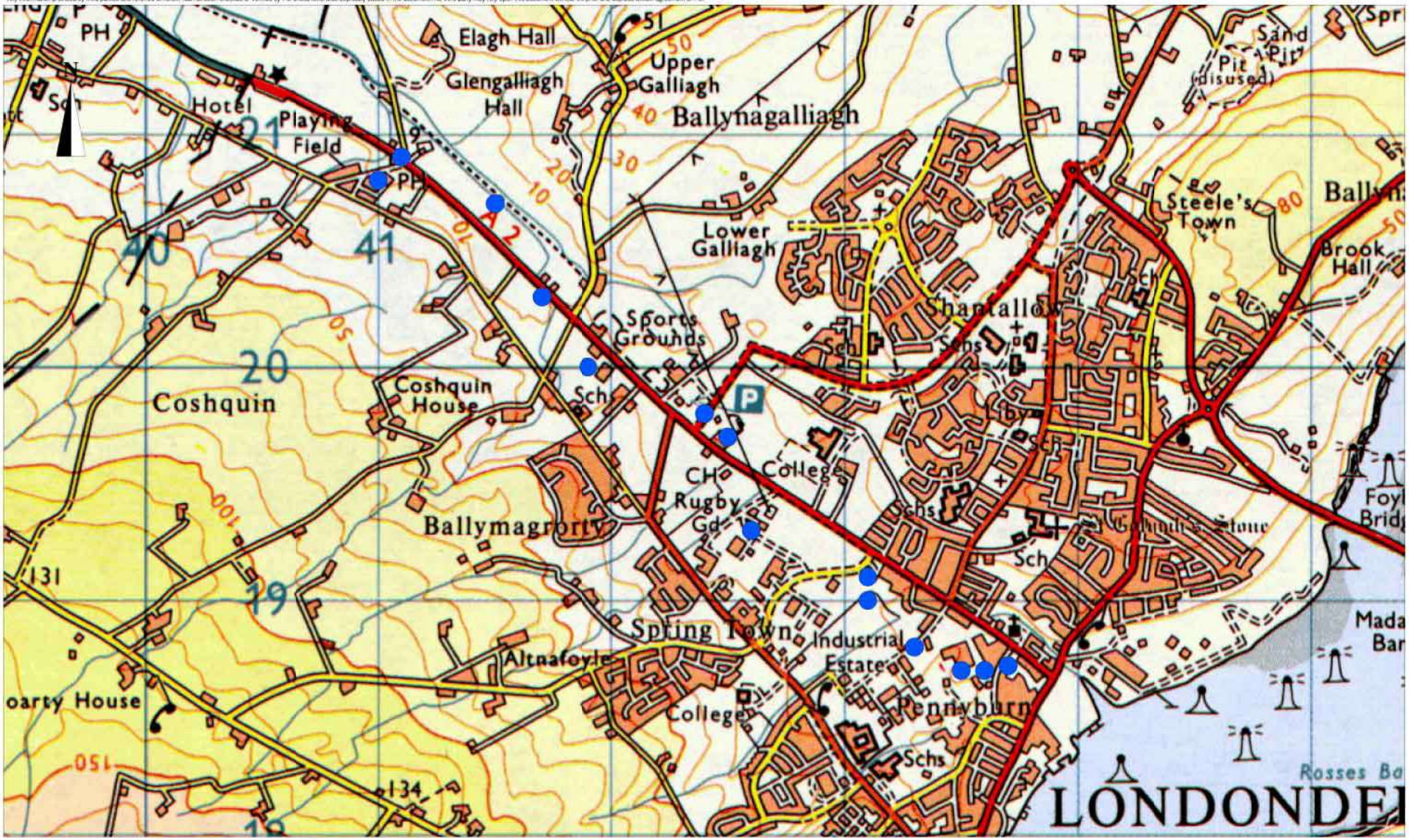
Client: ROADS Service

Project: 49675 IBLE A2 Buncrana Road

Title: Stage 2 Environmental Assessment Existing Soil Conditions

FABER MAUNSELL | AECOM
24 Linenhall Street, Belfast, BT2 8BG
Tel: +44 (0) 28 9043 4900
Fax: +44 (0) 28 9043 4900
www.fabermaunsell.com

Design: N/A		Mapinfo: AM	
Chk'd: MM		App'd: CD	
Date: 06.05.08		Scale: Not to scale	
No: Figure 15.3			Rev 0



Client: Regional Development / ROADS Service	Title: **Stage 2 Environmental Assessment Contaminated Land Locations**	FABER MAUNSELL | AECOM	Design: **TMcK** Mapinfo: **AM**
Project: **49675IBLE A2 Buncrana Road Improvements**	Key: Contaminated Land Site	24 Linenhall Street, Belfast, BT2 8BG Tel: +44 (0) 28 9043 4900 Fax: +44 (0) 28 9043 4909 www.fabermaunsell.com	Chk'd: **MM** App'd: **CD** Date: **02.05.08** Scale: **1:15000** No. **Figure 15.4**

