



Human Health and Population

Chapter 11: Traffic and Transport

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Glossary

Abnormal Indivisible Load	Loads or vehicles that exceed maximum vehicle weight, axle weight or dimensions as set out in the Road Vehicles (Construction and Use) Regulations 1986 as amended
Annual Average Daily Traffic Flows	The number of vehicles that will drive on a particular stretch of road on an average day of the year.
Application Site	The area within the red line Planning Boundary comprising the Onshore Transmission Works (OnTW), as defined.
Automatic Traffic Counter	Measuring equipment laid across the carriageway to measure speed, classification and number of vehicle movements passing over it.
Construction Compound	An indicative area within the Application Site used to accommodate the temporary work site including; construction parking, construction welfare facilities, construction meeting room, construction laydown and storage area, construction security facilities (fenced area/gate and security access) and construction security lighting.
Construction Traffic Management Plan	A document identifying management measures that mitigates possible adverse impacts of traffic from a scheme
Derestricted	Section of road that is not subjected to a local speed limit and is governed by the national speed limit.
Driver Delay	A delay incurred by drivers on a section of road.
EIA Report	Report presenting the findings of the Environmental Impact Assessment (EIA).
Ghost Island	Dedicated right turn lane into a side road allowing traffic to wait to turn right without obstructing the passage of straight through traffic.
Hazardous Load	The transportation of dangerous or hazardous materials by road.
Heavy Goods Vehicle (HGV)	A vehicle used for the movement of goods or services with a gross vehicle weight in excess of 7.5 Tonnes.
ICOL's Offshore Transmission Works (OfTW)	Offshore substation platforms (OSPs) and their foundations and substructures, interconnector cables and Offshore Export Cables. This refers to either the Consented OfTW or Revised OfTW, as defined.
ICOL's Offshore Wind Farm	This includes proposed wind turbine generators, foundations and substructures and inter-array cables. This refers to either the Consented Offshore Wind Farm or Revised Offshore Wind Farm, as defined.
Landfall	Point where up to two Offshore Export Cables from ICOL's Offshore Wind Farm will be brought ashore.
Onshore Export Cables	Electricity cables from the Onshore Substation to the grid connection point.
Onshore Substation	The electrical substation comprising of all the equipment and associate infrastructure required to enable connection to the electrical transmission grid.
Onshore Transmission Works (OnTW)	All proposed works within the Application Site, typically including the Onshore Substation, cables transition pits, cable jointing pits, underground electricity transmission cables connecting to the Onshore Substation and further underground cables required to facilitate connection to the national grid. This includes all permanent and temporary works required. See <i>Chapter 5: Description of Development</i> for full details.
Original OnTW	The OnTW, as was granted planning permission in principle in September 2014, under ELC reference 14/00456/PPM.

Original OnTW EIA	The Environmental Impact Assessment (EIA) that was prepared to support the planning application for the Original OnTW and reported in the Original OnTW ES, as defined.
Pedestrian Amenity	The convenience or comfort of movement on foot.
Pedestrian Delay	A delay incurred by pedestrians crossing a section of road.
Road Link	A length of road
Scoping Opinion	The Scoping Opinion adopted by ELC as to the scope and information to be provided in support of an application for the OnTW, as defined.
Scoping Report	Report prepared as the first stage of the EIA process in support of a request for a Scoping Opinion from ELC, under Regulation 17 of the EIA Regulations. The Report was submitted in July 2017.
Serious personal injury accident	An accident leading to serious injuries requiring hospital treatment
Severance	Real or perceived difficulties moving between one part of a community to another
Simple Priority Junction	A T- or staggered junction without any ghost or physical islands in the major road, and without channelising islands in the minor road approach.
Slight personal injury accident	An accident leading to slight injuries which are defined as cuts, bruises or sprains requiring roadside attention but not normally requiring admission to hospital.
Two-way vehicle movement	Movements of vehicles in both directions i.e. all southbound vehicle movements plus all northbound vehicle movements or all arriving vehicle movements plus all departing vehicle movements.

Abbreviations and Acronyms

AADT	Annual Average Daily Traffic Flows
ATC	Automatic Traffic Counter
CCGT	Combined Cycle Gas Turbine
CTMP	Construction Traffic Management Plan
DfT	Department for Transport
ELC	East Lothian Council
ES	Environmental Statement
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
IEA	Institute of Environmental Assessment
IEMA	Institute of Environmental Management and Assessment
OnTW	Onshore Transmission Works
PPP	Planning Permission in Principle
TEMPO	Trip End Model Presentation Programme

11 Traffic and Transport

11.1 Introduction

- 1 This chapter of the Environmental Impact Assessment Report (EIA Report) assesses the potential impacts resulting from the traffic generated by the Onshore Transmission Works (OnTW). Traffic generated by the OnTW along roads that access the Application Site has the potential to impact upon receptors along the road network.
- 2 This chapter is supported by the following appendices:
 - *Appendix 11A: Traffic and Transport.*
- 3 *Appendix 11A* has been produced in support of this EIA Report and provides all traffic flow data and assessments.
- 4 This chapter also shares direct linkages with the following chapters and has provided input to the assessment by means of the provision of traffic flow data:
 - *Chapter 10: Noise and Vibration;*
 - *Chapter 12: Socio-Economics, Land Use, Tourism and Recreation; and*
 - *Chapter 13: Air Quality.*

11.2 Consultations

- 5 Scoping responses received from East Lothian Council (ELC), which were relevant to Traffic and Transport are summarised in Table 11.1 below, including Inch Cape Onshore Limited's (ICOL) response.

Table 11.1: Scoping and Consultation Responses and Actions

Consultee	Scoping/ Consultation Response	ICOL Response
ELC	Impact of construction traffic on severance, driver delay, pedestrian delay, pedestrian amenity, accidents and safety and hazardous load: Scoped in. The traffic generated by the construction of the works is expected to be at a level that warrants assessment to determine residual significant effects	Full assessment undertaken in accordance with recognised guidance and advice within <i>Section 11.7.1</i> .

Consultee	Scoping/ Consultation Response	ICOL Response
ELC	Impact of construction traffic on severance, driver delay, pedestrian delay, pedestrian amenity, accidents and safety and hazardous loads – cumulatively with Blindwells and other housing development in East Lothian: Scoped in. The cumulative traffic generated by the construction of the revised OnTW and Blindwells development is expected to be at a level that warrants assessment. There may be other developments which should be considered including housing development at Longniddry South.	Full cumulative assessment undertaken with Blindwells development in accordance with recognised guidance and advice. Please see the last row within this Table for ICOL's response on the cumulative assessment for other housing developments and Longniddry South within <i>Section 11.8.1</i> .
ELC	Impact of abnormal indivisible loads: Scoped in. The movement of abnormal indivisible loads will not in themselves result in any significant environmental effects but an assessment of the ability to travel along the road network will be undertaken.	Full assessment undertaken along the access route within <i>Section 11.7.1</i> .
ELC	Impact of operational and maintenance traffic: Scoped out. Very low and infrequent traffic flows generated during this phase would not result in significant effect.	Scoped out.

Consultee	Scoping/ Consultation Response	ICOL Response
ELC	Impact of decommissioning traffic including cumulative impact: Scoped in. Decommissioning is likely to be a long time into the future, and its impacts are therefore necessarily speculative. The baseline at that time could be more sensitive and the future cumulative position uncertain. Assessment possible now is therefore limited, however it should be recognised that decommissioning traffic could potentially have a significant impact, broadly similar to or less than that of construction. Approval of a final decommissioning plan is likely to be subject to condition. Further Environmental Information may be more appropriately required at that time.	Recognise that decommissioning traffic could potentially have an impact, broadly similar to or less than that of construction as set out within <i>Section 11.7.3</i> .
ELC	Impacts on the road network should be included as described in the Scoping Report. Impacts on pedestrian delay, accidents, safety and hazardous loads also have links to human health and cross reference should be included.	Full assessment undertaken in accordance with recognised guidance and advice within <i>Section 11.7.1</i> .

