

moray offshore renewables ltd

Developing Wind Energy In The Outer Moray Firth

Environmental Statement

Modified Transmission Infrastructure for
Telford, Stevenson and MacColl Wind Farms

Technical Appendix 5.6 A

Transport Assessment



This document was produced by WYG Environment Planning Transport Ltd on behalf of Moray Offshore Renewables Ltd



Document Owner		Jordan Dunn			
Document Status		Final			
File Name		Technical Report – Transport Assessment.docx			
Revision	Date	Description	Originated By	Checked By	Approved By
A1	13 June 2014	Final	JD	GB	GB
A2					

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Table of Contents

1	Introduction.....	4
2	Development Proposals	5
2.1	Proposed Development	5
2.2	Access Strategy	6
2.3	Development Programme	6
2.4	Development Traffic Generation	6
3	Transport Planning Policy and Guidance	7
3.1	Legislation and Policy Context	7
4	Methodology	8
4.1	Introduction	8
4.2	Scoping.....	8
4.3	Appraisal Methodology.....	9
5	Baseline Conditions.....	13
5.1	Current Baseline	13
5.2	Traffic Volumes	14
5.3	Future Baseline	20
6	Potential Effects.....	22
6.1	Potential Construction and Decommissioning Effects.....	23
6.2	Potential Operational Effects.....	23
7	Mitigation	24
7.1	Mitigation By Design	24
7.2	Mitigation During Construction	24
7.3	Mitigation During Operation.....	25
8	Traffic Impact Assessment.....	26
8.1	Predicted Traffic Generation	26
8.2	Development Traffic Distribution	27
8.3	Predicted Traffic Effect	29
8.4	Link Capacity Assessment	36
8.5	Summary.....	36
9	Identification of Wider Effects and Significant Effects	37
9.1	Receptor Sensitivity	37
9.2	Effect Magnitude and Identification of Significant Effects	37
9.3	Cumulative Effects	38
10	Summary	39

1 Introduction

WYG has been commissioned by Moray Offshore Renewables Ltd (MORL) to undertake a Transport Assessment associated with the planning in principle application for the installation of the modified transmission infrastructure (modified TI). This study will focus on the onshore transmission infrastructure (OnTI) which includes the onshore aspects of the export cable and two substations to the south west of New Deer.

This report has been prepared in accordance with instructions from MORL on the above project details.

WYG has reviewed the transport issues associated with the construction of the development and with the operation of the development once the OnTI is in place.

The assessment undertook a review of the available information and assumed traffic numbers for a series of construction activities associated with the installation of the modified onshore export cable and construction of the substations. By quantifying the traffic associated with the construction activities, the significance of the likely effects were assessed by determining the increase in traffic.

The Transport Assessment forms Appendix 5.6A of Chapter 5.6 – Traffic and Transportation which along with the following Appendices assesses the likely transport effects and associated mitigation related to the OnTI;

- Construction Traffic Management Plan (CTMP) – Appendix 5.6B;
- Route Survey Report (RSR) – Appendix 5.6C; and
- Construction Traffic Method Statement – Appendix 5.6D.

Report Structure

Following this introductory chapter the report is structured as follows:

- **Chapter Two** describes the proposed development along with details of the construction programme and predicted traffic generation;
- **Chapter Three** reviews the relevant transport and planning policies;
- **Chapter Four** sets out the methodology used within the Transport Assessment (TA);
- **Chapter Five** sets out the baseline transport conditions encountered within the study area;
- **Chapter Six** provides a summary of potential impacts and associated transport related effects;
- **Chapter Seven** provides a summary of the proposed mitigation measures detailed within the accompanying CTMP – Appendix 5.6B;
- **Chapter Eight** provides an assessment of the traffic impact of the development of the site;
- **Chapter Nine** provides a review of the wider impacts likely to occur during the construction and operational phases along with suggested mitigation measures; and
- **Chapter Ten** summarises the findings of the Transport Assessment and outlines the key conclusions.

2 Development Proposals

2.1 Proposed Development

The proposed development is for the installation of modified TI to connect the three consented wind farms (Telford, Stevenson and MacColl offshore wind farms) the Outer Moray Firth to the pre-existing onshore National Electricity Transmission System (NETS).

The TI will include both offshore and onshore cable systems. An offshore cabling system from the three consented wind farms will come onshore at a landfall point at Inverboyndie bay. From there, underground onshore cabling will run southeastwards to connect with the NETS at New Deer which lies approximately 17 miles west of Peterhead in Aberdeenshire. Two substations located adjacent to one another will be located at New Deer to facilitate the connection of the TI to the NETS and are included in this assessment.

2.1.1 *OnTI*

The OnTI will be made up of the following key components:

- Underground cables;
- Transformers;
- Switchgear;
- Control and instrumentation equipment;
- Control buildings;
- Fenced compounds; and
- Access tracks.

The installation of the OnTI including the substations will require materials to be transported to site by road and, in addition to the above, temporary facilities including the provision of construction compounds, storage facilities and laydown areas.

One of the main traffic effects associated with the construction of the OnTI relates to the need to import abnormal indivisible loads (AILs) to the substation site. These loads will comprise the electrical equipment for the substation compounds (in particular the grid transformers). For this study, the port of Peterhead has been considered as the port of entry for the delivery of AILs for the substation construction.

There will also be a requirement to bring construction plant and materials (cable drums, concrete, pipes, blockwork, steel, etc.) to both the substations and cable route sites. These will be delivered by standard Heavy Goods Vehicles (HGVs).

Construction workers and operatives commuting to the site during the construction, commissioning, operation and maintenance and decommissioning periods would generate light-vehicle traffic, such as cars and Light Goods Vehicles (LGVs).

2.2 Access Strategy

Transportation to and from the modified export cable installation site would be via the existing trunk and local road networks. Studies relating to the exact route of the onshore cables within the 500 m wide limits of deviation are ongoing and, to date, no access points on the route have been identified for the traffic relating to the installation of the cable. Access points are likely to be located at roughly 2-4 km intervals along the length of the cabling route and will be located on A, B and C Class roads. The proposed track network will also cross the public highway at numerous points along the route.

The access point to the substations will be located on the C296 south of the junction with the C121B.

It is proposed that each access junction layout would be based on one of a series of standard layouts produced in line with Aberdeenshire Council (AC) standards for various road types including:

- High capacity, A class high speed road;
- Secondary route, high speed road;
- Secondary route, low speed road; and
- Unclassified road.

Proposed layouts for each road type are included within the accompanying CTMS – Appendix 5.6D.

2.3 Development Programme

Construction of the modified OnTI is likely to occur in phases between 2016 and 2019. The key stages associated with the construction are as follows:

- Installation of jointing pit at landfall site;
- Installation of cables between landfall site and onshore substation; and
- Construction of onshore substations.

2.4 Development Traffic Generation

Once operational, the OnTI assets will operate automatically with visits as required for periodic overhauls, scheduled maintenance and unscheduled maintenance. Traffic movements associated with the operation of the development would therefore be low.

The OnTI would be decommissioned following the end of their operational life. Decommissioning traffic would be a matter for the legislative process whenever the cable is decommissioned and would be addressed at that point.