FABER MAUNSELL | AECOM

Appendix C – Summary of Statutory Consultation Responses

Title	First name	Surname	Organisation	Company	Address 1	Address 2	City	County	Post Code	Date Sent	Date Received	Format	Reference	Respondent title	Respondent First name	Respondent Surname	Job Title	Address if Different	Response
Sir	or	Madam	Association of Community Groups	61 Duncairn Gardens			Belfast		BT15 2GB	21/01/2008									No written response received to date
Sir	or	Madam	Bord Gais Eireann (Northern Ireland)		Davidson House	20 Glenavy Road	Moira		BT67 0LT	21/01/2008	24/01/2008	Email		Mr	Danny	Barr			Further to correspondence ref 49675 IBLE ltr, which BGE (NI) received on today, can you please e-mail mapping in colour (preferable A3) for referencing.
Sir	or	Madam	British Telecom	Telephone House	45 - 75 May Street		Belfast		BT1 4SJ	21/01/2008									No written response received to date
Sir	or	Madam	British Trust for Ornithology		The Nunnery	Thetford	Norfolk		IP24 2PU	21/01/2008	08/04/2008	Email			Su	Gough	Research Ecologist - Terrestrial Ecology Unit		Thank you for your recent letter regarding the above study. As an independent scientific research charity, the BTO does not offer views on planning issues, but we are pleased to provide professional ornithological expertise. The BTO holds a number of ornithological data sets that may provide data relevant to your study. We do, however, have to charge an initial search fee of £25+VAT per site, to cover the staff time involved in looking through the databases. This amount will be waived should you subsequently purchase data as a result of the search (subject to a minimum charge of £75+VAT). If you would like me to carry out a search, please would you let me know - an e-mail or phone call will suffice. For your information I have attached a sheet outlining some of our major datasets and a copy of our policy and conditions of use of our data.
Sir	or	Madam	Cable & Wireless Communications Ltd.	Quarry Corner	Upper Newtownards Road	Dundonald	Belfast		BT16 1UD	21/01/2008									No written response received to date
Sir	or	Madam	Centre for Environmental Data and Recording		Ulster Museum	Botanic Gardens	Belfast		BT9 5AB	21/01/2008									No written response received to date
Sir	or	Madam	Confederation of British Industry	Centre Point	103 New Oxford Street		London		WC1A 1DU	21/01/2008									No written response received to date
Dr	Lucinda	Blakiston Houston	Council for Nature Conservation & the Countryside		Secretariat c/o Room 303	5 - 33 Hill Street	Belfast		BT1 2LA	21/01/2008	14/04/2008	Email		Ms	Kim	Robin	Secretariat	kim.robin@doeni.gov.uk	You mention that no response has been received from either of the Statutory Advisory Councils: Council for Nature Conservation & the Countryside, Historic Buildings Council, Historic Monuments Council. To date Council's have not had the opportunity to view The EIA statement. With this in mind they are unable to comment on the options until they see sight of this. Can you arrange for the relevant documents to be forwarded to Secretariat at the below address? CD replied: *This is a pre-planning consultation, so the EIA is not complete at this stage. If any of the Statutory Advisory Councils have comment on pre-planning considerations (ie, content of EIA etc) that would be much appreciated. If the Councils want to wait until the EIA is complete and comment at that stage, that is fine, we will make a note as such*. *Kim replied*: Council's hold no relevant information in relation to your EIA for the above road improvements but looks forward to seeing this in due course.
Sir	or	Madam	DARD - Director of Policy		Dundonald House	Stormont	Belfast		BT4 3SB	21/01/2008	14/04/2008	Ltr							Letter returned as 'could not trace' - likely that Director of Policy does not exist?
Sir	or	Madam	DARD - Fisheries and Rural Policy Division	4th Floor North	Dundonald House	Stormont	Belfast		BT4 3SB	21/01/2008									No written response received to date
Ms	Maureen	Emerson	DARD Environmental Policy Branch		Dundonald House	Stormont	Belfast		BT4 3SB	21/01/2008	07/02/2008	Email		Ms	Gillian	O'Neill	Agri-Environment Schemes Management Branch		I have consulted with colleagues in the Department regarding the above scheme and the only comment I received, from Countryside Management Branch, is that they have no additional comments to their response of 26 October 2006, which you should be in receipt of.
Ms	Carolyn	Tipping	DARD Forest Service		Dundonald House	Upper Newtownards Road	Belfast		BT4 3SB	21/01/2008	28/01/2008	Email			Una	Savage			Re above, Forest Service(FS) comments are as follows: The navy option is beside a privately owned woodland. Any deforestation for access or construction must be in full accordance with the EIA (Forestry) Regulations (NI) 2006. Please note future correspondence on EIAs should be sent to Gillian O'Neill at Loughry Campus, 76 Dungannon Road, Cookstown, BT80 9AA or email gillian.o'neill@dardni.gov.uk as she is responsible for coordinating all replies on behalf of DARD including FS.
Sir	or	Madam	DARD Loughs Agency	Headquarters	22 Victoria Road		Londonderry		BT47 2AB	21/01/2008	13/02/2008	Ltr		Dr	Declan	Lawlor	Environmental Officer		The following points outline the main concerns that the Loughs Agency would have in relation to road schemes. The Agency would be concerned of the increased potential for runoff from impermeable surfaces, which can contain contaminants, including sediments, oils, etc. The Loughs Agency requests that all storm water from the development site should not be discharged to nearby watercourses unless first passed through pollution interception and flow attenuation measures. Storm water can carry pollutants into watercourses and high volume discharges can alter the prevailing hydrological regime, both of which can impact on fisheries interests. In respect of these issues, Loughs Agency would encourage the consideration of SUDS within the development. LA would require information on any proposed culverting. We would also encourage water quality monitoring during and post construction. Work methods and materials must not impinge upon any nearby watercourses. The use of cement/concrete on site will require careful management - they are highly toxic to aquatic life and therefore must be kept out of all drains and Roadside drains should not intercept large volumes of water from the ground above. Any watercourse, however small, that is intercepted by the access routes should be bridged or culverted at that point. The use of fords must be avoided. Culverts should be of a size to avoid overloading, blocking or washout. The profile of any stream that is crossed must remain the same. Shooting velocities must be avoided. Erosion of roadside embankments and cuttings should be kept at no greater slope than the normal angle of repose to encourage re-vegetation; otherwise added stabilisation may be required. A contingency plan must be established and adhered to in the event of any watercourse contamination. Bridge crossing should not disturb the river bed. A detailed earthworks plan should be provided. The applicant should be aware that it is an offence under section 41 of the Foyle Fisheries Act 91952) to causes pollution which is detrimental to fisheries interests.
Sir	or	Madam	DARD -Quality Assurance		Dundonald House	Stormont	Belfast		BT4 3SB	21/01/2008	01/02/2008	Ltr	RDS 07/08		Jan	Davidson			I have considered your request regarding potential restrictions on the movement of soil in the area described above. There are no records of Potato Cyst Nematode (PCN) or Potato Wart Disease (PWD) in the proposed area. There are therefore no restrictions as far as the order is concerned on the movement of soil or other material from these lands.
Sir	or	Madam	DARD Rivers Agency		37 Castleroe Road		Coleraine		BT51 3RL	21/01/2008	01/05/2008	Ltr		Mr	Sam	Dickson			Please find highlighted on the attached location plan, watercourses designated under the Drainage (NI) Order 1973 and located within the area indicated which is close to your proposed works. The proposal may be affected by other undesignated watercourses of which Rivers Agency has no information. You should be aware that any works affecting any watercourses whether designated or not requires under the Drainage Order, the consent and approval of this Agency. As such any proposals should be forwarded to this office at an early stage for comment and appraisal.
Sir	or	Madam	DARD Rivers Agency		37 Castleroe Road		Coleraine		BT51 3RL	21/01/2008	25/01/2008	Ltr		Mr	Jackie	Harte	Regional Administrator		Letter received
Sir	or	Madam	DARD Rivers Agency	Western Region Regional Office	Woodside Avenue	Gortin Road	Omagh		BT79 9BS	21/01/2008									No written response received to date
Sir	or	Madam	DARD Rivers Agency	Headquarters	Hydebank	4 Hospital Road	Belfast		BT8 8JP	21/01/2008									No written response received to date
Sir	or	Madam	DCAL Central Management		Interpoint	20 - 24 York Street	Belfast		BT15 1AQ	21/01/2008									No written response received to date
Mr	Brian	Finn	DCAL Fisheries Conservancy Board NI		1 Mahon Road		Portadown		BT62 3EE	21/01/2008	14/04/2008	Ltr		Mrs	Karen	Simpson	Chief Exec		Please note that the area lies within the jurisdiction of the Loughs Agency
Mr	Jim	Hayes	DCAL Inland Fisheries		Interpoint	20 - 24 York Street	Belfast		BT15 1AQ	21/01/2008	28/01/2008	Email		Mr	Jim	Hayes	Fisheries Operations and Technical Support		The location of the proposed scheme is noted. The Loughs Agency is the lead body for provision of advice regarding impacts to salmonid and inland fisheries within the watersheds of Lough Foyle and Carlingford Lough. Consequently, said agency should be consulted in relation to this application. DCAL will continue to provide fisheries advice for those areas outside of the catchments of Foyle and Carlingford Loughs.
Sir	or	Madam	DCAL Inland Waterways		Interpoint	20 - 24 York Street	Belfast		BT15 1AQ	21/01/2008	08/04/2008	Email			Kathleen	Conlon			Thank you for your letter of 7 April 2008. Inland Waterways has no comments.
Mr	Garry	O'Neill	DCAL River Bush Salmon Station		Church Street	Bushmills		Co.Antrim		21/01/2008	08/04/2008	Email		Mr	Gary	O'Neill			Please see attached letter which was issued in response to earlier correspondence with your colleague. At this stage I have no further comments to make on the scheme nor on the options outlined in your note to me of 7th April. Please let me have sight of the Environmental Impact assessment when this has been completed.
Mr	Eugene	Rooney	Department of Education	Development Branch	Rathgael House	Balloo Road	Bangor		BT19 7PR	21/01/2008	15/02/2008	Ltr		Mrs	Heather	Bailey			The Buncrana Rd area is earmarked for considerable housing development and the contractors are seeking Article 40 agreements (under the Planning (NI) Order 1991) to enable sites to be earmarked, potentially for new primary schools. An Article 40 agreement facilitates, regulates or restricts the development uses of land. The dept. has facilitated one Article 40 agreement for the Galliagh area but there is another in process and it is understood that a third may follow. At this early stage the dept. has not made any assessment on the need or otherwise for new schools in this area. If you have not already done so, I would suggest that you contact Mrs Iris Baker, Head of Property Services with Western Education & Library Board and Mr Gerry Lundy, Head of Planning & Development with the Council for catholic maintained Schools (CCMS), who should be able to advise further on planned or potential school developments in the area.
Sir	or	Madam	Department of Health, Social Services and Public Safety	Castle Buildings	Stormont Estate		Belfast		BT4 3SQ	21/01/2008									No written response received to date
			Derry City Council								27/02/2008	Tel rec			Anne			Tel: 71376534	Derry City Council will be unable to make comment on A2 Buncrana Road Stage 2 Consultations until the end of March/beginning of April. This is due to committee scheduling.
Mr	Paul	McSwiggan	Derry City Council	Environmental Health Department	98 Strand Road,		Londonderry		BT48 7NN	21/01/2008	19/02/2008	Ltr	MMcC/SD	Mr	Mark	McChrystal	Env Health officer		There are existing residential units bordering part of the carriageway between PB R'about and the border. Further housing is proposed between Cosquin Rd and Buncrana Rd and also north of the Buncrana Rd to the Skeoque River and beyond. Due to the increase in traffic on the proposed routes, assessment will be required to be made on the effects of noise and air quality pollutant emissions. Noise: ref should be made to DOE PPG 24, Noise Exposure categories should be determined and potential mitigation identified. Air: Detailed assessment of air quality should be undertaken. Advanced air quality dispersion modelling would should detailed predicted pollutant concentrations and extent of any areas of exceedance. All relevant national Air Quality Strategy pollutants should be considered in this assessment. There is a duty to meet the Air Quality limit values set within the EC Air Quality Framework Directive on which UK values are based.