Consultee	Scoping/ Consultation Response	ICOL Response
ELC	For cumulative assessment, the Scoping Report states that development at Blindwells will be considered. Other sites especially those within the proposed East Lothian Local Development Plan should also be considered for their potential for cumulative impact. East Lothian Council has commissioned traffic modelling in relation to the proposed Local Development Plan (LDP). This information may help with understanding the impacts of construction traffic from the proposal. For further information contact East Lothian Council Transportation.	Full cumulative assessment undertaken with Blindwells development in accordance with recognised guidance and advice within <i>Section 11.8.1</i> . The timescales to gain planning consent, construct and occupy the possible developments in Tranent and Longniddry South detailed within the proposed East Lothian LDP do not align with the timescales of the OnTW. Even if these developments were to commence construction during the same timescales as the OnTW, the routes that their construction vehicles would use are different to the local roads to the Application Site. Therefore, given that the emerging sites in the proposed LDP within Tranent and Longniddry South would not generate any traffic within the Study Area during the timescales being considered for the OnTW, they do not need to be included as part of a cumulative assessment.

- 6 The information in the formal Scoping Opinion and relevant best practise documents have formed the methodology and scope for the assessment.

11.3 Policy and Legislation

- 7 Relevant policies and legislation are introduced in *Chapter 2: Policy and Legislation*. Policy which is relevant to traffic and transport is listed below.

- Scottish Planning Policy (2014);
- Planning Advice Note (PAN) 75 Planning for Transport 2005;
- National Transport Strategy 2016;
- East Lothian Local Plan 2008;
- East Lothian Proposed Local Development Plan 2016;
- East Lothian Local Transport Strategy 2001; and
- Emerging East Lothian Local Transport Strategy (consultation stage).

- 8 There is no legislation relating specifically to traffic and transport that needs to be accounted for when undertaking the EIA.

11.4 Embedded Mitigation

- 9 A Construction Traffic Management Plan ('CTMP') will be prepared and agreed with the Road Authority prior to construction. The CTMP will seek to ensure good working practices throughout the construction period.
- 10 The CTMP will provide the following information:
- Method Statement detailing and controlling the approved access routes, frequencies and timings of deliveries and any necessary restrictions;
 - Details of access and management for the onshore cabling works including the potential for traffic management on Edinburgh Road;
 - Details of proposed alterations to the existing vehicular access onto the B1348 Edinburgh Road for large component deliveries;
 - Temporary signage in the vicinity of the Application Site warning of construction traffic;
 - Arrangements for road maintenance and cleaning;
 - Wheel cleaning arrangements and regular road sweeping runs within the site to ensure dust and dirt is minimised and is not spread onto the public roads, etc; and
 - A Green Travel Plan to include measures to minimise dependency on the private car to and from the construction compounds.
- 11 An approved access route will ensure that vehicles access the Application Site using appropriate routes and that the study area for assessment has been identified appropriately whilst road cleaning will mitigate against the spread of dust and dirt around the wider road network surrounding the Application Site.
- 12 An improved access junction which will include modification of the existing verge and fence posts in liaison with the ELC's Roads Authority is proposed to the existing access off the B1348 to accommodate the abnormal indivisible load vehicle movements (see *Section 11.7.1* below). This is an accommodation measure to ensure that the abnormal indivisible load vehicles can access the Application Site in a satisfactory manner.

11.5 Baseline Environment

11.5.1 Study Area

- 13 The Study Area for the assessments has been defined by the local road network that vehicles associated with the OnTW may impact upon; 10 links have been identified for specific consideration as shown on Figure 11.2.
- 14 The proposed route for the OnTW construction traffic is illustrated in Figure 11.1.