Construction of the development will result in the highest traffic generation. The Transport Assessment therefore only considers this element.

3 Transport Planning Policy and Guidance

3.1 Legislation and Policy Context

A review of relevant transport and planning policies has been undertaken and is summarised below. The review provides the basis for the wider development context of the proposed development.

3.1.1 National Policy and Guidance

3.1.1.1 Scottish Planning Policy (SPP) 2010

Advice Note 75 (Planning for Transport). SPP is a statement of Scottish Government Policy on land use planning.

SPP notes that a Transport Assessment should be carried out where a change of use or new development is likely to result in a significant increase in the number of trips.

The SPP also states that *“the primary purpose of the strategic transport network is to provide for the safe and efficient movement of strategic long distance traffic between major centres, although in rural areas it also performs important local functions. Development proposals that have the potential to affect the performance or safety of the strategic transport network need to be appraised to determine their effects. If required, mitigation measures should be agreed with Transport Scotland that would, where practicable, achieve no net detriment to safety or in overall performance, including journey times and connections, emissions reduction and accessibility.”*

A review of the SPP is currently being undertaken with the draft SPP issued for consultation in April 2013 with the final policy due to be published in June 2014. In relation to the assessment of the transport impacts of development no major changes in policy are proposed.

3.1.2 Regional Policy and Guidance

3.1.2.1 Nestrans Regional Transport Strategy 2013

The Nestrans' Regional Transport Strategy (RTS) was approved by Scottish Ministers and published in 2008 and updated in 2013. Its stated vision is to provide a *“A transport system for the north east of Scotland which enables a more economically competitive, sustainable and socially inclusive society.”* The objectives of the strategy include:

- economy – to enhance and exploit the north east's competitive economic advantages, and reduce the impacts of peripherality;
- accessibility, safety and social inclusion – to enhance choice, accessibility and safety of transport for all in the north east, particularly for disadvantaged and vulnerable members of society and those living in areas where transport options are limited;
- environment – to conserve and enhance the north east's natural and built environment and heritage and reduce the effects of transport on climate, noise and air quality; and
- spatial planning – to support transport integration and a strong, vibrant and dynamic city centre and town centres across the north east.

3.1.3 Local Policy

3.1.3.1 Local Transport Strategy 2012

The Aberdeenshire Council Local Transport Strategy was adopted in 2012 with the aim to “*encourage individuals and businesses to consider ways to travel less, travel more actively and, where vehicular travel is necessary, how journeys could be made more effectively.*”

The strategy does not contain any specific policies relating to transmission infrastructure renewable energy or construction traffic although the general aims of the strategy particularly in relation to effective travel remain valid.

3.1.4 Guidance

3.1.4.1 Institute of Environmental Assessment (IEMA)/Guidelines for the Environmental Assessment of Road Traffic, 1993

The IEMA guidelines provide a reference for the assessment of the environmental impact of road traffic associated with major new developments. The purpose of the guidelines is to provide the basis for a systematic, consistent and comprehensive appraisal of traffic impacts for a wide range of development projects. The guidelines are not intended to be exhaustive nor a reference for the very detailed or specific problems that occur in assessing the environmental impact of traffic. The guidelines are intended to complement professional judgment as the environmental impact of traffic will vary project by project.

4 Methodology

4.1 Introduction

This section sets out the methods used to characterise existing and/or future baseline conditions at the site and in the surrounding area and is based on site visits, review of published information/maps, consultation, policy review etc.

Consideration has been given to the proposed access routes to the OnTI and the changes to trunk and local / minor road traffic patterns as a result of the additional development traffic on parts of the local road network. The assessment recommends measures to manage the effect of development traffic and to minimise disruption to the surrounding road network within the study area, and the assessment is undertaken on this basis.

4.2 Scoping

A scoping exercise relating to access, traffic and transport effects was undertaken with Transport Scotland and AC roads officers in May 2014 with the responses detailed in Table 4.1.

Table 4.1 Scoping Consultees

Organisation	Consultation Response
Aberdeenshire Council	AC satisfied with the proposed methodology. Principally concerned with traffic management measures rather than the likely traffic impact.
Transport Scotland	No response

4.3 Appraisal Methodology

4.3.1 Baseline Characterisation

The study area, agreed with AC roads, comprises the parts of the public road network that could be used by construction and operational traffic accessing the site. The roads identified as forming the likely route to site by construction traffic include the A97/A98/A947/B9105/B9170/B9121/C92S/C7S/C295.

The public road network that could be used by construction traffic accessing the site will also include numerous minor C/U Class routes that will be crossed by the proposed access track network.

The baseline review focuses on the nature of the surrounding road infrastructure and the level of traffic that uses it. It has been informed by desktop studies and consultation, comprising the following:

- Review of responses to the scoping letter;
- Collection of traffic flow data;
- Review of any roads hierarchy promoted in relevant Local Transport Strategies;
- Identification of sensitive junction locations;
- Identification of constraints to the roads network, with or without height/width/weight restrictions;
- Identification of areas of road safety concerns;
- Identification of other traffic sensitive receptors in the area (routes, communities, buildings etc.);
- Review of Ordnance Survey (OS) plans to derive a local area roads network; and
- Consideration of potential supply locations for construction materials, if not available on-site, to inform extent of local area roads network to be considered in the assessment.

Field surveys have also been undertaken to further enhance the understanding of the road network in the study area and to identify potential constraints on the network, including:

- Visual inspection of all roads identified in the study area network;
- Photographic/video record of any constraints; and
- Automatic Traffic Counts (ATC) to determine existing traffic flows on the surrounding road network.

4.3.2 Method of Assessment

The assessment has been undertaken in accordance with the Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic'. The IEMA guidelines include details on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for various receptors. The guidelines also identify the key effects that are most important when assessing the significance of traffic effects from an individual development: Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) entitled 'Assessment and Management of Environmental Effects' sets out four levels against which the magnitude of these effects should be assessed – major, moderate, low and negligible.

4.3.3 Significance Criteria

4.3.3.1 Receptor Sensitivity

The receptors that may be subject to any traffic effects arising from the construction of the proposed development are likely to be construction traffic routes and settlements along these. These settlements are classified by size, function, presence of school and community facilities, traffic calming or traffic management measures, vehicle speed limits and position on the roads hierarchy, using the criteria identified Table 4.2. This classification is based upon subjective judgement and relative sensitivity to the potential traffic effects of the modified OnTI.

Identification of receptor sensitivity requires the definition of both base-line conditions and estimation of conditions for the appropriate year of assessment. Each receptor will have a different value and level of sensitivity to change. Quantification of environmental effects is easier for some receptors than others. Traffic noise has been extensively researched and methods of measurement developed. Other effects such as severance are more subjective as there are no current proven or reliable techniques for study. Table 4.2 provides descriptions of receptor sensitivity based on DMRB guidelines HA 205/08 'Assessment and Magnitude of Environmental Effects'.

For many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed up by data or quantified information where possible.