Title	First name	Surname	Organisation	Company	Address 1	Address 2	City	County	Post Code	Date Sent	Date Received	Format	Reference	Respondent title	Respondent First name	Respondent Surname	Job Title	Address if Different	Response
																			In NI, the Environment (NI) Order provides the framework for local air quality management. In areas where air quality objectives are not expected to be met, the council must declare Air Quality management Areas and indicate an action plan to improve air quality. Derry City Council has monitored Nitrous Oxide levels at 4 locations on the Buncrana road since 1996. The purple option will result in less public exposure. The blue route would entail more traffic close to residential areas. The red route will lessen public exposure south of the A2 road from racecourse road, however as two areas of housing will be vested. housing north of the A2 will be exposed to the highest traffic volumes with associated noise and air quality issues.
Mr	John	Kelpie	Derry City Council	City Engineer	98 Strand Road,		Londonderry		BT48 7NN	21/01/2008									No written response received to date
Ms	Kathleen	Doharty	Derry City Council	Chief Executive, Anthony McGurk	98 Strand Road,		Londonderry		BT48 7NN	21/01/2008									No written response received to date
Mr	Colin	Kennedy	Derry City Council	Recreational and Leisure Services	98 Strand Road,		Londonderry		BT48 7NN	21/01/2008									No written response received to date
Sir	or	Madam	Derry City Council	Community Services	Waterside Community Services Office	71 Spencer Road	Londonderry		BT47 6AE	21/01/2008									No written response received to date
Mr	Terry	Johnston	DETI Geological Survey of Northern Ireland		20 College Gardens		Belfast		BT9 6BS	21/01/2008	07/02/2008	Ltr		Mr	Terence	Johnson			The geological information required for this ES is essentially the same irrespective of which route option is ultimately progressed. You should ensure that the ES contains sufficient information (maps etc) to characterise the site and surrounding area. This information is required for the assessment of potential environmental impact in particular any potential impacts on local groundwater.
Sir	or	Madam	DETI Invest Northern Ireland	5th Floor	Timber Quay	100 - 114 Strand Road	Londonderry		BT48 7NR	21/01/2008	10/04/2008	Tel Rec (to CD)			Claire				Invest NI is working directly with Roads Service re the proposal. They were asked to submit comment to us if they would like it to form part of the written documentation at Stage 2.
Mr	M	Millar	DFP	Landscape Architect Branch	Millennium House	17-24 Gt Victoria St	Belfast		BT2 7BN	21/01/2008									No written response received to date
Sir	or	Madam	DOE EHS - Water Management Unit	17 Antrim Road	Lisburn				BT28 3AL	21/01/2008	25/01/2008	Email	Our Ref: WQU0417 3		Jo	Campbell	Information Management Team		I wish to acknowledge receipt of your information request for the above scheme (see attached). Please note that EHS Water Management Unit only holds water related environmental information and does not hold information on Natural or Built Heritage. Information requests re: EHS Built Heritage should be sent to bh@doeni.gov.uk Information requests re: EHS Natural Heritage should be sent to anne.murray@doeni.gov.uk If you require any future information regarding water quality or the water environment on any other sites please email details of your information request to InformationManagement@doeni.gov.uk .
			DOE EHS - Water Management Unit	17 Antrim Road	Lisburn				BT28 3AL	21/01/2008	25/01/2008	Email	Our Ref: WQU0417 3		Jo	Campbell	Information Management Team		WMU hold the following information relating to Water which may be of use when completing the Environmental Assessment of this above proposal:- Water Quality: The site of the proposed road works lies alongside the Skeoge River. Drainage patterns on the ground are hard to discern, but a number of other small West Bank streams monitored by EHS may also be affected by it. The attached file, Fabermaunsell A2 Buncrana Rd, Derry RivQual.xls (30 KB), summarises water quality since 2000 in the Skeoge and in all of those streams. The summary shows:Designations under the EC Freshwater Fish Directive (FFD); Compliance with the FFD; General Quality Assessment (GQA) chemical classifications; GQA biological classifications. Waters designated under the FFD must comply with quality standards set out in the Directive. All of the waters are also subject to the requirements of the EC Water Framework Directive. Groundwater / Hydrogeology Issues: Please note that regional information on groundwater aquifer classification and/or groundwater vulnerability Groundwater / Hydrogeology Issues: Please note that regional information on groundwater aquifer classification and/or groundwater vulnerability is now available directly from the Geoindex on the British Geological Survey (BGS) website: www.bgs.ac.uk/geoindex/index.htm, See attached Groundwater Guidance Note, GroundwaterGuidanceNote.pdf (85 KB) Abstractions Historical To the best of our knowledge there are no abstractions within 1km radius of search location. Current There are no current abstractions listed within 1 km of the grid reference provided for either site. Consented Agricultural Discharges There no are 3 Authorised Disposal Sites for List 1 and 2 substances which are within the vacinity of the "A2 Buncrana Road Stage 2 Scheme Assessment Navy Route. The 2 sites to the North have XY centrepoints 241604 421453 and 241693 421915. Both sites are approximately 240 metres x 240 metres. A further Site (approx 75 metres x 75 metres) to the South has a XY centre point of 240200 419165. Consented Industrial Discharges See attached files, WQU04173-Cross Border.xls, WQU04173-Pennyburn.xls & WQU04173-Skeoge.xls Northern Ireland Water Ltd (NIW) Consented Discharges From the information available to EHS Water management Unit utilising Northern Ireland Water's data, there are consented and un-consented sewage discharges within 2.2 kilometre of the centre of this site. There may be other assets present but not visible on the GIS system therefore NIW should be contacted in order to confirm which assets exist. Pollution Incidents – See attached file, WQU04173 a2 buncrana road.xls Pollution Prevention The Water Management Unit's Pollution Prevention Team have no route preference.
Mr	Brian	McKervey	DOE EHS Built Heritage	Historic Buildings & Historic Monuments	Waterman House	5 - 33 Hill Street	Belfast		BT1 2LA	21/01/2008									No written response received to date
Mrs	Donna	Blaney	DOE EHS Environmental Protection	17 Antrim Road			Lisburn		BT28 3AL	21/01/2008									No written response received to date
Mr	Brian	Forrest	DOE EHS Environmnetal Protection		Klondyke Building, Cormac Avenue	Gasworks Business Park, Lower Ormeau Road	Belfast		BT7 2JA	21/01/2008									No written response received to date
Mrs	Susie	McGarry	DOE EHS Natural Heritage		Klondyke Building, Cormac Avenue	Gasworks Business Park, Lower Ormeau Road	Belfast		BT7 2JA	21/01/2008	14/02/2008	Ltr	CC57/4/18	Mr	Norman	Bryce	Scientific Officer		Site specific information: there are no designated areas within the site. However impacts on the following sites should be considered: Lough Foyle ASSI, Lough Foyle SPA, Lough Foyle Ramsar site (ie approx. 6km downstream of the proposal. River Foyle tributaries ASSI and SAC (ie approx. 9km upstream of the proposal but salmon would pass near the site. Common newts have been identified on land close to the junction of Elagh Road/Buncrana Rd. Common newts and their habitat are protected by the Wildlife (NI) Order 1985. There are several recorded sites close to the development which CEDaR holds information on. Flora & Fauna: the EIA should cover both habitats and species of flora and fauna (esp. protected species). It should include both the proposed site and its surroundings. JNCC Phase 1 (& Phase 2) survey required covering all seasons. See full response for further details. Landscape: See GLVIA guidelines. Establish the current landscape designation and policies covering the site and its surroundings. Details of local landscape character of the site and surroundings. Hydrology: the consequences of changes to the hydrological system on peatland, rivers, streams and wetland habitats should be established. Environmental Management Plan: An EMP detailing the construction, operation, and maintenance phases of the proposed road scheme should be included. Mitigation: Opportunities for reducing identified negative environmental impacts of the proposal by mitigation should be established.
			DOE EHS Natural Heritage	Countryside & Coast							24/01/2007	Ltr			E	McAuley			Thank you for your letter which was received on 23/01/08, the content of your correspondence has been noted and any follow up action which may be required will be carried out as soon as possible.
Sir	or	Madam	DOE EHS Waste & Contaminated Land Unit		Calvert House	23 Castle Place	Belfast		BT1 1FY	21/01/2008	18/06/2008	Ltr	LQ/67-8	Mr	Robert	Henderson			Enclosed are details of the current & previous uses for this parcel of land and surrounding areas, which have the potential to have resulted in contamination of this site. The EHS database has not yet been fully validated. (Details and maps of 18 sites enclosed - see full response).
Sir	or	Madam	DOE Planning & Environmental Policy Group	Air & Environmental Quality Unit	River House	48 High Street	Belfast		BT1 2AW	21/01/2008	10/04/2008	Email		Dr	Barry	McAuley			I would suggest that you seek comments and information regarding any likely impacts of the proposed options on local air quality or noise levels from Derry City Council. You may also wish to contact this council in relation to any recent Review and Assessments of local air quality. For information I would advise that all historical air quality data collected on the Department's monitoring networks can be accessed via the Internet at The Northern Ireland Air Quality Archive web site at www.airqualityni.co.uk Noise maps are available on the Department's Noise Website: www.noiseni.co.uk
Mrs	Mary	McIntyre	DOE Planning Service		Orchard House	40 Foyle Street	Londonderry		BT48 6AT	21/01/2008									No written response received to date
Sir	or	Madam	DOE Planning Service	Special Studies Unit	Millennium House	17 - 25 Great Victoria Street	Belfast		BT2 7BN	21/01/2008									No written response received to date
Sir	or	Madam	DOE Planning Service	Minerals Planning	Millennium House	17 - 25 Great Victoria Street	Belfast		BT2 7BN	21/01/2008									No written response received to date
Mr	D	Ferguson	DOE Planning Service HQ	Chief Executive	Millennium House	17 - 25 Great Victoria Street	Belfast		BT2 7BN	21/01/2008	28/01/2008	Ltr	DBA/22626	Mr	David	Moffatt	Planning Service Secretariat		Thanks you for your letter to Mr David Ferguson, Chief Exec. Your letter has been forwarded to Mary MacIntyre, the Divisional Planning Officer in our Londonderry office. A response will be issued in due course.
	Stephen		Donegal County Council	Roads							10/04/2008	Tel Rec (to CD)			Stephen				Tel call to say they were passed reminder letter and there was some confusion as they had already responded.
Mr	Pat	Gillespie	Donegal County Council	Area Manager of Roads and Transportation		Lifford House	Lifford	Co. Donegal		21/01/2008	18/02/2008	Ltr			Patrick	Gillespie	Senior Executive Engineer		The National Roads design team have responsibility for that section of N13 road - I have forwarded them your letter
Sir	or	Madam	Donegal County Council		Inishowen Public Services Centre	Inishowen		Co. Donegal		21/01/2008									No written response received to date
Sir	or	Madam	Donegal County Council	Planning Department	Blaney Road		Letterkenny	Co. Donegal		21/01/2008									No written response received to date
Ms	Claire	Cronin	Donegal County Council	Area Manager of Planning and Economic Development		Lifford House	Lifford	Co. Donegal		21/01/2008									No written response received to date