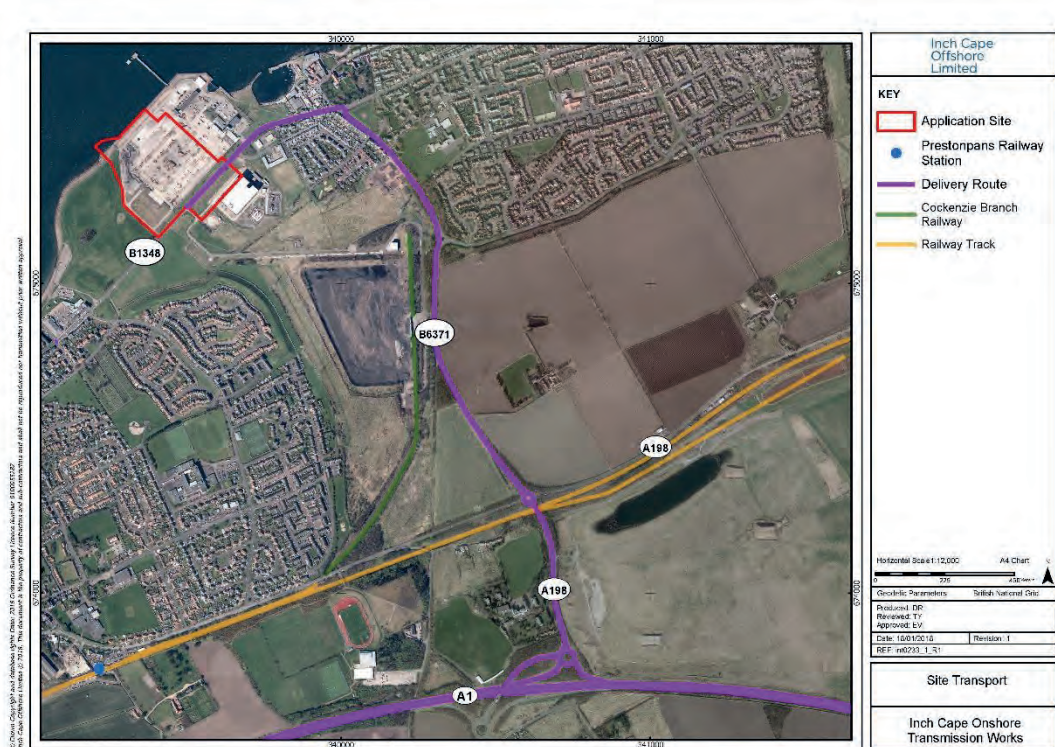


Figure 11.1 Proposed Construction Traffic Route

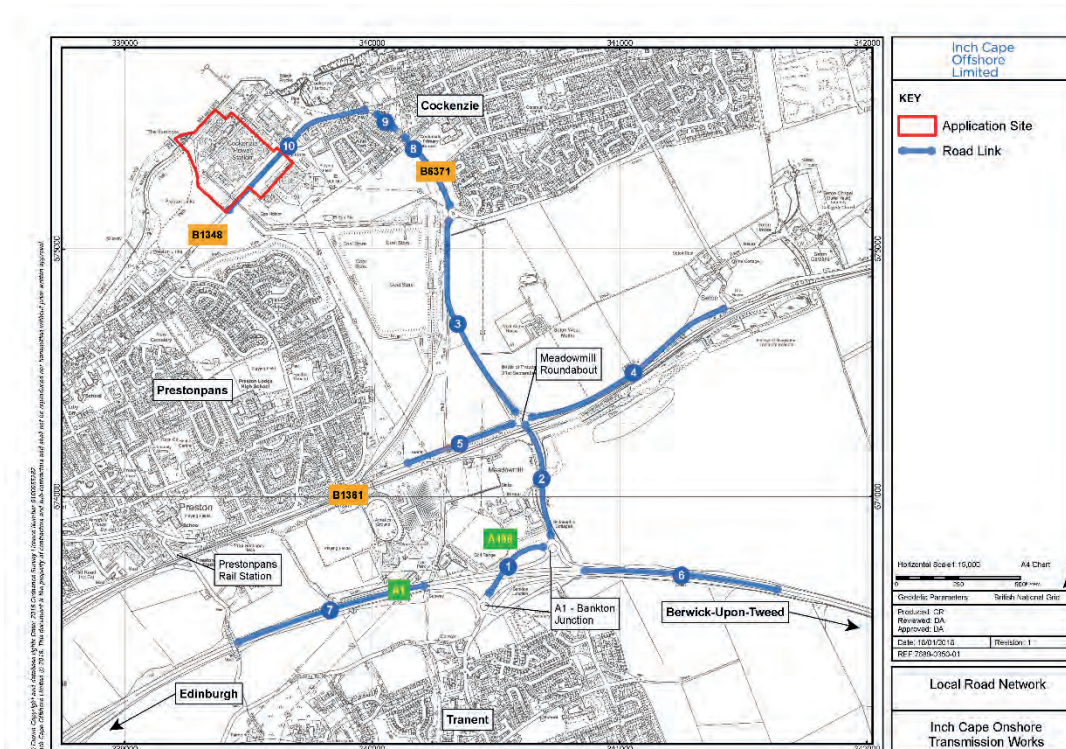


Figure 11.2 Local Road Network

15 The 10 links identified are:

- Link 1: A198 between A1 overbridge and A198 roundabout;
- Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads;
- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road;
- Link 4: A198 east of the B6371 / B1361 roundabout;
- Link 5: B1361 west of the B6371 / A198 roundabout;
- Link 6: A1 east of A198;
- Link 7: A1 west of A198;
- Link 8: B6371 between Alder Road and South Lorimer Place;
- Link 9: B6371 between South Lorimer Place and B1348; and
- Link 10: B1348 Edinburgh Road.

16 A description of the roads that make up these 10 links and which form the proposed route from the A1 to the Application Site is provided below:

17 The A198 is a single carriageway road of 7.3 m width along this section with a footway on its western side and is subject to a derestricted 60 mph speed limit. Observations in 2017 indicate

that this footway is used infrequently. There is street lighting at the B6371 / B1631 roundabout but not along the A198 carriageway.

- 18 The B6371 routes north from the A198 / B1361 roundabout to Cockenzie and forms the southern and northern arms of a three arm roundabout with Alder Road. It is a single carriageway road generally 6.5 m wide with a footway on its eastern side and no street lighting. Observations in 2017 indicate that this footway is used occasionally. The B6371 is derestricted for approximately 350 m to the north of the A198 / B1361 roundabout, north of which it becomes a 40 mph speed limit.
- 19 North of Alder Road, the B6371 continues as a single carriageway road, generally 6.5 m wide with a footway on its eastern side, streetlighting and a 40 mph speed restriction until it enters Cockenzie where the speed restriction reduces to 30 mph, there are footways on both sides of the carriageway and there are on-street parking bays on its western side. Observations in 2017 indicate that the footways are used infrequently but with higher footfalls on north sections in comparison to southern sections.
- 20 At its northern end, the B6371 forms the minor arm of a simple priority junction with the B1348 Edinburgh Road. The B1348 Edinburgh Road routes between the B6371 and the Application Site as a single carriageway road generally 7.3 m wide with footways on both sides, streetlighting, a 30 mph speed restriction and no parking restrictions. Observations in 2017 indicate that the footways are used regularly but are low in terms of movement.

11.5.2 Data Sources

- 21 To describe the baseline environment the following activities were undertaken
 - Site visits (in 2017);
 - Observations of vulnerable road users along the road network;
 - Analysis of traffic survey data (see *Section 11.5.3* for further details); and
 - Analysis of Personal Injury Accident data.
- 22 Data sources used to develop the necessary understanding of the baseline information are outlined in Table 11.2.

Table 11.2: Data Sources

Data Source	Area of Research
Automatic Traffic Counter	A198 Overbridge of the A1
Automatic Traffic Counter	A198 between the B6371/B1361 roundabout and the A1 slip roads
Automatic Traffic Counter	B6371 between the A198/ B1361 roundabout and Alder Road
Automatic Traffic Counter	B6371 between Alder Road and South Lorimer Place
Automatic Traffic Counter	B6371 between South Lorimer Place and B1348

Data Source	Area of Research
Automatic Traffic Counter	B1348 Edinburgh Road
Personal Injury Accident data	www.crashmap.co.uk
Traffic survey data in the vicinity of the Application Site	Proposed New Settlement, Blindwells Transport Assessment (Application Reference: 14/00768/PPM)
Traffic survey data in the vicinity of the Application Site	Department for Transport online traffic survey database
Traffic survey data in the vicinity of the Application Site	Transport Scotland online traffic survey database

11.5.3 Overview of Baseline

Traffic Flows

- 23 The Transportation department at ELC hold very limited traffic data in this location as they do not have a programme of regular traffic monitoring in this area and that new traffic surveys should be undertaken to establish existing traffic flows.

2014 ATCs

- 24 To establish traffic flows in the Study Area, a number of Automatic Traffic Counters (ATCs) were placed in 2014, as set out below.
- A198 overbridge of the A1;
 - A198 between the B6371/B1361 roundabout and the A1 slip roads; and
 - B6371 between the A198/ B1361 roundabout and Alder Road.
- 25 These surveys have been utilised for this application through the use of industry standard techniques to estimate future year traffic flows as explained in 11.5.4.
- 26 These ATCs were placed from Wednesday 23 April to Tuesday 29 April 2014 to capture representative traffic flow data over 24 hour periods for seven consecutive days. A summary of key data from the ATCs is set out in Table 11.3 and a full summary is attached in *Appendix 11A*.

Table 11.3: Summary of 2014 Automatic Traffic Counters

		B6371 between Alder Road and the A198 / B1361 roundabout	A198 between the B6371/B1361 roundabout and the A1 slip roads	A198 Overbridge of A1
Weekday (24 hour)	Total Vehs *	7,617	19,771	13,957
	HGVs *	486	1,381	1,019
Weekday (maximum hourly period)	Total Vehs *	671 (17:00–18:00)	1,685 (17:00–18:00)	1,193 (08:00–09:00)
	HGVs *	42 (15:00–16:00)	116 (11:00–12:00)	94 (15:00–16:00)
Saturday (24 hour)	Total Vehs *	6,365	17,099	11,890
	HGVs *	220	655	510
Saturday (maximum hourly period)	Total Vehs *	546 (11:00–12:00)	1502 (12:00–13:00)	1,040 (12:00–13:00)
	HGVs *	20 (12:00–13:00)	61 (09:00–10:00)	48 (09:00–10:00)

* two-way traffic flows

HGVs: Heavy Goods Vehicles

- 27 Specific locations for these traffic surveys were not specified by ELC, however, professional judgement was used and the above survey locations cover the route that construction vehicles would take from the A1.

2017 ATCs

- 28 To reflect the location of the OnTW Application Site, a number of new ATCs were also undertaken in 2017 at locations within the enlarged study area for which there was no previous data using professional judgement and to complement the 2014 ATCs, as set out below:
- B6371 between Alder Road and South Lorimer Place;
 - B6371 between South Lorimer Place and B1348; and
 - B1348 Edinburgh Road.
- 29 These ATCs were placed from Monday 21 August to Sunday 27 August 2017 to capture representative traffic flow data over 24 hour periods for seven consecutive days. A summary of key data from the ATCs is set out in Table 11.4 and a full summary is attached in *Appendix 11A*.