Table 4-2 Receptor Sensitivity

Sensitivity	Description
High	Typically receptors with high importance and rarity on an international and national scale and with limited potential for substitution. To include large rural settlements containing a high number of community and public services and facilities, areas with traffic control signals, waiting and loading restrictions, traffic calming measures and minor rural roads, not constructed to accommodate frequent use by HGV.
Medium	Typically receptors with high or medium importance and rarity on a regional scale and with limited potential for substitution. To include intermediate sized rural settlements containing some community or public facilities and services, areas with some traffic calming or traffic management measures and local A or B class roads, capable of regular use by HGV traffic.
Low	Typically receptors with low or medium importance and rarity on a local scale (on-site or neighbouring the site). To include small rural settlements with few community or public facilities or services, areas with little or no traffic calming or traffic management measures and trunk or A-class roads, constructed to accommodate significant HGV composition.
Negligible	Typically receptors with little importance and rarity. To include roads with no adjacent settlements including new strategic trunk roads or motorways that would be little effected by additional traffic.

4.3.3.2 Magnitude of Effect

The IEMA guidelines identify general thresholds for traffic flow increases of 10% and 30%. The guidelines also suggest that 30%, 60% and 90% changes in traffic levels should be considered as “slight, moderate and substantial” effects respectively with regard to severance and intimidation. It is also generally considered that traffic flow increases of less than 10% are negligible, given that daily variation in background traffic flow may vary by this amount. Based on these guidelines and perceptions, the magnitude of the effect can be estimated for the traffic-based effects using the criteria in Table 4.3.

Table 4-3 Effect Magnitude

High	Medium	Low	Negligible
>90% increase in traffic	60% - 90% increase in traffic	30% - 60% increase in traffic	0% - 30% increase in traffic

4.3.3.3 Significance of Effect

To determine the overall significance of the effects, the results from the receptor sensitivity and effect magnitude classifications are correlated and classified using the scale summarised in Table 4.4.

Table 4-4 Matrix for Determination of Significance of Effect

Sensitivity Magnitude	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

For the purposes of assessing significant effects, under the EIA regulations, this matrix provides a guide subject to professional judgement. For example, the introduction of a low number of additional HGV movements on a route that is currently subject to low numbers of HGV trips is recorded as being highly statistically significant, even though the numbers of additional trips could be just five to ten additional vehicles. Despite the fact that additional traffic volumes may be exceptionally low, the effect may be statistically high. However, it is not necessarily significant in terms of the EIA regulations. Effects are considered to be significant for the purposes of the EIA Regulations where the effect is classified as being of equal to or greater than moderate significance.

5 Baseline Conditions

5.1 Current Baseline

5.1.1 Local Road Network

It is likely that the majority of traffic associated with the delivery of plant and materials associated with the cable installation and substation construction will originate from the trunk road network to the south and east of the site (A90/A96). Quarry sourced materials will arrive from local quarries surrounding the site with construction staff assumed to be based locally during the construction period. The assessment has focussed on the likely effect on the following roads identified as forming the likely routes to site by construction traffic:

- The A98 is the primary east-west route through the northern coast of Aberdeenshire running between the A96 at Fochabers and Fraserburgh. The road is single carriageway along its entirety;
- The A97 is a distributor road route running from Banff south to Huntly and the A96. The road is single carriageway along its entirety;
- The A947 is a distributor road route running from Banff south through Turriff before joining the A96 south of Dyce. The road is single carriageway along its entirety;
- The A948 is a distributor road running from New Deer to Ellon and the A90. The road is single carriageway along its entirety;
- The A981 is a distributor road running from Fraserburgh to New Deer and the A948. The road is single carriageway along its entirety;
- The B9105 is a rural distributor road running from the A98 at Cook through Fintry to the A947 north of Turriff. The road is single carriageway along its entirety;
- The B9170 is a rural distributor road running from the A947 south of Turriff through Cuminestown and New Deer before turning south to Inverurie. Construction traffic is likely to utilise the section of the route between the A947 and New Deer. The road is single carriageway along its entirety;
- The B9121 is a rural distributor road running between Whitehills and the A97 at Tipperty. A further section continues south from the A97 joining the B9025 at Slack of Scotston. Construction traffic is likely to utilise the section of the route between the A98 and the A97. The section of road within the study area is wide single track without passing places;
- The C9S is a minor rural road running from the A947 at Foulzie and the A98 at Fishriegreen. Construction traffic is unlikely to utilise this route. The section of road within the study area is single track without passing places;
- The C7S is a minor rural road running from the A947 at King Edward through Gorrachie to the C9S at Fishrie. Construction traffic is likely to utilise the section of the route between the A947 and Gorrachie. The section of road within the study area is single track without passing places;

- The C29S is a minor rural road running from the B9170 at Oldmill to the B9005 near Gight Castle. Construction traffic is likely to utilise the section of the route between the B9170 at Oldmill and the proposed substation. The section of road within the study area is wide single track without passing places; and
- The C121B is a minor rural road running from the B9170 near Hillhead of Auchreddie to the C26S at Keithen. Construction traffic is likely to utilise the section of the route between the B9170 near Hillhead of Auchreddie and Burnside. The section of road within the study area is wide single track without passing places.

5.2 Traffic Volumes

As part of the scoping discussions 17 sites were identified that would allow an accurate estimate of the potential impact of the construction phase to be made. To gauge existing usage, ATC surveys were commissioned at the following locations:

- A98 west of Boyndie;
- B9121 south of Fiskaidly;
- A98 west of the B9038;
- A97 south of B9121;
- A947 near Keilhill;
- C92S east of Foulzie;
- C7s west of Gorrachie;
- B9105 south of Fintry;
- A947 north of Turriff;
- A947 south of the B992;
- A98 east of the B9027;
- B9170 west of Cuminestown;
- C29S south of Cuminestown;
- C121B west of C295;
- B9170 west of New Deer;
- A948 west of the B9028; and
- A981 west of the B9028.

For each location, one week's worth of count data was collected during June 2014 as agreed with AC roads with the locations surveyed illustrated in Plates 5.1 and 5.2.

Plate 5-1 Traffic Survey Locations (Northern Section)