Title	First name	Surname	Organisation	Company	Address 1	Address 2	City	County	Post Code	Date Sent	Date Received	Format	Reference	Respondent title	Respondent First name	Respondent Surname	Job Title	Address if Different	Response
Mr	Alan	Keys	DRD Roads Service	Traffic Engineer	Crescent Road		Londonderry			21/01/2008	26/02/2008	Ltr	T173	Mr	Alan	Key	Traffic Section		In addition to the Racecourse Rd junction, it is likely that some from of traffic light control would be required at Branch Rd/ Templemore Rd and at Springtown Road. Consideration should be given to making Pennyburn bypass left-in/left-out only. Other junctions between Racecourse Rd and Strand Rd may require some form of restriction on turning movements also, as currently these junctions cause congestion which affects the operation of Pennyburn Roundabout. If possible Whitehouse Rd should be stopped up at its junction with Buncrana Rd. This would remove the conflict with the junction of Upper Galliagh Rd and an alternative safer access will be available via Skeoge roundabout. Bus priority measures should be considered and the potential benefits quantified.
Mr	Liam	McAvoy	DRD Roads Service	Transportation Planning Branch (NISTRM)	Clarence Court	10 - 18 Adelaide Street	Belfast		BT2 8GB	21/01/2008	07/02/2008	Email			Claire	Donnelly	Transportation and Engineering Policy Unit		I refer to your letter of 21 January 2008 regarding Stage 2 Environmental Assessment of A2 Buncrana Road. Transportation and Engineering Policy Unit (TEPU) does not hold any information on environmental issues in the locality of Buncrana Road. Any local issues should be referred to Northern Division for comment. For your information. TEPU normally provide guidance to Roads Service Divisions on transportation modelling and appraisal procedures.
Mr	Austin	Montgomery	DRD Roads Service	Section Engineer	Crescent Road		Londonderry			21/01/2008									No written response received to date
Mr	Ken	Whiteside	DRD Roads Service	Street Lighting Engineer	County Hall	Castlerock Road	Coleraine			21/01/2008									No written response received to date
Mr	Roy	Sherman	DRD Roads Service HQ	Lands & Legislation Branch	Clarence Court	10/18 Adelaide Street	Belfast		BT2 8GB	21/01/2008	08/04/2008	Tel rec		Ms	Julie-Ann	Dutton			Julie Ann had been passed letter sent to Roy Sherman and was wondering if it was relevant. They usually only look at the Environmental Statements. Determined that it would not be relevant for them at this stage. Suggested that we contact Philip Hamilton in Strategic Planning - email original consultation correspondence through to him (with maps) - Philip.hamilton@drdni.gov.uk
Sir	or	Madam	DSD - Department of Social Development	Northern Office	Kevlin Buildings	47 Kelvin Avenue	Omagh		BT78 1ER	21/01/2008	23/04/2008	Tel		Mr	Alister	McKane			No comments from DSD, Western Area Office, Omagh □
Sir	or	Madam	DSD Regional Development Office	Headquarters	Brookmount Buildings	42 Fountain Street	Belfast		BT1 5EE	21/01/2008									No written response received to date
Sir	or	Madam	DSD Regional Development Office	Northern Office	5th Floor	Londonderry House	Londonderry			21/01/2008									No written response received to date
Sir	or	Madam	Eircom (NI) Ltd.	William Ritchie Building	Clarendon Dock		Belfast		BT1 3BG	21/01/2008									No written response received to date
Sir	or	Madam	Federation of Small Businesses	Cathedral Chambers	143 Royal Avenue		Belfast		BT1 1FH	21/01/2008									No written response received to date
Sir	or	Madam	Fire Authority for Northern Ireland (NI Fire & Rescue Service)	Brigade Headquarters	1 Seymour Street		Lisburn		BT27 4SX	21/01/2008	03/03/2008	Email		Mr	Terry	Morrison	Station Commander		tried to contact you by telephone on Wednesday 26th February, but you were unavailable. I must apologise for not contacting you sooner but I have only taken over this post recently, and I am still trying to do a catch up on things. As to the Buncrana Road impact study, the only issues that may arise, and which can affect the Fire & Rescue Service, will be in relation to access to locations around the proposed works, and the availability of the current water supplies. I am sure that the Fire Service will be contacted prior to any works being commenced, but at this stage we have no issues with the three options being proposed. If you require any further information on this, or any other issue , please do not hesitate to contact me at the address below, or on telephone number, 028 71311162.
Mr	Tony	Guiney	Firmus Energy	Records Officer	Kilbegs Business Park		Antrim		BT41 4NN	21/01/2008									No written response received to date
Sir	or	Madam	Foyle Fisheries Commission		8 Victoria Street		Londonderry		BT47 2AB	21/01/2008	28/01/2008	Ltr		Mrs	Karen	Simpson	Chief Exec		Please note that the development lies within the jurisdiction of the Loughs Agency of the Foyle, Carlingford and Irish Lights Commission.
Dr	Declan	Lawlor	Foyle, Carlingford & Irish Lights Commission		22 Victoria Road		Londonderry		BT47 2AB	21/01/2008									No written response received to date
Sir	or	Madam	Freight Transport Association	Hermes House	St Johns Road	Tunbridge Wells	Kent		TN4 9UZ	21/01/2008									No written response received to date
Mr	T.	Glenn	Health and Safety Exectutive		83 Ladas Drive		Belfast		BT6 9FR	21/01/2008	07/02/2008	Ltr	CN200801-0019 PS2007, 117	Mr	Mark	Collier	Principal H&S Inspector		We have considered this matter and have no comments to make in relation to the application.
Sir	or	Madam	Historic Buildings Council	Waterman House	Waterman House	5 - 33 Hill Street	Belfast		BT1 2LA	21/01/2008									No written response received to date
Sir	or	Madam	Historic Monuments Council	Waterman House	Waterman House	5 - 33 Hill Street	Belfast		BT1 2LA	21/01/2008									No written response received to date
Sir	or	Madam	Irish Business & Employers Confederation (IBEC)	Confederation House	84 - 86 Lower Baggot Street		Dublin 2			21/01/2008									No written response received to date
Sir	or	Madam	Londonderry and Lough Swilly Railway Company	Unit 23	Springtown Industrial Estate	Springtown Road	Londonderry	Co. Londonderry	BT48 0LY	21/01/2008									No written response received to date
Sir	or	Madam	Mobilise	National Headquarters	Ashwellthorpe	Norwich			NR16 1EX	21/01/2008									No written response received to date
Mr	Aiden	O'Doherty	National Roads Design Office	Donegal Town Public Service Centre	Drumlonagher		Donegal Town	Co. Donegal		21/01/2008	21/02/2008	Email			Mark	Gallaghar	Donegal National Roads Design Office		We are in receipt of your letter dated 21st January 2008 regarding the proposed improvements to the A2 Buncrana Road. Firstly we thank you for including us in this process and would welcome the proposed upgrading of this important route. In relation to the options from Pennyburn Roundabout to Skeoge Roundabout, it's apparent that there are major constraints in this area. In relation to the Skeoge Roundabout to the Border with the Republic of Ireland section of the proposed scheme, we would ask you to consider moving the proposed roundabout further towards the border. The roundabout would then provide a tie-in point for a future link/relief road around Bridgend. This would provide economic benefits for both sides of the border. The link would facilitate access to development lands on both sides of the border and reduce the number of junctions on this important route. We would be grateful if you keep Donegal National Roads Design Office updated on the scheme as it progress's. Should you require any information please do not hesitate to contact me
Mr	Brian	Nicholl	NIE		120 Malone Road		Belfast		BT9 5HT	21/01/2008	04/02/2008	Email	Our Ref: 0801/11699	Mr	Brian	Nicholl	Distribution Service Centre		We refer to your request for a marked up cable drawing showing Northern Ireland Electricity equipment. We enclose for your attention but ask you to note that all cable positions are approximate only as indicated clearly on the drawing. Therefore, the onus is on you and your subcontractor to locate and avoid all underground and overhead electrical equipment owned by NIE plc and to prevent any damage whatsoever to any electrical equipment. Please note specifically that smaller service cables may not show on the marked up drawing and therefore all reasonable steps should be taken by you to locate any cable whether, underground or overhead. Any damage must be reported immediately as no matter how minor the damage may appear, live electricity cables are extremely dangerous and can kill. All site safety MUST be maintained in accordance with Health and Safety legislation and we refer you to the following guidance notes, for information, but these do not form an exhaustive list: 1. HSE guidance notes GS6 (avoidance of danger from overhead electric lines) and2. HSE booklet HS (G) 47 avoiding danger from underground services (these guidance notes are available from the Health & Safety Executive for N.I. (HSENI). If any damage whatsover occurs to NIE plc equipment all work in the vicinity must stop immediately and the damage must be reported at once to NIE plc on the following number: 08457 643 643. You should ensure that the attached mark up and a copy of this letter are given to any contractor or subcontractor who may have personnel or machines working on this site and we have enclosed two copies for your convenience. Also note, that NIE plc original drawings must be used at all times and this present drawing is only valid for 3 months from the date of this letter. Please note that you will be working in close proximity to 110/275kV equipment. Therefore, a copy of your proposed work has been passed to our Transmission Lines Engineer, Keith Holmes who should be contacted before the commencement of any works whatsoever on 028 9066 1100 ext 33720. As your letter requested additional information your correspondence has been forwarded to Denzil Conn our Planning Engineer who will be replying to your request. He can be contacted on 02825 661858. Please allow sufficient time for your request to be responded to.
			NIE		120 Malone Road		Belfast		BT9 5HT	21/01/2008	04/02/2008	Email	Our Ref: 0801/11699	Mr	Brian	Nicholl	Distribution Service Centre		Hard copy of letter sent in email on 04/02/08. See above.
	Records	Secretary	Northern Ireland Bat Group		Ulster Museum	Botanic Gardens	Belfast		BT9 5AB	21/01/2008									No written response received to date
Sir	or	Madam	Northern Ireland Council for Voluntary Action	61 Duncairn Gardens			Belfast		BT15 2GB	21/01/2008									No written response received to date
Ms	Carla	McGuigan	Northern Ireland Fire and Rescue Service		Northland Road		Londonderry			21/01/2008									No written response received to date
Mr	Fergal	Kearney	Northern Ireland Tourist Board		St Annes Court	59 North Street	Belfast		BT1 1NB	21/01/2008	22/04/2008	Ltr		Mr	Feargal	McKearney			Appropriate tourism infrastructure is important for tourism and those areas served by better road/ rail and air access are more competitive than others areas. One of the key outcomes is the removal of traffic from towns and villages - giving them back to the community enabling them to make them attractive places to visit.
			Northern Ireland Water	Chief Executive							07/02/2008	Ltr		Mr	Phil	Barker	Director of Operations		We are aware of the alternative proposals for this scheme and have no specific objection to nay of the three options detailed in your letter. We will however need to upgrade the sewerage system within this section of Buncrana Rd to coordinate with the relevent design and construction phases for the road improvement scheme. Please contact Philip Devlin at out Allmagelvin Office to discuss detailed design or to arrange whatever meetings are necessary with our staff, 02890741166 or philip.devlin@niwater.com
Ms	Katharine	Byran	Northern Ireland Water	Chief Executive	Northland Hse	3 Fredrick Street	Belfast		BT1 2NR	21/01/2008	24/01/2008	Ltr	WS 1/08/36		Glenn	Turpie			Thank you for your recent latter, regarding the EIA for the A2 Buncrana Road. The issues you have raised are being investigated and we aim to issue a reply to you by 6th feb 2008.
Ms	Bronagh	Ward	Northern Ireland Water		Belt Road	Allnagelvin	Londonderry		BT47 2LL	21/01/2008									No written response received to date