Table 11.4: Summary of 2017 Automatic Traffic Counters

		B6371 between Alder Road and South Lorimer Place	B6371 between South Lorimer Place and B1348	B1348 Edinburgh Road
Weekday (24 hour)	Total Vehs *	5529	5336	7824
	HGVs *	173	129	304
Weekday (maximum hourly period)	Total Vehs *	199 (09:00–10:00 & 12:00–13:00)	445 (17:00–18:00)	631 (17:00–18:00)
	HGVs *	8 (12:00–13:00)	11 (08:00–09:00, 16:00–17:00 & 18:00–19:00)	24 (11:00–12:00)
Saturday (24 hour)	Total Vehs *	4820	4943 **	8325
	HGVs *	106	119 **	298
Saturday (maximum hourly period)	Total Vehs *	413 (11:00–12:00)	421 (12:00–13:00) **	704 (13:00–14:00)
	HGVs *	14 (12:00–13:00 & 17:00–18:00)	15 (11:00–12:00 & 15:00–16:00) **	33 (11:00–12:00)

* two-way traffic flows

** Calculated Traffic Flows

HGVs: Heavy Goods Vehicles

- 30 During the course of the 2017 survey period, the ATC on the B6371 between South Lorimer Place and B1348 was damaged on the evening of Friday 25th August to Sunday 27th August and miscounted traffic flow. Given the proximity of the ATC on the B6371 between Alder Road and South Lorimer Place, the two datasets were therefore compared and found to have the same profiles throughout the day and very similar traffic volumes and classifications. Therefore, the periods for which data was miscounted, was calculated using the data from the B6371 between Alder Road and South Lorimer Place.

Third Party Data

- 31 Existing traffic survey data has also been obtained from the submitted Transport Assessment that supported the planning application (reference: 14/00768/PPM) for the Proposed New Settlement, Blindwells (White Young Green, 2014).
- 32 This report contained a number of manual turning counts, most notably a 2010 survey at the A198 / B6371 / B1361 roundabout, which has been extracted and used to inform the baseline traffic scenario along the adjacent road network. It is understood that its Transport Assessment (Proposed New Settlement, Blindwells) and this traffic survey remained

acceptable to Road Officers when PPP was granted in March 2017 and thus it remains suitable at this time and for assessing the OnTW planning application.

33 Annual Average Daily Traffic Flows (AADT) were obtained at the following locations using the Department for Transport traffic survey online databases:

- A198, north of the A1 (Bankton Junction);
- A1, east of the A198 junction (2016 AADT); and
- A1, west of the A198 junction (2016 AADT).

34 These AADTs are attached at *Appendix 11A*.

Transport Scotland and Department for Transport Data

35 Traffic flow data was also obtained from Transport Scotland covering the A1 to the east and west of the A198 junction (Bankton Junction) and its slip roads. However, there were significant periods and occasions where there was no data recorded and as a result there were very few days on which an accurate AADT or weekday average could be calculated. This was particularly the case between 2014 and 2017. On the basis that an accurate AADT or weekday average could not be calculated from the Transport Scotland data, the data was not used within this assessment.

Road Safety

36 Data was extracted from Crashmap for the last available five year period between January 2011 and December 2015 covering the B6371 between the A1 and the B1348 Edinburgh Road and along the B1348 Edinburgh Road between the Application Site and the B6371.

37 There was a total of 13 injury accidents along the Study Area within the five year period and these were all spread across the network in terms of location and date of occurrence. There were no injury accidents along the B1348 Edinburgh Road within the immediate vicinity of the Application Site access.

38 There were no clusters of injury accidents along the Study Area which suggests there are no 'blackspot' sites and there are no common contributory factors amongst them.

39 There was one injury accident that resulted in serious injury on the B1348 Edinburgh Road outside Hawthorn Bank, however, there were no other injury accidents in this location during the five year period and it was a solitary occurrence.

40 From the information available from Crashmap, there does not appear to be any road safety issues along the access route into the Application Site.

Information Gaps and Limitations

41 The above data covers the Study Area and has been obtained from recognised online data sources and from site specific traffic surveys. The data is considered to be representative and reflective of baseline conditions. There was damage to one of the ATCs, however, given that

the data available from it was representative of a nearby ATC, there is confidence with the datasets collected. It is therefore considered that there are no significant limitations to the baseline data.

11.5.4 Baseline without the OnTW

- 42 The Scottish Government (National Planning Framework 3, June 2014) identifies the site of the former Cockenzie Power Station as a national development site for thermal energy generation, carbon capture and storage (National Development 3). NPF3 also identifies Cockenzie as a key location with opportunities for renewable energy-related investment, reflected by National Development 4 'High Voltage Electricity Transmission Network' in NPF3. ELC recognises that the site presents a key opportunity in terms of economic development and energy related investment and is seeking views on the most appropriate land uses for the site through its Local Development Plan (LDP) consultation exercise, which is at draft stage only at present and a separate Masterplan which was published in November 2017.
- 43 Until the draft LDP has been formally adopted by ELC it is difficult to predict the baseline in the absence of the OnTW. However, given the status of the site in NPF3 it is expected that the demolished site of the former Cockenzie Power Station will be redeveloped, most probably for some energy/industrial related purpose.
- 44 A description of the roads that form the Study Area is set out in *Section 11.5.1*. There are no committed road schemes that will alter the road links in the future year scenarios being considered (as described in the following paragraphs) and is considered to accurately reflect the baseline position.
- 45 The construction period is envisaged to commence in 2020 / 2021. The start of the construction process is the most intensive due to the groundworks involved and thus the peak daily construction traffic generated is also envisaged in 2020 / 2021. In terms of EIA, a lower baseline traffic flow results in a larger magnitude of change relative to the baseline traffic flows and given that background traffic flows are predicted to increase year-on-year, an assumption of a peak occurring in 2020, rather than 2021, results in a worst case assessment. Traffic growth rates have therefore been applied to the traffic flows on each link to estimate future year traffic flows for a baseline year of 2020.
- 46 Traffic growth rates have been calculated using observed growth from the traffic flow data recorded on the A198. This road leads into Cockenzie from the A1 and therefore represents a good source of actual traffic growth within the Study Area that can be applied to calculate future traffic flows in confidence.
- 47 For the 2014 ATC traffic datasets, an observed growth rate has been identified between 2014 and 2016 from the Department for Transport (DfT) A198 dataset to calculate the 2016 base traffic flows. Then an annual average growth rate has been identified over the last five year period (2011 to 2016) from the DfT A198 dataset and applied to calculate the 2020 base traffic flows.

- 48 For the 2010 traffic datasets, an observed growth rate has been identified between 2010 and 2016 from the DfT A198 dataset to calculate the 2016 base traffic flows. Then an annual average growth rate has been identified over the last five year period (2011 to 2016) from the DfT A198 dataset and applied to calculate the 2020 base traffic flows.
- 49 For the 2016 traffic datasets (the A1 traffic flows), an annual average growth rate has been identified over the last five year period (2011 to 2016) from the DfT A1 dataset and applied to calculate the 2020 base traffic flows.
- 50 For the 2017 ATC datasets, an annual average growth rate has been identified over the last five year period (2011 to 2016) from the DfT A198 dataset and applied to calculate the 2020 base traffic flows.
- 51 These growth rates (expressed as a factor) are set out in Table 11.5.

Table 11.5: Growth Rates

Dataset	2010-2016	2014-2016	2011-2016	2016-2020 Estimates	2017-2020 Estimates
A198 Observed Growth Rates	1.157	1.074	1.032	1.128	1.096
A1 East Observed Growth Rates	-	-	1.022	1.087	-
A1 West Observed Growth Rates	-	-	1.025	1.098	-

- 52 The relevant growth rates have been applied to the traffic flows on the above links to estimate the 2020 baseline traffic flow. Full details of the resultant daily traffic flows by hour are attached at *Appendix 11A*. These are the predicted baseline traffic flows in 2020 that would exist without the OnTW.