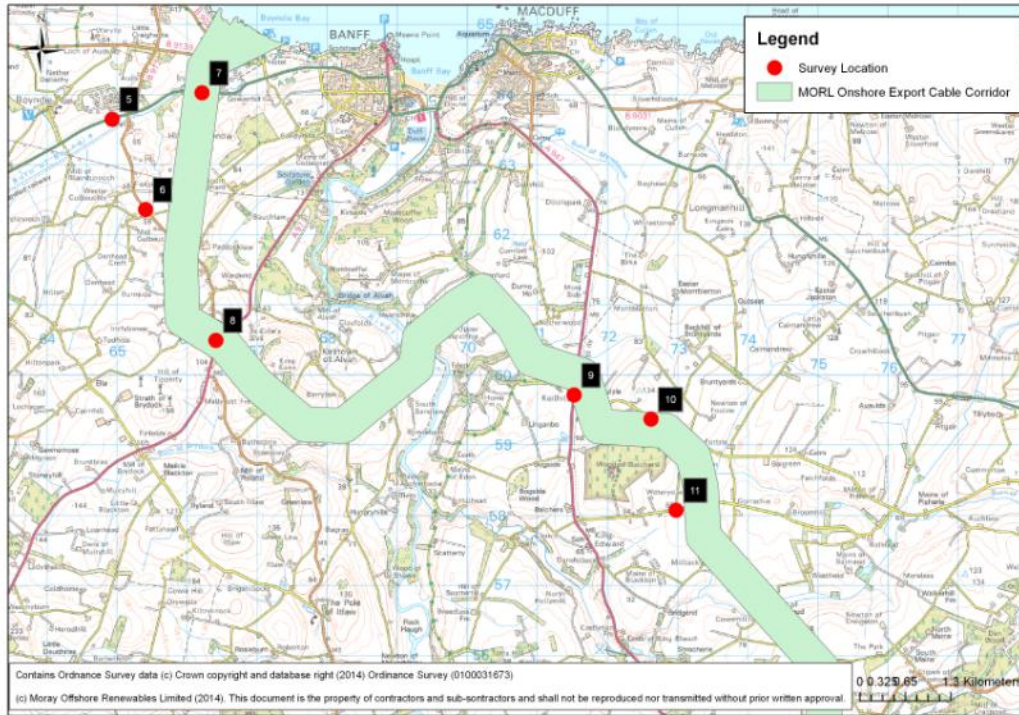
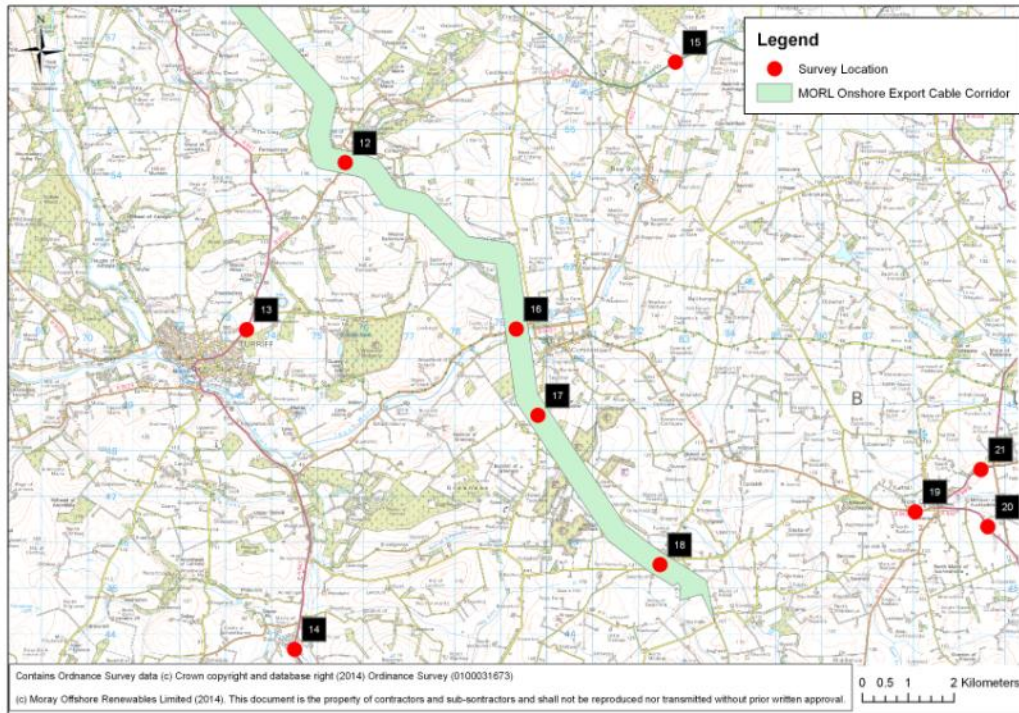


Plate 5-2 Traffic Survey Locations (Southern Section)



The counters installed on the A947 near Keilhill, A948 west of the B9028 and A981 west of the B9028 were damaged during the survey period. The A948 and A981 counters were able to provide two weekdays worth of data and this is considered adequate to provide an estimate of the likely weekday traffic flows. The counter on the A947 north of Turriff has been used as a proxy for the A947 Keilhill counter due to the lack of usable data.

The traffic counters used allowed the traffic flows to be split into vehicle classes as well into overall directional traffic volume. The vehicle classes reported in the survey were as follows:

- Motorcycles and pedal cycles;
- Cars;
- Lights – this classification covers light goods vehicles (up to 3.5 tonne) and cars with trailers/caravans;
- Other goods vehicles – Class 1 (OGV1) & buses; this classification covers smaller commercial vehicles between 3.5 and 7.5 tonnes and includes rigid 2 and 3 axle trucks and articulated trucks up to 3 axles as well as buses and coaches; and
- Other Goods Vehicles – Class 2 (OGV2); this classification covers all heavy goods vehicles with four or more axles.

Table 5.1 summarises the weekday traffic data collected at the 17 sites with data split into the following categories:

- Cars/Lights; and
- HGV (OGV 1 + OGV 2).

Table 5-1 Existing Traffic Flows (Weekday Average Two Way Flows)

Survey Location	Time Period	Cars / Lights	HGV	Total
A98 west of Boyndie	12 Hours	3466	856	4322
	24 Hours	4174	989	5163
B9121 south of Fiskaidly	12 Hours	227	50	278
	24 Hours	279	58	337
A98 west of the B9038	12 Hours	5342	874	6217
	24 Hours	6475	1003	7478
A97 south of B9121	12 Hours	1003	215	1219
	24 Hours	1189	223	1411
A947 near Keilhill	12 Hours	5196	907	6103
	24 Hours	6471	1072	7543
C9S east of Foulzie	12 Hours	48	16	64
	24 Hours	59	18	78
C7S west of Gorrachie	12 Hours	109	31	140
	24 Hours	130	37	167
B9105 south of Fintry	12 Hours	1004	223	1227
	24 Hours	1217	255	1427
A947 north of Turriff	12 Hours	5196	907	6103
	24 Hours	6471	1072	7543
A947 south of the B992	12 Hours	3491	725	4216
	24 Hours	4588	895	5482
A98 east of the B9027	12 Hours	2576	735	3311
	24 Hours	3029	838	3867
B9170 west of Cuminestown	12 Hours	1515	377	1892
	24 Hours	1870	438	2308
C29S south of Cuminestown	12 Hours	327	73	401

Survey Location	Time Period	Cars / Lights	HGV	Total
	24 Hours	416	87	503
C121B west of C29S	12 Hours	190	43	233
	24 Hours	234	51	285
B9170 west of New Deer	12 Hours	1232	354	1587
	24 Hours	1552	409	1962
A948 west of the B9028	12 Hours	826	188	1013
	24 Hours	1094	225	1319
A981 west of the B9028	12 Hours	2241	393	2634
	24 Hours	2865	465	3320

5.2.1 Traffic Speeds

The ATC surveys were also used to collect speed statistics. The 5-day average and 85th percentile speeds observed at the count locations are summarised below in Table 5.2.