Title	First name	Surname	Organisation	Company	Address 1	Address 2	City	County	Post Code	Date Sent	Date Received	Format	Reference	Respondent title	Respondent First name	Respondent Surname	Job Title	Address if Different	Response
Sir	or	Madam	Northwest Development Office	Orchard House	40 Foyle Street		Londonderry		BT48 6AR	21/01/2008	20/02/2008	Email		Mr	Aiden	Graham			In respect of the above reference NWDO has no comment on the specifics other than to enquiry if you have consulted with ILEX Urban Regeneration Company as they have been tasked with the development of Fort George and have produced a Masterplan in respect of that site. They may have comment as to traffic implications for access to the newly developed Fort George.
Ms	Elizabeth	Todd	NTL Communications		209 Airport Road West		Belfast		BT3 9EZ	21/01/2008									No written response received to date
Sir	or	Madam	Ordnance Survey of Northern Ireland	Colby House	Stranmillis Court	Malone Lower	Belfast		BT9 5BJ	21/01/2008									No written response received to date
Mr	Aaron	Sloan	Phoenix Natural Gas		197 Airport Road West		Belfast		BT3 9ED	21/01/2008	28/01/2008	Ltr	DS/01/08/FM/77		Joy	McFarland	Engineering Support Supervisor		We can confirm that we have no mains or services in the area of the proposed works and do not intend to build there in the near future. Should you require further information, please do not hesitate to contact David Stevenson on 02890 555819.
Mr	Ross	Campbell	PSNI Road Management Unit		4 Maydown Road		Londonderry		BT47 6SJ	21/01/2008	25/02/2008	Ltr		Mr	Ross	Campbell	Trafic Management		Having studied the three options, the police view is that the purple options is the preferred route on ground of road safety as it will remove through traffic in both directions from passing residential housing of Collon Terrace. In relation to the Skeogue Roundabout to ROI border section police would support online widening with a roundabout at Eliagh Business Park (navy option). The consturection of this roundabout would be the safest method of regulating traffic using the business.
Sir	or	Madam	Quercus	Queen's University Belfast	School of Biological Solences	97 Lisburn Road	Belfast		BT9 7BL	21/01/2008	15/04/2008	Ltr		Dr	Jane	Preston			I have spoken to Prof Ian Montgomery, acting Manager at Quercus and we both feel that Quercus are not in a position to comment on the proposed scheme as it would be a conflict of interest.
Sir	or	Madam	RAC Motoring Services Ltd.	8 Surrey Street			Norwich		NR1 3NG	21/01/2008									No written response received to date
Sir	or	Madam	River Faughan Anglers Ltd		26a Carlisle Road		Londonderry		BT486JW	21/01/2008									No written response received to date
Ms	Claire	Ferry	Royal Society for the Protection of Birds		Belvoir Park Forest		Belfast		BT8 7QT	21/01/2008									No written response received to date
Sir	or	Madam	Sustrans Northern Ireland	Marquis Building	89 - 91 Adelaide Street		Belfast		BT2 8FE	21/01/2008	06/05/2008	Meeting (RS, FM, Sustrans)							Cycle lane provision RM pointed towards 'The National Cycle Network - Guidelines and Practical Details: Issue 2' report (Arup / Sustrans)" which gives guidance on appropriate cycling provision in relation to traffic volumes and speeds. Consideration of this document suggests that where 85th percentile vehicle speeds are between 30-40 mph then a segregated cycle facility should be provided (assuming >10,000 vehicles per day on the road). A segregated cycle facility should also be provided for this volume of traffic even if traffic speeds are only between 10-30 mph. Current traffic flows on Buncrana Road (2006 data) are between 17,000-24,000 vehicles per day. Whilst Sustrans will not insist on a certain level of 'provision' along the road, it should be appropriate to conditions. Linking to existing routes Consideration should be given to integration with existing cycle routes, particularly along the river front at Fort George. This will encourage commuters to use the routes. A very important section which should be considered in detail is between Racecourse Road and Pennyburn Roundabout since there is already a cycle route along Racecourse Road that could be tied in to. Routes from the Skeoge areas are important. Sustrans will support any transport solution that reduces the dependence on the private car for trips. Preferred corridor Sustrans' preferred corridor at this stage is the Purple Route, as it creates the potential for a 'traffic-free' route through the section of the 'old' road between Racecourse Road and Springtown Road. "Arup / Sustrans report available here: http://www.sustrans.org.uk/default.asp?sID=1100529418828
Sir	or	Madam	The Automobile Association		56 Drury Street		Dublin 2			21/01/2008									No written response received to date
			The Housing Exectutive								27/02/2008	Ltr		Mr	Sean	psni	Area Manager		The proposals affect NIHE in as much as it owns property at Collon terrace from which it delivers a local housing service to over 2000 tenants and the wider community in the North of the city. Red Route: In this proposal, the office is demolished to make way for the road. Clearly this will have a major effect on the delivery of housing services in the area and will cause considerable disruption to both staff and customers through relocation. Purple Route: In this option, while the office is not acquired for the project, I contend that the remaining building would be blighted to such an extent that it could no longer operate. Given the proposed drawing, it is difficult to see how staff could park vehicles in the remaining space and there does not appear to be nay facility for visitor parking. The resulting isolated nature of the site would make it difficult to ensure the safety of nay visitors to the office. Furthermore, the working environment in terms of noise and fumes would be unacceptable. Blue Route: In impact on the office is essentially the same as for the purple route and our comments reflect that option. The boundary on the Coshquin Rd appears to reflect the last property on benview Road which remains in our ownership. Could you clarify if it is indeed affected or does the map just outline the general intent? Conclusion: In summary, irrespective of the options presented, it is very difficult to see how an effective office environment and service can continue to operate in both terms of visitors and employers and may force us to relocate. Could you please outline what are the next stages in he process and associated timescales. I would be happy to facilitate a meeting if you feel that would be helpful.
Sir	or	Madam	The Housing Exectutive	The Housing Centre	2 Adelaide Street		Belfast		BT2 8PB	21/01/2008	22/02/2008	Ltr		Dr	John	McPeake	Director of Design & Property Services		I consider the matter to be best dealt with at a local level from our Derry office. Accordingly, I made arrangements for one of my local engineers to meet with colleagues from our planning and housing departments to discuss the proposals. I understand that Sean Mackie, the Area manager, will respond formally on behalf of the Housing Executive.
Ms	Avril	McAllister	The Housing Executive		14 Collon Terrace		Londonderry		BT48 7QP	21/01/2008	01/02/2008	Ltr							I refer to your letter dated 21 january 2008, addressed to Mrs Avril McAllister. I wish to advise that your correspondence has been passed to Mr Sean Mackie, Area Manager at the above address for his attention. NIHE, West Area Office, Richmond Chambers, the Diamond, L'derry, Bt48 6QP.
Ms	Janice	Tracey	The Londonderry Chamber of Commerce		1 St. Columbs Court		Londonderry	County Londonderry	BT48 6PT	21/01/2008									No written response received to date
Mr	Scott	Peckins	The National Trust	Rowallane House	Saintfield	Ballynahinch		Co Down	BT24 7LH	21/01/2008	28/04/2008	Ltr			Helen	Kirk	Landuse Planning Advisor		The proposed area does not directly affect any NT property or holdings and we therefore have no comment to make at this time.
Sir	or	Madam	The Roe Valley Chamber of Trade & Commerce	44 Catherine Street			Limavady		BT49 9DB	21/01/2008									No written response received to date
Sir	or	Madam	The Wildfowl and Wetlands Trust	Castle Espie	Ballydrain Road	Comber		County Down	BT23 6EA	21/01/2008									No written response received to date
Sir	or	Madam	The Woodland Trust		1 Dufferin Court	Dufferin Avenue	Bangor	Co. Down	BT20 3BX	21/01/2008									No written response received to date
Mr	Alan	Young	Translink		68 Foyle Street		Londonderry	Co. Londonderry	BT48 6AT	21/01/2008	08/04/2008	Tel (to CD)			Alan	Young			Comments were reverted at the public exhibition and meeting. Generally translink prefer the red route.
Ms	Dianne	Archibald	Ulster Angling Federation		14 Harwood Gardens	Carrickfergus	Antrim		BT38 7US	21/01/2008	08/02/2008	Ltr	UAF/09/06(Feb08)		Robbie	Marshall	Development Officer		These works will take in land along the banks of the River Skeoge. The UAF would request that measure are taken to ensure that pollution does not enter the river course from the proposed works. It is unclear from the drawings whether any river crossings are proposed but if so these would need to be completed away from spawning times. Also there is a need to ensure that migratory fish are not impeded.
Mr	Kenneth	Sharkey	Ulster Farmers Union		475 Antrim Road		Belfast		BT15 3DA	21/01/2008									No written response received to date
Mr	Dermot	Hughes	Ulster Wildlife Trust		3 New Line	Crossgar	Downpatrick		BT30 9EP	21/01/2008									No written response received to date
Ms	Susan	Henderson	Valuation Service	Central Advisory Unit, Land & Property Services	Queens Court	56-66 Upper Queen St	Belfast		BT1 6FD	21/01/2008									No written response received to date
Sir	or	Madam	Virgin Media, Plant Enquiries Team	Cable Phone House	Small Heath Business park	Talbot Way,	Small Heath	rmingham B10 0H	B10 0HJ	08/04/2007	08/04/2008	Tel		Mr	Ian	Philips			Called to say they had received reminder letter but not the original consultation letter. (They were not on the consultation list - possibly forwarded to them via Eirgrid?). Original consultation materials sent out 08/04/08
Sir	or	Madam	Western Education & Library Board	1 Hospital Road			Omagh	Co. Tyrone	BT79 OAW	21/01/2008	02/06/2008	Ltr			Iris	Baker	Head of property Services Division		The board considered the improvement options identified and does not envisage that the proposed road developments will have any relative effect on any existing Board properties or any future proposals.
Sir	or	Madam	Western Education & Library Board	1 Hospital Road			Omagh	Co. Tyrone	BT79 OAW	21/01/2008	11/04/2008	Email			Shauna	McGilp	PA/Office Manager,Property Services Division		Thank you for your letter to WELB dated 7 April requesting a response to your original letter of 21 January. I am unable to locate the original letter and I am unsure if we have ever received it. Could you please send me another copy by email or post and we will return our comments to you asap.
Ms	Annamarie	McNally		St Martins House	Waterloo Road		Dublin 4			21/01/2008	29/02/2008	Ltr	NRA08-61018	Mr	Tom	Carr	Engineering Inspector		The NRA have no objections with the upgrade proposal by DRD Roads Service on the A2 Buncrana road linking with the N13 at the border. The Authority would advise that a copy of the corresspondence be snet to the Donegal National Roads Design Office for their information, if not already done so.