11.6 Assessment Methodology

11.6.1 Methodology

- 53 The impact assessment methods used within this chapter have been agreed through the scoping process with ELC and follow those from the Original OnTW EIA.
- 54 This assessment has been undertaken based on current relevant guidance for assessing the environmental effects of development traffic. This is set out within The Institute of Environmental Assessment (IEA) (now the IEMA) publication 'Guidance Note Number 1: Guidelines on the Environmental Assessment of Road Traffic', 1993.

- 55 The IEMA guidelines recommend two rules to be considered when assessing the impact of development traffic on a road link:
- Rule 1: Include highway (road) links where traffic flows will increase by more than 30 per cent (or the number of heavy goods vehicles will increase by more than 30 per cent); and
 - Rule 2: Include any other specifically sensitive areas where total traffic flows have increased by 10 per cent or more.
- 56 The 30 per cent threshold is based upon research and experience of the environmental effects of traffic, with less than a 30 per cent increase generally resulting in imperceptible changes in the environmental effects of traffic. The guidance considers that projected changes in total traffic flow of less than 10 per cent creates no discernible environmental effect.
- 57 The receptors and vulnerable road users identified in the following list are considered as per IEMA guidelines to be sensitive receptors with regard to the potential impact of traffic increase:
- people at home;
 - people in work places;
 - sensitive groups such as children;
 - the elderly or the disabled;
 - sensitive locations such as hospitals, churches, schools or historical buildings;
 - people walking or cycling;
 - open spaces;
 - recreational sites;
 - shopping areas;
 - sites of ecological/nature conservation value; and
 - sites of tourist/visitor attraction.
- 58 The above bullet points define receptors which may be sensitive to changes in traffic conditions. The determination of receptor sensitivity is based on the criteria of value, adaptability and tolerance. Sensitivity has been categorised following these principles as shown in Table 11.6 below.

Table 11.6: Definitions of Sensitivity

Sensitivity	Typical Descriptors
High	schools, colleges, playgrounds, accident black spots (with reference to accident data), retirement homes, urban/residential roads without footways that are used by pedestrians

Sensitivity	Typical Descriptors
Moderate	congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities
Low	places of worship, public open space, nature conservation areas, listed buildings, tourist attractions, residential areas with adequate footway provision and other receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions

- 59 High, moderate and low sensitivities are defined from site visits and observations and using professional judgement. Road links which are identified as high or moderate sensitivity are considered against the IEMA Rule 2 threshold (10 per cent increase) described in *Section 11.5.3* above. Road links identified as low sensitivity are considered against the Rule 1 threshold (30 per cent increase). Magnitude of Impact
- 60 In cases where the IEMA thresholds are exceeded, Table 2.1 of the IEMA guidelines set out a list of environmental effects which should be assessed. These are listed below:
- Noise;
 - Vibration;
 - Visual impact;
 - Severance;
 - Driver delay;
 - Pedestrian delay;
 - Pedestrian amenity;
 - Accidents and safety;
 - Hazardous loads;
 - Air pollution; and
 - Dust and dirt.
- 61 The following topic specific chapters are included in this EIA Report and consider the impacts on the relevant associated receptors. There are direct links between this chapter and the noise, vibration and air pollution chapters and the effects of traffic in relation to these disciplines are set out within their respective chapter. This chapter does not therefore consider these effects any further:
- *Noise - Chapter 10: Noise and Vibration;*
 - *Vibration – Chapter 10: Noise and Vibration;*
 - *Visual Impact - Chapter 8: Landscape and Visual;*
 - *Air Pollution - Chapter 13: Air Quality;*

- *Dust and Dirt - Chapter 13: Air Quality;*
- *Ecological impact – Chapter 6: Ecology; and*
- *Heritage and conservation areas – Chapter 9: Cultural Heritage.*

62 Of the remaining environmental effects that are considered in this chapter, the assessment of magnitude of change is set within that assessment in paragraphs 80 to 107 below and is based upon professional judgement and the guidance offered within the IEMA Guidelines.

11.6.2 Identification of effects

63 The magnitude of impact and the assessment of effect significance follows that described in *Chapter 3; Process and Methodology* and that set out above and in Table 11.7 below. Effects described as Moderate, Moderate/Major or Major for the purposes of this assessment are considered to be significant.

Table 11.7: Significance of Effects

Magnitude of Impact	Sensitivity of resource/receptor		
	Low	Moderate	High
Negligible	Negligible/Minor	Minor	Minor/Moderate
Low	Minor	Minor/Moderate	Moderate
Moderate	Minor/Moderate	Moderate	Moderate/Major
High	Moderate	Moderate/Major	Major

11.7 Impact Assessment - Landfall, Onshore Export Cable and Onshore Substation

11.7.1 Effects of Construction

Defining the Sensitivity of Road Links

64 Prior to carrying out the impact assessment, it is necessary to define the sensitivity of the receptors along the 10 road links. This process informs whether IEMA threshold 1 or 2 (see *Section 11.6.2* above) will be followed.

65 After this the percentage change in traffic flows predicted to be generated by the OnTW on each of the 10 road links is set out.

66 The impact assessment is then undertaken on the road links where the relevant IEMA threshold has been breached (10 per cent for sensitive, 30 per cent for non sensitive). This will determine the significance of any effects.

67 Table 11.8 highlights the qualification of the sensitivity assessment for each of the 10 road links. The sensitivity for each road link has been defined using Table 11.6 above, using

professional judgement and by incorporating all receptor groups identified and discussed above.

- 68 Two road links (Link 9: B6371 between South Lorimer Place and B1348 and Link 10: B1348 Edinburgh Road) were deemed to have receptors of moderate sensitivity (see Table 11.8). As a result, the rule 2 IEMA threshold of 10 per cent applies to these two road links.
- 69 The remaining eight road links were deemed to have receptors of low sensitivity (see Table 11.8). As a result, the rule 1 IEMA threshold of 30 per cent applies to these eight road links.

Table 11.8: Sensitivity of Receptors in the Revised Onshore Transmission Works

Receptor	Sensitivity	Qualification
Link 1: A198 between A1 overbridge and A198 roundabout	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines and has adequate footway provision for the surrounding residential areas
Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines and has adequate footway provision for the surrounding residential areas
Link 3: B6371 between the A198 / B1361 roundabout and Alder Road	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines and has adequate footway provision for the surrounding residential areas
Link 4: A198 east of the B6371 / B1361 roundabout	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines and has adequate footway provision for the surrounding residential areas
Link 5: B1361 west of the B6371 / A198 roundabout	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines and has adequate footway provision for the surrounding residential areas
Link 6: A1 east of A198	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines
Link 7: A1 west of A198	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines
Link 8: B6371 between Alder Road and South Lorimer Place	Low	Road link does not contain any sensitive receptors as advised by the IEMA guidelines and has adequate footway provision for the surrounding residential areas
Link 9: B6371 between South Lorimer Place and B1348	Moderate	Road link contains a medical practice and has adequate footway provision for the surrounding built up areas and their level of use

Receptor	Sensitivity	Qualification
Link 10: B1348 Edinburgh Road	Moderate	Road link contains two shops with frontage onto the footways, which have adequate footway provision for the surrounding built up areas and their level of use

Magnitude of Impact Calculation

Construction Traffic Flows

- 70 The construction process and the dimensions of the various construction elements (such as the Onshore Substation) inform the amount of material required etc. and the subsequent number of construction Heavy Goods Vehicle (HGV) movements and construction staff vehicle movements.
- 71 A number of calculations have therefore been made based on the construction layouts and configurations to estimate the number of resultant construction vehicle movements. Full details of these calculations and the resultant number of construction vehicle movements generated by the OnTW are set out at *Appendix 11A* with a summary in Table 11.9.