Table 5-2 Speed Summary (Two Way)

Survey Location	Average Speed	85 th Percentile Speed	Speed Limit
A98 west of Boyndie	56	66	60
B9121 south of Fiskaidly	36.3	44.2	60
A98 west of the B9038	39.8	52.6	60
A97 south of B9121	50.3	60.9	60
A947 near Keilhill	56.5	67.4	60
C92S east of Foulzie	41.9	56.0	60
C7s west of Gorrachie	49.8	58.1	60
B9105 south of Fintry	39.1	45.9	60
A947 north of Turriff	56.7	66.0	60
A947 south of the B992	58.1	65.8	60
A98 east of the B9027	58.1	65.8	60
B9170 west of Cuminestown	45.1	54.8	60
C29S south of Cuminestown	48.7	56.0	60
C121B west of C295	34.9	45.2	60
B9170 west of New Deer	48.8	56.7	60
A948 west of the B9028	44.9	51.0	60
A981 west of the B9028	45.8	54.3	60

5.2.2 Accident History

Road traffic accident data was obtained for the four years from the start of 2009 to the end of 2012 at the following locations which form the study area:

- A98 between the A947 and B9121;
- B9121 between the A98 and A97;
- A97 between the A98 and B9121;
- A947 between the A98 and Turriff;
- B9105;
- B9170 between the A947 and New Deer;
- C7S between the A947 and Gorrachie; and
- C121B.

Appendix A of this report provides a summary of the 73 injury accidents recorded on the routes for the four year period. There is no obvious pattern in relation to the injury accidents recorded with the majority of accidents located on the A947 to the south of Banff and only two accidents recorded involving HGVs.

5.3 Future Baseline

Construction of the OnTI would be completed by 2021 subject to planning consent from AC. For the purpose of this assessment, a 37 month construction period has been assumed with the peak construction period occurring during 2018. Any lengthening in the programme would have a reduced effect on the surrounding road network in respect to overall trip generation.

To assess the likely effects during the construction phase, base year traffic flows were determined by applying the National Road Traffic Forecast (NRTF) high growth factors to the surveyed traffic flows. Applying high NRTF growth factors provides a robust assessment as they represent higher than average growth. The NRTF high growth factor is 1.0670.

2018 Base traffic conditions are indicated in Table 5.4.

Table 5-4 2018 Base Traffic Flows (Weekday Average Two Way Flows)

Survey Location	Time Period	Cars / Lights	HGV	Total
A98 west of Boyndie	12 Hours	3698	913	4612
	24 Hours	4454	1055	5509
B9121 south of Fiskaidly	12 Hours	242	53	297
	24 Hours	298	62	360
A98 west of the B9038	12 Hours	5700	933	6634

Survey Location	Time Period	Cars / Lights	HGV	Total
	24 Hours	6909	1070	7979
A97 south of B9121	12 Hours	1070	229	1301
	24 Hours	1269	238	1506
A947 near Keilhill	12 Hours	5544	968	6512
	24 Hours	6905	1144	8048
C92S east of Foulzie	12 Hours	51	17	68
	24 Hours	63	19	83
C7s west of Gorrachie	12 Hours	116	33	149
	24 Hours	139	39	178
B9105 south of Fintry	12 Hours	1071	238	1309
	24 Hours	1299	272	1523
A947 north of Turriff	12 Hours	5544	968	6512
	24 Hours	6905	1144	8048
A947 south of the B992	12 Hours	3725	774	4498
	24 Hours	4895	955	5849
A98 east of the B9027	12 Hours	2749	784	3533
	24 Hours	3232	894	4126
B9170 west of Cuminestown	12 Hours	1617	402	2019
	24 Hours	1995	467	2463
C29S south of Cuminestown	12 Hours	349	78	428
	24 Hours	444	93	537
C121B west of C295	12 Hours	203	46	249
	24 Hours	250	54	304
B9170 west of New Deer	12 Hours	1315	378	1693
	24 Hours	1656	436	2093
A948 west of the B9028	12 Hours	881	201	1081

Survey Location	Time Period	Cars / Lights	HGV	Total
	24 Hours	1167	240	1407
A981 west of the B9028	12 Hours	2391	419	2810
	24 Hours	3057	496	3542

6 Potential Effects

Potential traffic and transport effects associated with the modified OnTI would be related to traffic movements during the construction period. During construction, vehicles would access the site transporting construction staff, construction materials (aggregates, sand, cable), plant items and substation components.

As described in Section 2.4 potential effects during the operational phase would be extremely unlikely due to the low levels of movements.

The perception of changes in traffic is dependent upon a wide range of factors including its volume, speeds, function and its composition (e.g. percentage of heavy goods vehicles). Therefore, the assessment of the environmental effects of traffic requires a number of stages, namely:

- Determination of existing and forecast traffic levels and characteristics;
- Determining the time period suitable for assessment;
- Determining the year of assessment; and
- Identifying the geographical boundaries of assessment.

In accordance with the Guidelines, the assessment was undertaken on road links where:

- Traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and
- Traffic flows are predicted to increase by 10% or more in any other specifically sensitive areas.

6.1 Potential Construction and Decommissioning Effects

The assessment presents the potential effects of construction traffic, and identifies those which are likely to be significant.

The effects recommended to be potentially important in the EIA guidelines, when assessing the traffic effects from an individual development, listed below, have been considered.

- Severance – severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery resulting from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself;
- Driver delay – these delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.
- Pedestrian delay – the delay to pedestrians, as with driver delay, is likely only at, or close to the capacity of the system;
- Pedestrian amenity – the guidelines for the environmental assessment of road traffic suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where traffic flow (or its lorry component) is halved or doubled;
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of danger, or fear and intimidation, from known traffic and physical conditions;
- Accidents and safety – professional judgement will be used to assess the implications of local circumstances, or factors which elevate or lessen risks of accidents; and
- Dust and dirt – there are no simple formulas to predict the levels of dust and dirt which might arise although an estimation of the likely construction volumes will be useful background to provide an informed decision.

No consideration of possible decommissioning effects has been included as part of this assessment. At the end of the proposed development's operational life, there may be an impact on the local road network due to the movements of HGVs associated with the removal of equipment and materials. However, the number of vehicle movements is anticipated to be lower than that predicted for construction and any baseline data collected for the purposes of this assessment would not be relevant so far in the future.

6.2 Potential Operational Effects

Significant effects related to traffic movements during the operational phase are unlikely to arise. The traffic generated once the site is operational would be associated mainly with service and maintenance trips using mainly 4x4 type vehicles with potentially occasional HGV movements to access the site for heavier maintenance and repairs.

7 Mitigation

The primary mitigation measure to help minimise the effects of the construction traffic was careful consideration of the road network to identify a preferred route to and from the access junction to the proposed development. This considered physical characteristics of the roads network and the number and location of potentially sensitive receptors along the various routes.

7.1 Mitigation By Design

The proposed access strategy has been designed to minimise the effect of construction traffic on rural C and U Class roads. Where possible, access junctions relating to the onshore cable route will be positioned on the A and B class road network.

The accompanying CTMS – Appendix 5.6D provides further information in relation to the proposed access strategy during the construction phase.

7.2 Mitigation During Construction

The access routes for construction traffic from the strategic road network to the proposed track network will be finalised following the confirmation of the proposed cable route and the appointment of the main contractor.