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Appendix D – Results of Economic Sensitivity Test

Appendix D – Results of Economic Sensitivity Test

Project:	**A2 Buncrana Road**	Job No:	**60033975**
Subject:	**Stage 2 Economic Analysis Sensitivity Tests**	Date:	**04 November 2008**

1.1 Introduction

This Technical Note has been prepared to discuss the Sensitivity Assessments undertaken for the economic analysis element of the A2 Buncrana Road widening scheme. The following test has been undertaken:

- A set of 'alternative' future year flows have been produced, using observed data factored up to the future year (2015). These flows also include the trips associated with 1,000 no. houses built-out on the H1/H2/ lands.

1.2 Sensitivity Test Procedure

Sensitivity Test Flows

Given that the Derry Transport Model (DTM) forecasts significant levels of traffic on the network at 2015 (primarily as a result of the trips associated with the full build-out of the H1/H2 lands), it was decided that sensitivity tests be undertaken using observed flows factored up by NRTF Central growth to 2015, together with the inclusion of trips associated with only a partial build-out of H1/H2, in this case 1,000 houses.

As such, flows from the various Automatic Traffic Counter (ATC) surveys recorded in and around Buncrana Road between 2006 and 2008 were used to form the basis of determining daily 7-day AADT flows on the network. In addition, turning count data at the various junctions from both 2006 and 2008 was used to determine traffic movements for use in the COBA model.

NRTF Central growth rates were used to factor the 2006 and 2008 flows up to the 2015 assessment year. COBA then extrapolates additional year traffic flows for each of the remaining assessment years by way of the NRTF growth rates.

H1/H2 Traffic

The trips associated with a build-out of 1,000 houses on the H1/H2 lands were determined as follows. Daily 85th percentile trip rates from TRICS 2008(b) suggested 10.188 daily trips per unit, given a total of 10,188 trips associated with the H1/H2 lands. It was further assumed that the split between H1 and H2 was 50:50, with therefore 500 units effectively each located to the east and west of Skeoge roundabout.

The traffic distribution was determined as follows:

- 70% of traffic would use Buncrana Road (S)
- 20% of traffic would use Skeoge Link
- The remaining 10% would use Buncrana Rd (N)
- Given the movements observed at Branch Roundabout, the 70% on Buncrana Road would split to 50% on Buncrana Road further south and 20% on Branch Road itself.

Comparison of traffic levels

These development trips were added to the 2015 'background' traffic to produce the assessment flows. A comparison between the DTM and the Sensitivity Test flows is made in Table 1 for selected roads coded within the COBA network, which reveals that in general, the flows in the sensitivity test are much lower than those in the DTM. The Sensitivity Test flows are reproduced at the end of this note.

Table 1 – Comparison of two model scenario flows

Road	2015 Model Flow (7-day AADT)	
	Derry Model (DE2B)	Sensitivity Test
Buncrana Road north of Skeoge Roundabout	36,386	19,858
Buncrana Road south of Skeoge Roundabout	49,154	24,747
Buncrana Road north of Branch Roundabout	45,494	28,531
Buncrana Road south of Branch Roundabout	27,653	23,202
Buncrana Road south of Springtown Road	17,132	26,444
Buncrana Road north of Racecourse Road	16,011	26,543
Buncrana Road south of Racecourse Road	28,088	29,727
Skeoge Link	38,195	15,167
Templemore Road	20,492	19,690
Branch Road	37,400	30,788
Springtown Road	16,213	9,055
Racecourse Road	16,028	19,327
Pennyburn Industrial Estate	11,541	11,192

1.3 Results – Revised Models with Sensitivity Test flows

The results of the assessment using the Sensitivity Test flows are presented in Table 2. The results show much lower BCRs than those shown in Table 7.16 of the *A2 Buncrana Road Improvements Stage 2 Scheme Assessment Report* (Stage 2 SAR) and this is due to the lower traffic flows produced in the Sensitivity Test. However, the Red Route still produces the best NPV/BCR, followed by the Blue and then Purple Routes.

Table 2 – Results for COBA Assessments using Sensitivity Test flows

Impact		Red	Blue	Purple	Navy
A	Consumer User Benefits *(£000s)*	£64,340	£70,294	£66,907	£24,474
B	Business User Benefits *(£000s)*	£62,267	£70,948	£66,446	£31,753
C	Private Sector Provider Impacts *(£000s)*	£1,060	£758	£727	£410
D	Accident Benefits *(£000s)*	-£1,458	-£27,625	-£14,359	£7,556
E	Emissions Benefits	£548	£366	£349	£885
G	Present Value of Benefits (PVB) *(= A + B + C + D + E)*	£126,758	£114,741	£120,069	£66,078
H	Present Value of Costs (PVC)	£28,479	£30,845	£34,193	£19,159
I	Net Present Value (NPV) *(£000s) (= F — G)*	£98,279	£83,895	£85,876	£46,919
	Benefit to Cost Ratio (BCR) *(= F / G)*	**4.451**	**3.720**	**3.512**	**3.449**

The results in Table 3 show the same COBA assessments however with the 'Indirect Tax Revenues' removed. With this element removed, each of the scheme's NPVs/BCRs improve, and the Red Route still performs best of the three options.

Table 3 – Revised Sensitivity Test results with Indirect Tax Revenues removed

Impact	Red	Blue	Purple	Navy
Indirect Tax Revenues	-£4,730	-£3,150	-£3,008	-£7,525
Revised Present Value of Benefits (PVB)	£122,028	£111,591	£117,061	£58,553
Revised Present Value of Costs (PVC)	£23,749	£27,695	£31,185	£11,634
Net Present Value (NPV) *(£000s)*	£98,279	£83,896	£85,876	£46,919
Revised Benefit to Cost Ratio (BCR)	**5.138**	**4.029**	**3.754**	**5.033**

Table 4 reflects the results of the assessments when the Navy route is combined with each of the three other routes. This table is comparable with Table 7.17 of the Stage 2 SAR.

Table 4 – Revised results for combined COBA Assessments using Sensitivity Test flows

Impact		Red+Navy	Blue+Navy	Purple+Navy
A	Consumer User Benefits *(£000s)*	£60,653	£56,401	£50,225
B	Business User Benefits *(£000s)*	£59,191	£58,860	£50,647
C	Private Sector Provider Impacts *(£000s)*	£1,124	£546	£426
D	Accident Benefits *(£000s)*	£3,045	-£23,143	-£10,574
E	Emissions Benefits	£535	£188	£116
G	Present Value of Benefits (PVB) *(= A + B + C + D + E)*	£124,548	£92,852	£90,840
H	Present Value of Costs (PVC)	£40,117	£41,093	£43,999
I	Net Present Value (NPV) *(£000s) (= F — G)*	£84,431	£51,759	£46,841
	Benefit to Cost Ratio (BCR) *(= F / G)*	**3.105**	**2.260**	**2.065**

Table 5 reflects the results of the above assessments with the removal of Indirect Tax Revenues.

Table 5 – Revised combined Sensitivity Test results with Indirect Tax Revenues removed

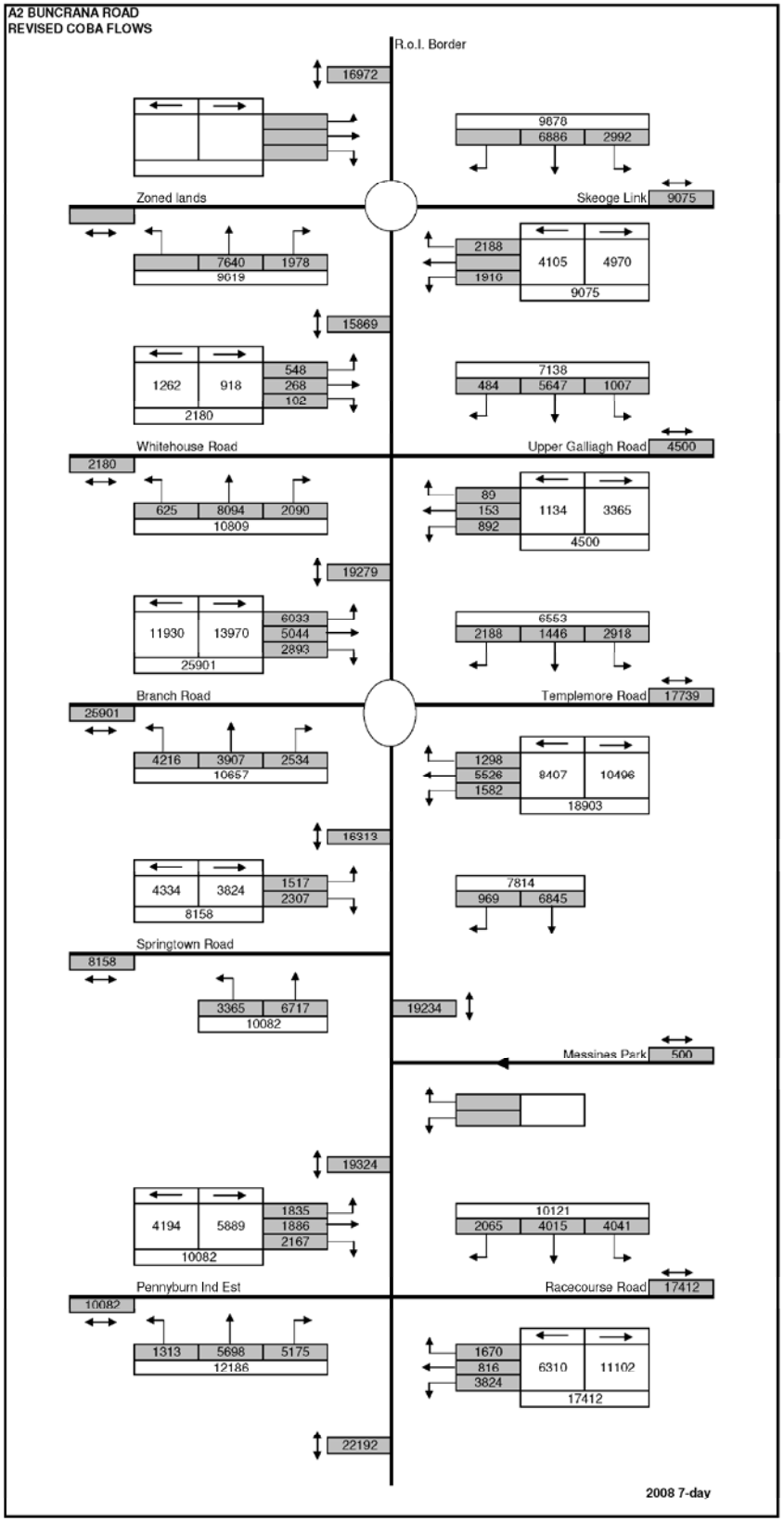
Impact	Red+Navy	Blue+Navy	Purple+Navy
Indirect Tax Revenues	-£4,604	-£1,611	-£1,003
Revised Present Value of Benefits (PVB)	£119,944	£91,241	£89,837
Revised Present Value of Costs (PVC)	£35,513	£39,482	£42,996
Net Present Value (NPV) *(£000s)*	£84,431	£51,759	46,841
Revised Benefit to Cost Ratio (BCR)	**3.377**	**2.311**	**2.089**