Table 11.9: Summary of Construction Traffic Flows

Year	Month	Daily HGV Movements (two-way)	Daily Staff Movements (two-way)	Daily Total Vehicle Movements (two-way)
Year 1	1	58	60	118
	2	58	60	118
	3	58	60	118
	4	58	60	118
	5	67	120	187
	6	67	120	187
	7	10	100	110
	8	15	120	135
	9	22	120	142
	10	22	80	102
	11	22	80	102
	12	22	80	102
Year 2	1	22	80	102
	2	17	60	77
	3	57	30	87
	4	57	30	87
	5	57	30	87
	6	7	10	17
	7	18	10	28
	8	19	50	69

Year	Month	Daily HGV Movements (two-way)	Daily Staff Movements (two-way)	Daily Total Vehicle Movements (two-way)
	9	18	10	28
	10	18	10	28
	11	0	20	20
	12	0	20	20
Year 3	1	0	20	20
	2	0	20	20
	3	0	0	0
	4	0	0	0

- 72 In summary, a maximum of 67 two-way HGV movements per day is predicted during months five and six of the construction period; this equates to approximately seven two-way HGV movements per hour. Other months in the construction period range from between 7 and 58 two-way HGV movements per day and equates to an average of 30 two-way HGV movements per day and around three two-way HGV movements per hour.
- 73 A maximum of 120 staff car arrivals are predicted on site during months five, six, eight and nine of the construction period. This equates to 240 two-way construction staff car movements per day during these peak months of the construction programme. Other months in the construction period range from between 10 and 100 two-way staff car movements per day and equates to an average of 53 two-way staff car movements per day. To ensure a robust assessment, the peak HGV movements during months five and six and the peak staff car movements during months five and six are assumed to overlap and occur at the same time to create a combined peak scenario.

Magnitude of Change

- 74 The peak and average construction vehicle movements generated by the OnTW have been assessed against the 2020 baseline traffic flows to determine the magnitude of change. Full details are attached at *Appendix 11A* and a summary of the key percentage change in traffic flows are set out in Tables 11.10 (average) and Table 11.11 (peak) below.
- 75 The percentage change in traffic flow is calculated by assessing the OnTW traffic flows against the 2020 baseline traffic flows. This is undertaken for both the average and peak OnTW traffic flows. These percentage increases are then compared to the above Rule 1 and Rule 2 thresholds. Those links that are predicted to have increases below the thresholds are concluded to have Negligible/Minor effects, in accordance with the guidance.

Table 11.10: Percentage Change in Traffic Flow (Peak Construction OnTW)

	Weekday (24 hour)		Weekday (maximum hourly period)		Saturday (24 hour)		Saturday (maximum hourly period)	
	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *
Link 1: A198 between A1 overbridge and A198 roundabout	0.5 %	2.7 %	6.3 % (19:00 -20:00)	4.7 % (10:00 - 11:00)	0.5 %	3.0 %	13.5 % (07:00 - 08:00)	10.3 % (08:00 – 09:00)
Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads	0.8 %	4.0 %	7.7 % (06:00-07:00)	6.5 % (12:00-13:00 & 16:00-17:00)	0.7 %	4.7 %	10.2 % (07:00-08:00)	13.4 % (08:00-09:00)
Link 3: B6371 between the A198 / B1361 roundabout and Alder Road	2.0 %	11.5 %	20.7 % (06:00-07:00)	20 % (10:00-11:00)	2.0 %	14.0 %	42 % (07:00-08:00)	77 % (11:00-12:00)
Link 4: A198 east of the B6371 / B1361 roundabout	0.0 %	0.0 %	0.3 % (06:00-07:00)	0.0 %	0.0 %	0.0 %	0.3 % (07:00-08:00)	0.0 %
Link 5: B1361 west of the B6371 / A198 roundabout	0.0 %	0.0 %	0.3 % (06:00-07:00)	0.0 %	0.0 %	0.0 %	0.4 % (07:00-08:00)	0.0 %

	Weekday (24 hour)		Weekday (maximum hourly period)		Saturday (24 hour)		Saturday (maximum hourly period)	
	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *
Link 6: A1 east of A198	0.0 %	0.2 %	N/A	N/A	0.0 %	0.2 %	N/A	N/A
Link 7: A1 west of A198	0.3 %	2.1 %	N/A	N/A	0.4 %	1.5 %	N/A	N/A
Link 8: B6371 between Alder Road and South Lorimer Place	3.0 %	35.5 %	55 % (06:00-07:00)	69 % (09:00-10:00)	2.8 %	32.4 %	66 % (07:00-08:00)	385 % (08:00-09:00)
Link 9: B6371 between South Lorimer Place and B1348	3.1 %	47.8 %	62 % (06:00-07:00)	98 % (09:00-10:00)	2.8 %	28.7 %	71 % (07:00-08:00)	228 % (08:00-09:00)
Link 10: B1348 Edinburgh Road	2.1 %	20.2 %	52.2 % (06:00-07:00)	36 % (09:00-10:00)	1.6 %	11.5 %	53 % (07:00-08:00)	68 % (08:00-09:00)

* two-way traffic flows

Shaded cells indicate increases that exceed the IEMA thresholds

Table 11.11: Percentage Change in Traffic Flow (Average Construction OnTW)

	Weekday (24 hour)		Weekday (maximum hourly period)		Saturday (24 hour)		Saturday (maximum hourly period)	
	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *
Link 1: A198 between A1 overbridge and A198 roundabout	0.2 %	1.1 %	2.9 % (19:00 -20:00)	1.8 % (10:00 - 11:00)	0.2 %	1.2 %	6.3 % (07:00 - 08:00)	4.1 % (08:00 – 09:00)
Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads	0.3 %	0.9 %	3.6 % (06:00-07:00)	1.4 % (12:00-13:00 & 16:00-17:00)	0.3 %	1.0 %	4.8 % (07:00-08:00)	2.9 % (08:00-09:00 & 10:00-11:00)
Link 3: B6371 between the A198 / B1361 roundabout and Alder Road	0.9 %	5.0 %	9.3 % (06:00-07:00)	8.8 % (10:00-11:00)	0.9 %	6.2 %	18.6 % (07:00-08:00)	33.9 % (11:00-12:00)
Link 4: A198 east of the B6371 / B1361 roundabout	0.0 %	0.0 %	0.1 % (06:00-07:00)	0.0 %	0.0 %	0.0 %	0.2 % (07:00-08:00)	0.0 %
Link 5: B1361 west of the B6371 / A198 roundabout	0.0 %	0.0 %	0.2 % (06:00-07:00)	0.0 %	0.0 %	0.0 %	0.3 % (07:00-08:00)	0.0 %

	Weekday (24 hour)		Weekday (maximum hourly period)		Saturday (24 hour)		Saturday (maximum hourly period)	
	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *
Link 6: A1 east of A198	0.0 %	0.1 %	N/A	N/A	0.0 %	0.1 %	N/A	N/A
Link 7: A1 west of A198	0.1 %	0.8 %	N/A	N/A	0.1 %	0.5 %	N/A	N/A
Link 8: B6371 between Alder Road and South Lorimer Place	1.4 %	15.6 %	25.6 % (06:00-07:00)	30 % (09:00-10:00)	1.3 %	14.2 %	31 % (07:00-08:00)	169 % (08:00-09:00)
Link 9: B6371 between South Lorimer Place and B1348	1.4 %	21 %	28.9 % (06:00-07:00)	42.8 % (09:00-10:00)	1.3 %	12.6 %	33 % (07:00-08:00)	100 % (08:00-09:00)
Link 10: B1348 Edinburgh Road	1.0 %	8.9 %	24.4 % (06:00-07:00)	15.9 % (13:00-14:00)	0.8 %	15.0	24.6 % (07:00-08:00)	30 % (08:00-09:00)

* two-way traffic flows

Highlighted cells indicate increases that exceed the IEMA thresholds

76 The peak construction traffic flows generated by the OnTW would result in increases that are below the IEMA thresholds set out in *Section 11.6.1* above, on the following road links:

- Link 1: A198 between A1 overbridge and A198 roundabout;
- Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads;
- Link 4: A198 east of the B6371 / B1361 roundabout;
- Link 5: B1361 west of the B6371 / A198 roundabout;
- Link 6: A1 east of A198; and

- Link 7: A1 west of A198.