The local road network in the vicinity of the modified OnTI generally consists of 5 m wide narrow single carriageway roads. It is likely that upgrades to the local road network may be required in specific areas subject to confirmation of the final access route and these will be agreed with AC prior to construction. Upgrades are likely to take the form of localised carriageway widening and carriageway strengthening to ensure the safe movement of construction traffic.

Additional mitigation is likely to be required to accommodate the transport of the abnormal transformer components and this is detailed in the accompanying Route Survey Report (RSR) and associated CTMP – Appendix 5.6B.

During the construction period the Applicant would maintain a website containing the latest information relating to traffic movements associated with vehicles accessing the site. This will be agreed with the local roads authority.

The following measures are recommended in terms of site operation and maintenance during the construction phase;

- All materials delivery lorries (dry materials) would be sheeted to reduce dust and stop spillage on public roads; and
- Specific training and disciplinary measures would be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway, wheel wash facilities will be established at the site entrance.

The CTMP – Appendix 5.6B sets out measures to be put in place to reduce the impact of noise, dust and excessive speed.

Vehicles will be fitted with identification numbers to allow the public to identify any vehicles that may be speeding or causing specific issues and drivers will be required to pass through sensitive areas at low speed.

In order to mitigate against pedestrian amenity effects, it is recommended that construction traffic is discouraged from travelling through settlements such as Fintry, Cuminestown, New Deer and New Blyth during peak school hours.

A road sweeper would also be deployed on the various sections of the road network close to site access junctions to ensure that the road network is kept clean and free running.

Wherever possible, contractors will be encouraged to use low emissions vehicles through the CTMP thus mitigating against air pollution.

7.3 Mitigation During Operation

Site roads would be well maintained and monitored to limit any material being brought onto public roads by maintenance traffic travelling to and from site during the operational phase.

8 Traffic Impact Assessment

8.1 Predicted Traffic Generation

The assessment is based upon construction traffic estimates derived by the Applicant over the estimated 37 month construction period for the modified OnTI. The estimated construction traffic movements are provided in full in Appendix B of this report and summarised in Table 8.1 below.

Table 8-1 Predicted Construction Trips

Activity	Total Trips (Two Way)	Peak Month Trips (Two Way)	Daily Trips (Two Way)
Landing Point			
Set Up	116	0	0
Excavation	68	0	0
Piling	34	0	0
Construction Works	31	16	2
Cable Installation	32	32	2
Remediation	58	58	4
General Supplies	48	16	2
Staff	720	240	10
Onshore Cable			
Set Up	320	0	0
Excavation	32093	6074	254
Laying	5051	631	26
Jointing	456	76	4
Backfill	104	17	2
Remediation	6501	0	0
General Supplies	572	44	2
Staff	11232	864	2
Substation			

Activity	Total Trips (Two Way)	Peak Month Trips (Two Way)	Daily Trips (Two Way)
Setup	204	0	0
Site Preparation	128	0	0
Foundations	1256	0	0
Buildings	300	0	0
AIL deliveries	132	0	0
Installations	600	0	0
Commissioning	128	0	0
Remediation	128	43	2
General Supplies	960	40	2
Staff	9504	396	16

8.2 Development Traffic Distribution

8.2.1 Landfall Point

It is assumed that quarry sourced construction materials will approach by way of the B9139 or the A98 through Banff with 50 % approaching from either direction. Exported fill material will leave the site in the opposite direction.

The remaining construction traffic will approach by way of the A96 split evenly between the A98 and the A947. Construction staff will approach by way of the A98 from the east.

All construction traffic will access the landing area by way of an access junction on the B9038 north of Inverboyndie.

8.2.2 Onshore Export Cable Corridor

In order to distribute traffic associated with the 33 km long cable corridor the corridor has been split into three distinct sections as follows:

- Section 1 – Proposed substation to the B9105 south of Fintry with an approximate length of 13 km;
- Section 2 – B9170 west of Cuminestown to the River Deveron with an approximate length of 11 km; and
- Section 3 – River Deveron to the landing area with an approximate length of 9 km.

8.2.2.1 Cable Section 1

It is assumed that quarry sourced materials will approach by way of the A98/B9027/B9170 or A947/B9170. Exported fill material will leave the site in the opposite direction.

The remaining construction traffic will approach by way of the A96/A947/B9170/B9105 or the A90/A948/B9170 with 50 % approaching from either direction. Construction staff will approach by way of the A947/B9170/B9105 or the A948/B9170 with 50 % approaching from either direction.

Cable section 1 is likely to have four main access points along this section of the route with traffic distributed as follows:

- C121B west of the C295 – 33 %;
- C29S south of Cuminestown – 11 %;
- B9170 west of Cuminestown – 23 %; and
- B9105 south of Fintry – 33 %.

8.2.2.2 Cable Section 2

It is assumed that quarry sourced materials will approach by way of the A947 or A98/B9105. Exported fill material will leave the site in the opposite direction.

The remaining construction traffic will approach by way of the A96/A98/A947 or A947 with 50% approaching from either direction. Construction staff will approach by way of the A947 with 50% approaching from either direction.

Cable section 2 is likely to have three main access points along this section of the route with traffic distributed as follows:

- B9105 south of Fintry – 34 %.
- C7S west of Gorrachie – 33 %; and
- A947 north of Keilhill – 33 %.

8.2.2.3 Cable Section 3

It is assumed that quarry sourced materials will approach from the north by way of the B9139/B9121 or the A98 through Banff with 50 % approaching from either direction. Exported fill material will leave the site in the opposite direction.

The remaining construction traffic will approach by way of the A96 split evenly between the A98 and the A947. Construction staff will approach by way of the A98 from the east.

Cable section 3 is likely to have three main access points along this section of the route with traffic distributed as follows:

- A97 south of Tippetty– 34 %.
- B9121 north of Tippetty – 33 %; and
- A98 west of Inverboyndie – 33 %.

8.2.3 Substations

It is assumed that quarry sourced materials will approach by way of the A98/B9027/B9170/C295. Exported fill material will leave the site in the opposite direction.

The remaining construction traffic will approach by way of the A90 split evenly between the A981 and A948 and then following the B9170/C121B/C295 to site. Construction staff will approach by way of the A948/B9170/ C121B/C295.

8.3 Predicted Traffic Effect

The 2018 future year traffic data was combined with the peak daily construction traffic flows to estimate the total trips on the study network during the peak of the construction phase. This was then distributed across the road network.

Table 8.2 illustrates the peak weekday 2018 construction traffic flow; Table 8.3, the 2018 Base plus peak construction traffic (Total) flows; and Table 8.4, the percentage increase in 2018 Total traffic over 2018 Base traffic.