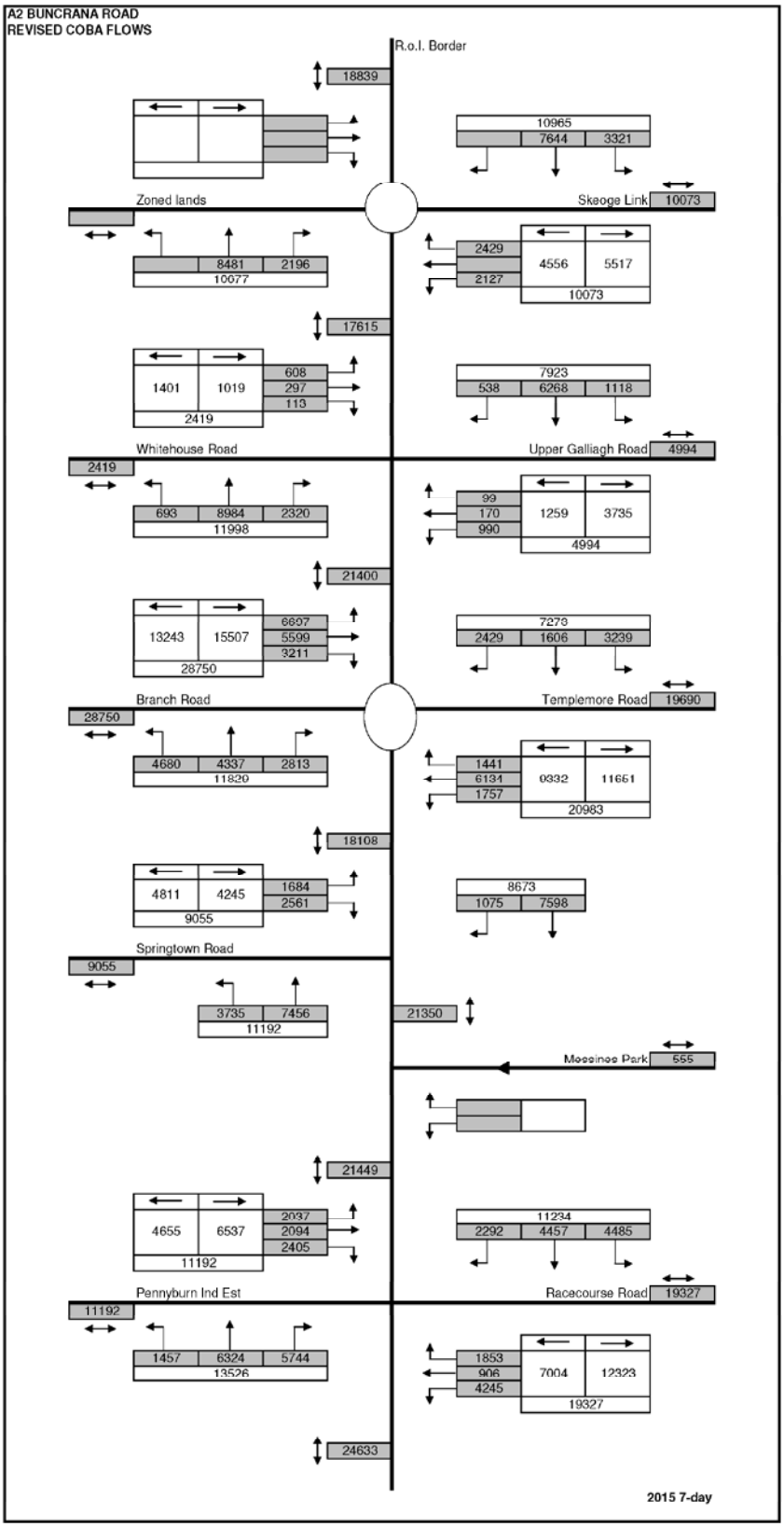
1.4 Conclusion

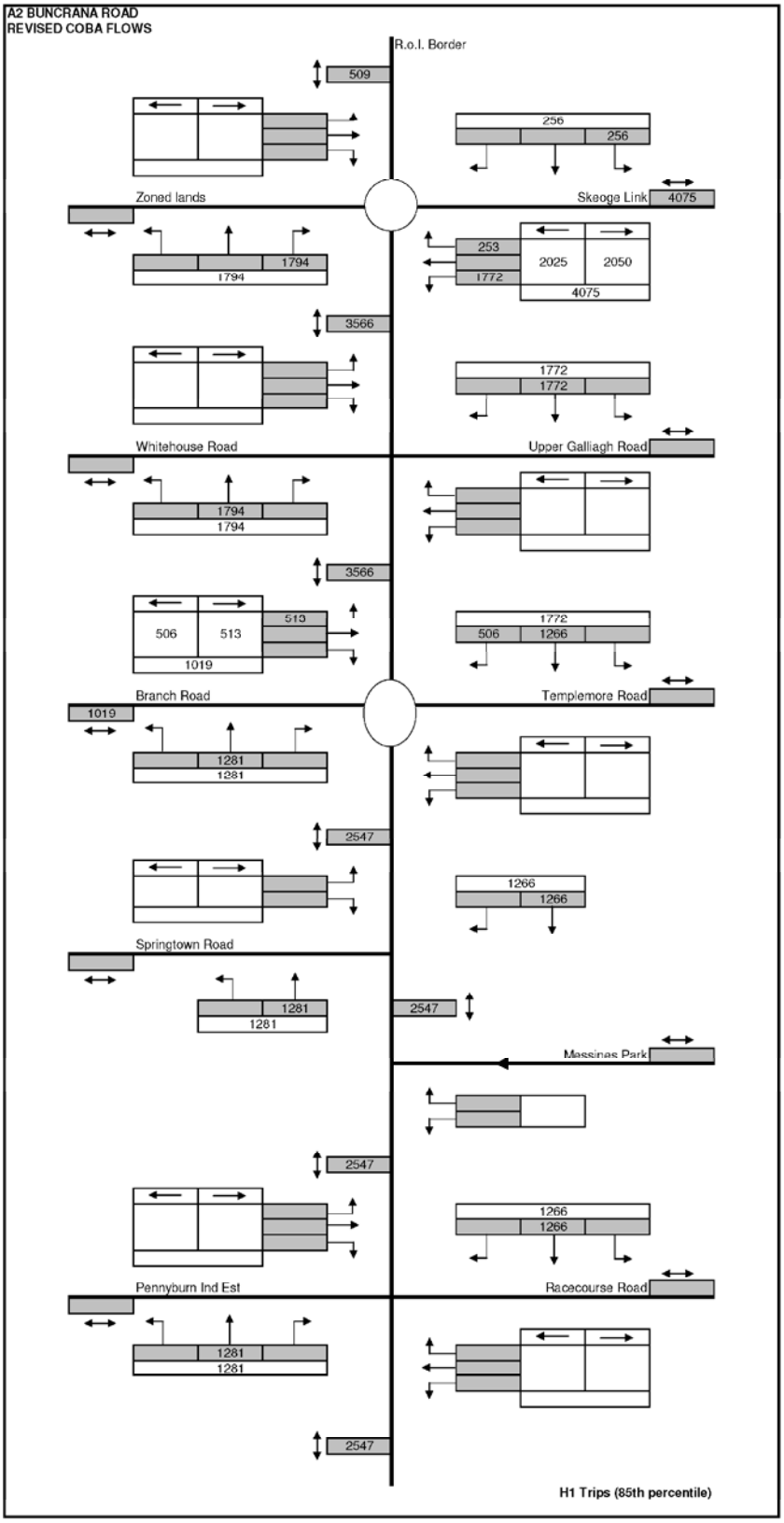
The above revised analyses suggest the following:

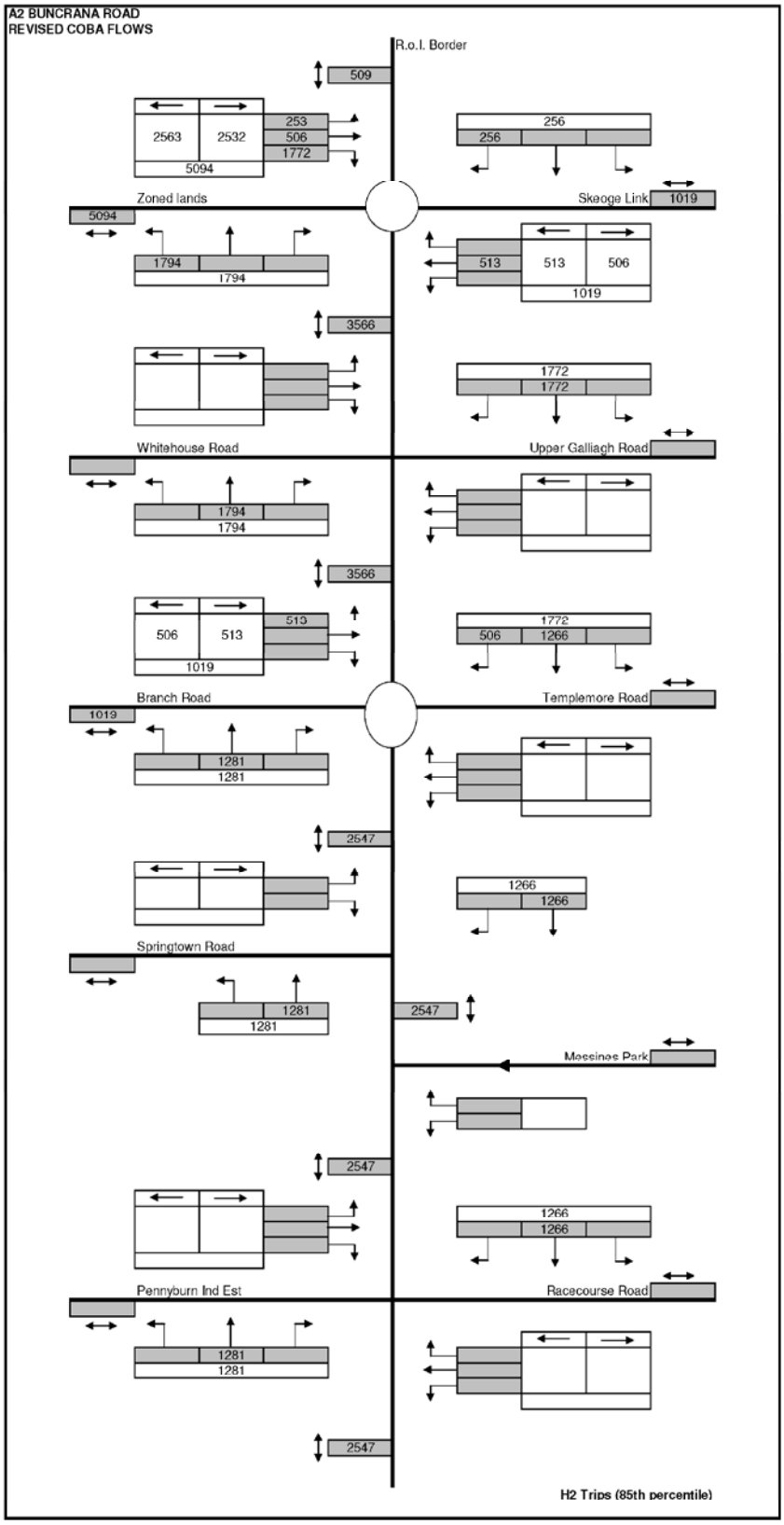
- Using the Sensitivity Test flows, the Red Route performs best, followed by Blue and then Purple, however the BCRs produced are much closer together (ranging between 4.5 – 3.5) than the BCRs included in the Stage 2 SAR (ranging between 10.0 – 5.6).
- Removing the Indirect Tax Revenues enables the Red Route to perform noticeably better than the other two routes in both flow scenarios (i.e. when the three routes are considered on their own, and when combined with the Navy Route).

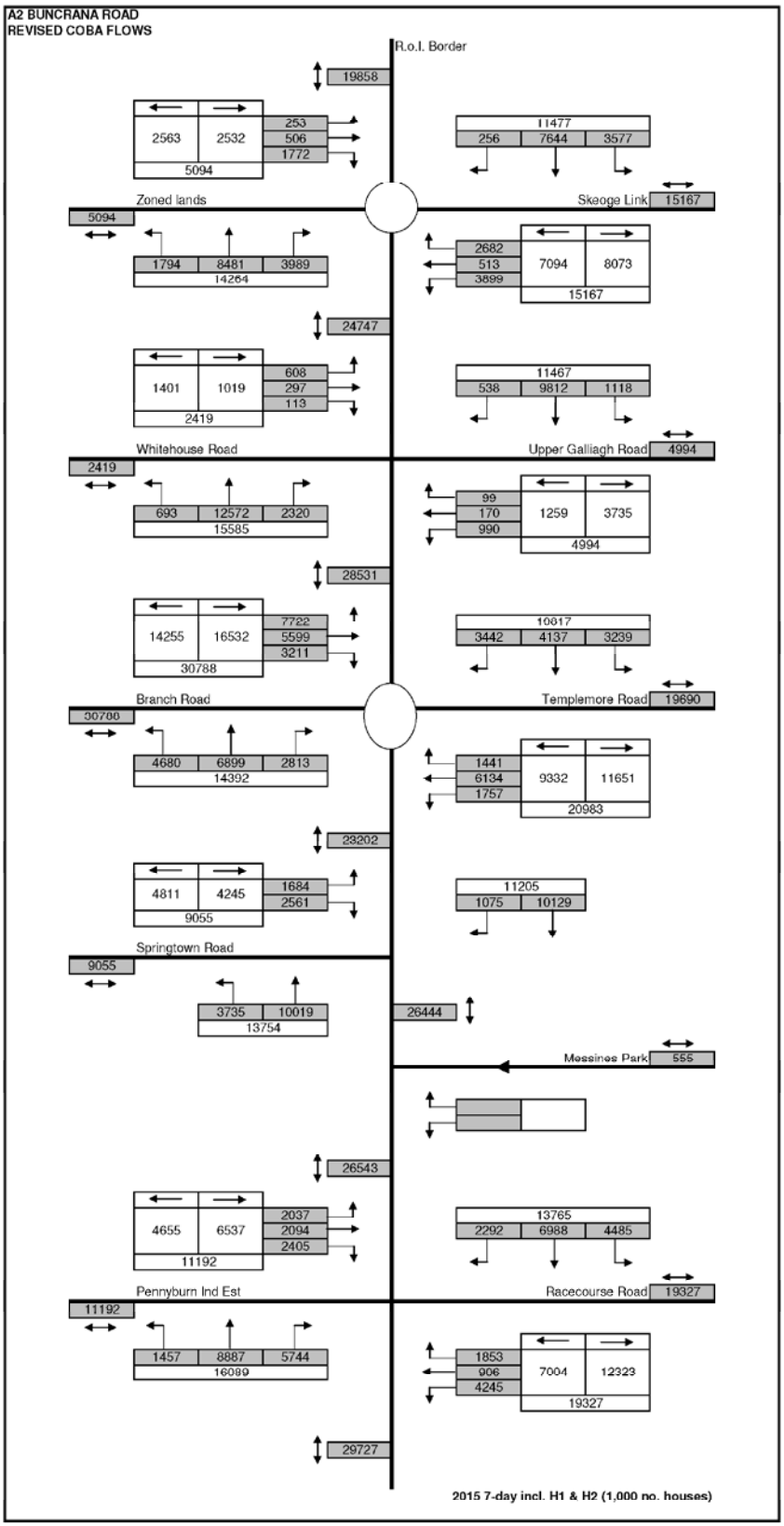
SENSITIVITY TEST FLOWS




A2 BUNCRANA ROAD
REVISED COBA FLOWS
R.o.l. Border
18839
10965
7644
3321
Zoned lands
Skeoge Link
10073
8481
2196
10077
2429
4556
5517
2127
10073
17615
1401
1019
608
297
113
2419
7923
538
6268
1118
Whitehouse Road
Upper Galliagh Road
4994
2419
693
8984
2320
11998
99
170
990
1259
3735
4994
21400
13243
15507
6607
5599
3211
28750
7278
2429
1606
3239
Branch Road
Templemore Road
19690
28750
4680
4337
2813
11829
1441
6134
1757
9332
11661
20983
18108
4811
4245
1684
2561
9055
8673
1075
7598
Springtown Road
9055
3735
7456
11192
21350
Meeting Park
555
21449
4655
6537
2037
2094
2405
11192
11234
2292
4457
4485
Pennyburn Ind Est
Racecourse Road
19327
11192
1457
6324
5744
13526
1853
906
4245
7004
12323
19327
24633
2015 7-day


A2 BUNCRANA ROAD
REVISED COBA FLOWS
R.o.I. Border
509
256
256
Zoned lands
Skeoge Link
4075
1794
1794
253
2025
2050
1772
4075
3566
1772
1772
Whitehouse Road
Upper Galliagh Road
1794
1794
3566
506
513
513
1019
1772
506
1266
Branch Road
Templemore Road
1019
1281
1281
2547
1266
1266
Springtown Road
1281
1281
2547
Massines Park
2547
1266
1266
Pennyburn Ind Est
Racecourse Road
1281
1281
2547
H1 Trips (85th percentile)


A2 BUNCRANA ROAD
REVISED COBA FLOWS
R.o.I. Border
509
2563
2532
253
506
1772
5094
256
256
Zoned lands
Skeoge Link
1019
5094
1794
1794
513
513
506
1019
3566
1772
1772
Whitehouse Road
Upper Galliagh Road
1794
1794
3566
506
513
513
1019
1772
506
1266
Branch Road
Templemore Road
1019
1281
1281
2547
1266
1266
Springtown Road
1281
1281
2547
Messines Park
2547
1266
1266
Pennyburn Ind Est
Racecourse Road
1281
1281
2547
H2 Trips (85th percentile)


A2 BUNCRANA ROAD
REVISED COBA FLOWS
R.o.I. Border
19858
2563
2532
253
506
1772
5094
11477
256
7644
3577
Zoned lands
5094
Skeoge Link
15167
1794
8481
3989
14264
2682
513
3899
7094
8073
15167
24747
1401
1019
608
297
113
2419
11467
538
9812
1118
Whitehouse Road
2419
Upper Galliagh Road
4994
693
12572
2320
15585
99
170
990
1259
3735
4994
28531
14255
16532
7722
5599
3211
30788
10617
3442
4137
3239
Branch Road
30788
Templemore Road
19690
4680
6899
2813
14392
1441
6134
1757
9332
11651
20983
23202
4811
4245
1684
2561
9055
11205
1075
10129
Springtown Road
9055
3735
10019
13754
26444
Messines Park
555
26543
4655
6537
2037
2094
2405
11192
13765
2292
6988
4485
Pennyburn Ind Est
11192
Racecourse Road
19327
1457
8887
5744
16089
1853
906
4245
7004
12323
19327
29727
2015 7-day incl. H1 & H2 (1,000 no. houses)