77 On this basis, the peak construction traffic flows generated by the OnTW will result in imperceptible effects along the above listed road links. The magnitude of impact of the peak construction traffic flows generated by the OnTW along these road links would be negligible. The significance of the increase in traffic flows along these road links as a result of the peak construction traffic flows generated by the OnTW would therefore be Negligible/Minor, thus the effect would not be significant.

78 The peak construction traffic flows generated by the OnTW would result in increases that exceed the IEMA thresholds during some hours of the day on the following road links:

- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road;
- Link 8: B6371 between Alder Road and South Lorimer Place;
- Link 9: B6371 between South Lorimer Place and B1348; and
- Link 10: B1348 Edinburgh Road.

79 Assessments are therefore undertaken below to determine the significance of the effect along these road links resulting from the peak construction traffic flows generated by the OnTW.

Hazardous Loads

80 Construction of the OnTW may involve transporting hazardous loads by road. All such loads are required to be transported in sealed containers and their movement will form a component of the CTMP.

81 Given the specialist vehicles used to transport such loads, together with the CTMP, no such spillages are expected as a result of these proposals and hazardous loads are not considered any further in this chapter.

Severance

82 Severance is only likely to occur on highly trafficked roads and result from the perceived division the road and traffic creates between either side.

83 It is noted that the guidance set out above identifies that increases in traffic of between 30 per cent and 60 per cent could result in a slight effect upon severance. The only occasions on which an increase in traffic exceeds 30 per cent is when construction staff are arriving on site early in the morning when background traffic flows are low (between 06:00 and 07:00 on a weekday and between 07:00 and 08:00 on a Saturday).

84 Indeed, the maximum traffic flow along the road links being assessed during these periods (in this instance, on Link 3: B6371 between the A198 / B1361 roundabout and Alder Road) is 142 two-way vehicle movements per hour during the baseline scenario, changing to 201 two-way vehicle movements per hour with the addition of the peak OnTW construction traffic flows. This equates to only one vehicle movement on average every 25 seconds, changing to one vehicle movement on average every 18 seconds.

85 Such levels of vehicle movement are not highly trafficked and thus, severance would not occur on these road links.

86 It is therefore considered that the magnitude of impact on severance would be negligible. The significance of the severance effect as a result of the peak OnTW construction traffic flows would therefore be Negligible/Minor, thus the effect would not be significant.

Driver Delay

87 Driver delays occur when traffic flows are high and roads are at or near capacity. This occurs when traffic flows are at their peak, during the weekday AM (08:00 to 09:00) and PM (17:00 to 18:00) peak hours.

88 The traffic surveys that are set out above (see Tables 11.3 and 11.4 above) confirm that it is these periods when traffic flows on the network are at their highest. Using professional judgement from the traffic surveys show that traffic flows along the road links are not high. Indeed, on-site inspections during site visits in 2017 suggest that driver delay on these links are generally not noticeable.

89 It is noted that the maximum peak construction traffic flows generated by the OnTW during these periods are seven two-way vehicle movements per hour. Such vehicle movements would not affect congestion or driver delay by any perceptible amounts irrespective of baseline conditions.

90 Traffic flow increases during the weekday AM and PM peak hours when there is the greatest potential for driver delay occurring are a maximum of 2.2 per cent, which the above sets out would affect congestion or driver delay by insignificant amounts irrespective of baseline conditions.

91 Furthermore, the peak construction traffic flows are predicted to be generated over a temporary time period of only two months (months five and six).

92 It is therefore considered that the magnitude of impact on driver delay would be negligible. The significance of the driver delay effect as a result of the peak OnTW construction traffic flows would therefore be Negligible/Minor, thus the effect would not be significant.

Pedestrian Amenity

93 Pedestrian amenity encompasses the overall relationship between pedestrians and traffic, including fear and intimidation which is the most emotive and difficult impact to quantify and assess. There are no commonly agreed thresholds for quantifying the significance of changes in pedestrian amenity, although the guidance set out above refers to a useful study (Crompton and Gilbert, 1976) which could be referenced when considering any effect and replicates key data from within.

94 The study sets out that moderate (the lowest category) fear and intimidation could be experienced when the average hourly traffic flow over an 18 hour day is around 600 to 1,200 vehicles per hour or when there are between 1,000 and 2,000 HGVs over an 18 hour day.

95 The average hourly traffic flow over an 18 hour day along the road links in the baseline scenario and then with the peak construction traffic flows generated by the OnTW are set out below:

- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road: 504 two-way vehicle movements increasing to 514 two-way vehicle movements;
- Link 8: B6371 between Alder Road and South Lorimer Place: 330 two-way vehicle movements increasing to 341 two-way vehicle movements;
- Link 9: B6371 between South Lorimer Place and B1348: 319 two-way vehicle movements increasing to 330 two-way vehicle movements; and
- Link 10: B1348 Edinburgh Road: 468 two-way vehicle movements increasing to 478 two-way vehicle movements.

96 All of these traffic flows are well below the lower threshold of the assessment criteria where the lowest category of fear and intimidation could occur.

97 In terms of HGVs, the traffic flow over an 18 hour day along the road links in the baseline scenario and then with the peak construction traffic flows generated by the OnTW are set out below:

- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road: 566 two-way HGV movements increasing to 633 two-way HGV movements;
- Link 8: B6371 between Alder Road and South Lorimer Place: 188 two-way HGV movements increasing to 255 two-way HGV movements;
- Link 9: B6371 between South Lorimer Place and B1348: 140 two-way HGV movements increasing to 207 two-way HGV movements; and
- Link 10: B1348 Edinburgh Road: 324 two-way HGV movements increasing to 391 two-way HGV movements.

98 All of these HGV movements are well below the lower threshold of the assessment criteria where the lowest category of fear and intimidation could occur.

99 It is therefore considered that the magnitude of impact on pedestrian amenity would be negligible. The significance of the pedestrian amenity effect as a result of the peak OnTW construction traffic flows would therefore be Negligible/Minor, thus the effect would not be significant.

Pedestrian Delay

100 Highly trafficked roads and changes to the volume or speed of traffic may affect the ability of people to cross roads. The guidance set out above notes that studies have shown that pedestrian delay is perceptible or considered significant beyond a delay threshold of 10 seconds, for a link with no crossing facilities. It goes on to say that a 10 second pedestrian delay in crossing a road broadly equates to a two-way link flow of approximately 1,400 vehicles per hour.

- 101 The peak hourly traffic flows along the road links in the baseline scenario and then with the peak construction traffic flows generated by the OnTW are set out below:
- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road: 722 two-way vehicle movements increasing to 729 two-way vehicle movements;
 - Link 8: B6371 between Alder Road and South Lorimer Place: 470 two-way vehicle movements increasing to 477 two-way vehicle movements;
 - Link 9: B6371 between South Lorimer Place and B1348: 457 two-way vehicle movements increasing to 464 two-way vehicle movements; and
 - Link 10: B1348 Edinburgh Road: 677 two-way vehicle movements increasing to 684 two-way vehicle movements.
- 102 All of these movements are well below the threshold upon which a perceptible delay to pedestrians could occur.
- 103 It is therefore considered that the magnitude of impact on pedestrian delay would be negligible. The significance of the pedestrian delay effect as a result of the peak OnTW construction traffic flows would therefore be Negligible/Minor, thus the effect would not be significant.