Table 8-2 Weekday Construction Traffic (Weekday Average Two Way Flows)

Survey Location	Time Period	Cars / Lights	HGV	Total
A98 west of Boyndie	12 Hours	0	50	50
	24 Hours	0	50	50
B9121 south of Fiskaidly	12 Hours	3	27	30
	24 Hours	3	27	30
A98 west of the B9038	12 Hours	16	77	94
	24 Hours	16	77	94
A97 south of B9121	12 Hours	3	28	31
	24 Hours	3	28	31
A947 near Keilhill	12 Hours	6	92	98
	24 Hours	6	92	98
C92S east of Foulzie	12 Hours	0	0	0
	24 Hours	0	0	0
C7s west of Gorrachie	12 Hours	4	30	34
	24 Hours	4	30	34
B9105 south of Fintry	12 Hours	9	68	77
	24 Hours	9	68	77
A947 north of Turriff	12 Hours	10	34	43
	24 Hours	10	34	43
A947 south of the B992	12 Hours	0	8	8
	24 Hours	0	8	8
A98 east of the B9027	12 Hours	0	54	54
	24 Hours	0	54	54
B9170 west of Cuminestown	12 Hours	3	26	29
	24 Hours	3	26	29

Survey Location	Time Period	Cars / Lights	HGV	Total
C29S south of Cuminestown	12 Hours	2	13	14
	24 Hours	2	13	14
C121B west of C295	12 Hours	21	42	62
	24 Hours	21	42	62
B9170 west of New Deer	12 Hours	23	7	30
	24 Hours	23	7	30
A948 west of the B9028	12 Hours	23	7	30
	24 Hours	23	7	30
A981 west of the B9028	12 Hours	0	0	0
	24 Hours	0	0	0

Table 8-3 2018 Total Flows (Weekday Average Two Way Flows)

Survey Location		Cars / Lights	HGV	Total
A98 west of Boyndie	12 Hours	3698	963	4662
	24 Hours	4454	1105	5559
B9121 south of Fiskaidly	12 Hours	245	80	327
	24 Hours	301	89	390
A98 west of the B9038	12 Hours	5716	1010	6728
	24 Hours	6925	1147	8073
A97 south of B9121	12 Hours	1073	257	1332
	24 Hours	1272	266	1537
A947 near Keilhill	12 Hours	5550	1060	6610
	24 Hours	6911	1236	8146
C92S east of Foulzie	12 Hours	51	17	68
	24 Hours	63	19	83
C7s west of Gorrachie	12 Hours	120	63	183
	24 Hours	143	69	212
B9105 south of Fintry	12 Hours	1080	306	1386
	24 Hours	1308	340	1600
A947 north of Turriff	12 Hours	5554	1002	6555
	24 Hours	6915	1178	8091
A947 south of the B992	12 Hours	3725	782	4506
	24 Hours	4895	963	5857
A98 east of the B9027	12 Hours	2749	838	3587
	24 Hours	3232	948	4180
B9170 west of Cuminestown	12 Hours	1620	428	2048
	24 Hours	1998	493	2492

Survey Location		Cars / Lights	HGV	Total
C29S south of Cuminestown	12 Hours	351	91	442
	24 Hours	446	106	551
C121B west of C295	12 Hours	224	88	311
	24 Hours	271	96	366
B9170 west of New Deer	12 Hours	1338	385	1723
	24 Hours	1679	443	2123
A948 west of the B9028	12 Hours	904	208	1111
	24 Hours	1190	247	1437
A981 west of the B9028	12 Hours	2391	419	2810
	24 Hours	3057	496	3542

Table 8-4 Percentage Impact Increase 2018 Base v 2018 Total (Weekday Average Two Way Flows)

Survey Location		Cars / Lights	HGV	Total
A98 west of Boyndie	12 Hours	0%	5.48%	1.08%
	24 Hours	0%	4.74%	0.91%
B9121 south of Fiskaidly	12 Hours	1.24%	50.94%	10.10%
	24 Hours	1.01%	43.55%	8.33%
A98 west of the B9038	12 Hours	0.28%	8.25%	1.42%
	24 Hours	0.23%	7.20%	1.18%
A97 south of B9121	12 Hours	0.28%	12.23%	2.38%
	24 Hours	0.24%	11.76%	2.06%
A947 near Keilhill	12 Hours	0.11%	9.50%	1.50%
	24 Hours	0.09%	8.04%	1.22%
C92S east of Foulzie	12 Hours	0%	0%	0%
	24 Hours	0%	0%	0%
C7s west of Gorrachie	12 Hours	3.45%	90.91%	22.82%
	24 Hours	2.88%	76.92%	19.10%
B9105 south of Fintry	12 Hours	0.84%	28.57%	5.88%
	24 Hours	0.69%	25.00%	5.06%
A947 north of Turriff	12 Hours	0.18%	3.51%	0.66%
	24 Hours	0.14%	2.97%	0.53%
A947 south of the B992	12 Hours	0%	1.03%	0.18%
	24 Hours	0%	0.84%	0.14%
A98 east of the B9027	12 Hours	0%	6.89%	1.53%
	24 Hours	0%	6.04%	1.31%
B9170 west of Cuminestown	12 Hours	0.19%	6.47%	1.44%

Survey Location		Cars / Lights	HGV	Total
	24 Hours	0.15%	5.57%	1.18%
C29S south of Cuminestown	12 Hours	0.57%	16.67%	3.27%
	24 Hours	0.45%	13.98%	2.62%
C121B west of C295	12 Hours	10.34%	91.30%	24.90%
	24 Hours	8.40%	77.78%	20.39%
B9170 west of New Deer	12 Hours	1.75%	1.85%	1.77%
	24 Hours	1.39%	1.61%	1.43%
A948 west of the B9028	12 Hours	2.61%	3.49%	2.78%
	24 Hours	1.97%	2.92%	2.13%
A981 west of the B9028	12 Hours	0%	0%	0%
	24 Hours	0%	0%	0%

8.4 Link Capacity Assessment

The average link capacities for the various links within the study area have been estimated using the NESAs Manual, Chapter 3. The theoretical capacities are detailed below:

- A98 – around 14,400 vehicles per 12 hours;
- B9121 – around 1,680 vehicles per 12 hours;
- A97 – around 14,400 vehicles per 12 hours;
- A947 – around 14,400 vehicles per 12 hours;
- C92S – around 1,680 vehicles per 12 hours;
- C7S – around 1,680 vehicles per 12 hours;
- B9105 – around 10,800 vehicles per 12 hours;
- B9170 – around 9,600 vehicles per 12 hours;
- C29S – around 1,680 vehicles per 12 hours;
- C121B – around 1,680 vehicles per 12 hours;
- A948 – around 10,800 vehicles per 12 hours;
- A981 – around 10,800 vehicles per 12 hours;

A comparison of the theoretical capacity versus the estimated '2018 Future Year Traffic Base Traffic Flow + Construction Phase Trips' 12-hour flows for the links in the network is illustrated in Graph 8.1 in Appendix C.

8.5 Summary

The impact review was undertaken for weekday conditions and the results indicate that the greatest impact of construction traffic will be on the B/C Class sections of the road network represented in the assessment by the B9105/B9121/C7s/C29s/C121B. However, this reflects the low number of trips and particular HGV trips on these sections of the road network. The comparison of development traffic flows with theoretical link capacities indicates that there is significant spare capacity on the local road network and no link capacity issues associated with the construction traffic would be anticipated.

With reference to the IEMA guidelines, total traffic flows are not predicted to increase by more than 30 % on any link although HGV levels will increase by more than 30 % on B9121/C7s/C121B. The critical links are therefore considered to be the above along with B0105 and C29s which are considered to be sensitive locations. The maximum number of additional HGV movements per day is 92 on the A947. This is considered low when spread over the course of a day on an A Class road.

A route evaluation has been carried out for the minor road network against the key environmental criteria identified by the IEMA guidelines.

9 Identification of Wider Effects and Significant Effects

9.1 Receptor Sensitivity

The B/C class routes included within the evaluation are generally minor rural roads which are either narrow single carriageway or single track and not designed for frequent use by HGVs. There are a limited number of small settlements along the proposed access routes along with numerous residential properties located close to the road. These receptors are considered to have a medium sensitivity.

In addition to the routes described above Fintry and Cuminestown have been included as receptors as the main settlements along the above routes. Fintry is classed as a small rural settlement with Medium sensitivity due to the position of a school on the western edge. Cuminestown is classed as an intermediate rural settlement including a school with Medium sensitivity.

9.2 Effect Magnitude and Identification of Significant Effects

9.2.1 Severance

The increase in traffic flow affecting receptors along the B9105/B9121/C7s/C29s/C121B is summarised in Table 8.3. Based on the two-way average daily Total traffic flows, the severance / fear and intimidation impact is estimated to be **minor significance** at the receptors along the access route and within Fintry and Cuminestown due to the low volumes of overall traffic.

9.2.2 Driver / Pedestrian Delay

There is the potential for limited driver delay during the peak construction phases due to the limited passing opportunities along the narrow sections of the B/C Class road network although localised improvements may be introduced where required to accommodate the safe movement of construction traffic.

There is significant spare capacity along the links assessed and the driver / pedestrian delay impact is therefore estimated to be **minor significance** at the receptors along the route.

9.2.3 Pedestrian Amenity

The magnitude of the impact on pedestrian amenity has been considered in terms of the threshold described in the MEA. Therefore based on the estimated two-way percentage increases in HGV traffic summarised in Table 8.3 the threshold for changes to pedestrian amenity has not been reached in any locations although the C7s and C121B are considered to be close to the threshold.

There are currently no pedestrian facilities along the C7s and C121B and limited pedestrian demand. Pedestrian footways are available within Cuminestown although the increase in HGV movements on the B9170 is lower at 6.47%.

With mitigation measures in place through the CTMP the pedestrian amenity impact is likely to be **minor significance** at the receptors along the route.

9.2.4 Accidents and Safety

Accident data was analysed along the B9105/B9121/C7s/C29s/C121B with the overall number of accidents considered to be low.

Due to the width of the route it will be necessary for construction vehicles to maintain a low speed along the minor road network. Construction working will also be limited to daytime operations with the aim of further reducing the accident risk. With mitigation measures in place the accidents and safety impact is therefore estimated to be **minor significance** at the receptors along the route.

9.2.5 Dust and Dirt

There are no specific guidelines to determine magnitude of impact of dust and dirt although its impact is likely to be limited to the immediate vicinity of the site access junctions, with mitigation proposed to ensure that the impact is **minor significance**.

9.3 Cumulative Effects

AC and Transport Scotland did not request that any other schemes were taken into account as part of the access, traffic and transport impact assessment. No cumulative impact assessment was therefore undertaken for this assessment.

10 Summary

This Transport Assessment considers the likely significant effects on the road network and the local settlements through which the road passes due to traffic associated with the modified OnTI.

Information supporting this assessment has been collected from a detailed desktop study and related field surveys as explained in Chapter 4.

The assessment undertook a review of the available information and assumed traffic numbers for a series of construction activities associated with the installation of the modified onshore export cable and construction of the substations. By quantifying the traffic associated with the construction activities, the significance of the likely effects could be realised by determining the increase in traffic.

The additional traffic due to the OnTI construction activities will result in increases of traffic flows on the local roads leading to the cable route and the substation sites. When considering actual volumes of traffic however, the predicted flows are well within the practical operating capacity of these roads and the environmental effect are, therefore, considered minor significance; assuming appropriate mitigation measures, such as a robust Traffic Management Plan, are implemented.

Appendix A – Accident Data

Appendix A - Accident Data Summary

Location	Severity			No Vehicles / Peds		Vehicles Types										Road Feature		Surface Condition					Lighting		
	Slight	Serious	Fatal	Single	Multiple	Car + Motorcycle	Motorcycle	Motorcycle + Other	Car	Car + Bus/Coach	Car + Car	Car + Pedestrian	Car + Other	Car + HG V	HGV + HG V	HGV	Junction / Access	Pedestrian Crossing	Dry	Wet or Damp	Flood	Frost or Ice	Snow	Daylight	Darkness
A98	12	5		8	9	2	1		7		4		1	1	1		11	3	10	5			2	15	2
A97	5			3	2	1			3				1				3		3	1		1		4	
A947	27	4		17	14		1	1	14	2	6		1	1	1	2	7	1	2	23	1		2	21	8
B9105	7	4		3	4	1			3		3						3		4	2			1	4	1
B9170	3	2		2	4				1		1			3			1		2	3				2	3
C7S	1	1	1	1	2		1		1		1								1	2				3	
C121B	1			1					1													1		1	

Appendix B– Construction Traffic Profile

Transport Indicative Construction Programme

Vehicle Classes

	2016					2017												2018				May	2019												2020	Total																
	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January		February	March	April	May	June	July	August	September	October	November	December	January	Total	Cars & Lights	HGV															
Landing Point																																																				
Set Up																																								116	116											
Excavation																																							34	34												
Piling																																							34	34												
Construction Works																																							16	16												
Cable Instalation																																							32	32												
Remediation																																							58	58												
General Supplies																																							16	16												
Staff																																							240	240												
Cable Run																																																				
Set Up																																								160	160											
Excavation																																								6074	6074											
Laying																																							6074	6074												
Jointing																																							631	631												
Backfil																																							76	76												
Remediation																																							17	17												
General Supplies																																							87	87												
Staff																																							44	44												
																																							864	864												
																																							864	864												
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																																							864	864												
Substation																																																				
Set Up																																									204	204										
Site Preparation																																									43	43										
Foundations																																								251	251											
Buildings																																							60	60												
AIL deliveries																																							44	44												
Installations																																							150	150												
Commissioning																																							64	64												
Remediation																																							43	43												
General Supplies																																							40	40												
Staff																																							396	396												
																																							396	396												
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																																							396	396												
Total Per Month	0	0	0	640	479	479	730	687	687	687	747	496	496	496	496	480	480	480	586	586	586	1654	7888	8453	8547	8186	2198	995	0	0	0	0	0	0	0	0	160	2857	3488	3582	3582	4796	4071	0	0	0	0	0	0	70776	23132	47644
Assumed Working Days	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
Total Per Day	0	0	0	27	20	20	30	29	29	29	31	21	21	21	21	21	20	20	20	24	24	24	69	329	352	356	341	92	41	0	0	0	0	0	0	0	7	119	145	149	149	200	170	0	0	0	0	0	0	33%	67%	

Appendix C– Theoretical Link Capacity

Graph 8.1: Theoretical Capacity Profile