Accidents and Safety

- 104 Data from Crashmap, as set out above, shows that there is not a road safety issue along the road network to the Application Site.
- 105 The AADT, number of injury accidents and length of road link can be used to calculate an observed injury accident rate, as set out for the road links below:
- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road: observed injury accident rate of 106 injury accidents per billion vehicle-miles;
 - Links 8 and 9: B6371 between Alder Road and South Lorimer Place and between South Lorimer Place and B1348: observed injury accident rate of 1,603 injury accidents per billion vehicle-miles; and
 - Link 10: B1348 Edinburgh Road: observed injury accident rate of 771 injury accidents per billion vehicle-miles.
- 106 These observed rates can be applied to the OnTW traffic flows to estimate the change in injury accidents as a result of the OnTW, as set out below:
- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road: estimated increase of 0.00077 injury accidents per annum;
 - Links 8 and 9: B6371 between Alder Road and South Lorimer Place and between South Lorimer Place and B1348: estimated increase of 0.0058 injury accidents per annum; and
 - Link 10: B1348 Edinburgh Road: estimated increase of 0.0046 injury accidents per annum.

- 107 It is considered that the magnitude of impact on accidents and safety would be negligible. The significance of the accidents and safety effect as a result of the peak OnTW construction traffic flows would therefore be Negligible/Minor, thus the effect would not be significant.

Effects on the B1348 Edinburgh Road During Construction of the Onshore Export Cable

Corridor

- 108 It is noted that the cable route will be constructed underneath the B1348 Edinburgh Road. At this stage, it is envisaged that the existing cable ducts associated with the former Cockenzie Power Station could be re-used and the cables would be pulled through them. In this case, there would be no requirement to trench across the B1348 Edinburgh Road.
- 109 In the event that the cable ducts are not able to be used then the crossing of the B1348 may require a trench or Horizontal Directional Drilling (HDD).
- 110 If trenching is required, it is likely that a trench will be created through the B1348, immediately to the north of the grid connection. These works will take between 4 to 12 weeks depending on the existing services in the road and would be carried out in consultation with ELC, local communities and other stakeholders and avoid complete road closure.
- 111 On this basis, there is no requirement to undertake an assessment of the changes in traffic as a result of diversionary routes as no diversion will be necessary. Using professional judgement, traffic flows on the B1348 Edinburgh Road are not at a level that would create any significant driver delay in the event that trenching and shuttle working be required. This aspect is therefore not considered any further within this chapter.

Abnormal Indivisible Loads

- 112 Due to the size and dimensions of some specific components (known as abnormal indivisible loads) their movement can sometimes require specific additional analysis. In this instance, the abnormal indivisible load vehicles have large turning requirements and their movement may require works to the road network to accommodate them.
- 113 An assessment of abnormal indivisible loads has therefore been made via a Swept Path Analysis (see *Appendix 11A*). This has been undertaken by tracking the movement of the abnormal load vehicles along the access route using the AutoTrack computer programme and 1:500 scale OS mapping.
- 114 The Swept Path Analysis identifies if the abnormal load vehicles can turn through the road network satisfactorily or identifies any areas where accommodation or mitigation measures are required.
- 115 Modification to the site access junction (B1348) will be required, the existing verge and fence posts will be modified in liaison with the ELC's Roads Authority to provide access for the abnormal indivisible loads, details of which are at *Appendix 11A*, however these are considered to be minimal and are not envisaged to materially affect the public road network.

11.7.2 Effects of Operation and Maintenance

- 116 There would be a limited requirement for vehicles to access the Application Site once it is operational. There would be occasional maintenance vehicles, however, this would not be a regular daily occurrence.
- 117 The number of vehicle movements that would be generated would be substantially lower than those generated during the lowest construction periods.
- 118 As such, there are no significant effects predicted from the operation and maintenance of the OnTW.

11.7.3 Effects of Decommissioning

- 119 The potential impacts of decommissioning are considered to be equivalent to and potentially lower than the peak impacts assessed for the construction phase. The assessment findings are therefore presented for construction and operational phases of the OnTW only, assuming that the impacts during the construction will apply to the impacts during decommissioning.
- 120 The approach to decommissioning is described in *Chapter 5: Description of Development*. The OnTW will be decommissioned following the end of their operational life. A draft decommissioning plan will be prepared prior to construction and a final plan prior to decommissioning. The draft and final decommissioning plans will take account of any new development sites that have been identified in the interim period, taking account of their planning status at the time of preparing the decommissioning plans.

11.8 Cumulative Impact Assessment

ICOL OfTW

- 121 There will be no expected traffic generated onto the road network that is associated with the construction or operation and maintenance of the ICOL OfTW and Offshore Wind Farm; all transport movements will be by vessel. As such, there is no requirement to undertake any cumulative assessments for the construction elements of the ICOL OfTW and Offshore Wind Farm for Traffic and Transport.

11.8.1 Cumulative Effects of Construction

- 122 The full list of projects and activities considered as part of the cumulative assessment are detailed in *Chapter 3: Process and Methodology*. Projects and activities relevant to this assessment are the Proposed New Settlement, Blindwells. Potential future sites at Longniddry South and Tranent are not included as a cumulative assessment for the reasons set out in Table 11.1.

Blindwells

- 123 The Blindwells residential led development was granted PPP earlier in 2017. Individual planning applications need to be submitted and approved, planning conditions will need to be discharged and then construction could commence.
- 124 Given the extent of this development, it will not be fully constructed and occupied during the time periods that the OnTW would be constructed and during the time periods that are subsequently being assessed within this chapter. To ensure a robust assessment, it has been assumed that this development will be constructed during the time periods that the OnTW would be constructed.
- 125 The Transport Assessment prepared for the Blindwells development does not set out the likely construction traffic flows that may be generated by that development. Therefore, there is nothing in the public domain that estimates the construction traffic flows generated by this development.
- 126 For assessment purposes only, an assumption has therefore been made. It is typical that residential developments generate in the order of 14 two-way HGV movements per day for every 100 dwellings constructed per annum. On top of this, it is assumed there would be 50 staff two-way car movements arriving then departing the site each day. Full details of these estimates are set out at *Appendix 11A*.

PLDP Sites

- 127 As set out in the ELC Scoping Opinion, there are emerging residential sites in the proposed LDP within Tranent. The timescales to gain planning consent, construct and occupy these possible developments do not align with the OnTW.
- 128 Even if these developments were to commence construction during the same timescales as the OnTW, the routes that their construction vehicles would use are different to the local roads to the Application Site. Traffic levels on the wider road network (i.e. the A1) are significantly higher than the local roads and the assessments undertaken above show that the increases along them as a result of the OnTW are negligible (less than 0.5 per cent). If these developments were to commence construction during the same timescales as the OnTW, any increase along the wider road network would remain Negligible and the same conclusion would be drawn.
- 129 Therefore, there is no need to consider the emerging sites in the proposed LDP within Tranent as part of a cumulative assessment.

Magnitude of Change

- 130 A cumulative assessment has been undertaken of the peak construction traffic generated by the OnTW and the Proposed New Settlement, Blindwells.

- 131 The estimated construction traffic flows generated by the Proposed New Settlement, Blindwells are set out at *Appendix 11A*. These are summarised in Table 11.12 along with a comparison of those predicted to be generated by the OnTW.

Table 11.12: Cumulative Construction Traffic Flows

	Weekday 24 Hour		Weekday Hourly HGV Movements *
	Total Vehicle movements *	HGV movements *	
OnTW peak construction traffic flows	180	67	7
OnTW average construction traffic flows	82	30	3
Proposed New Settlement, Blindwells construction traffic flows (construction rate of 100 dwellings per annum)	114	14	2
Total peak Cumulative Development traffic flows **	294	81	9

* two-way vehicle movements

** based on OnTW peak construction traffic flows

- 132 These peak cumulative development traffic flows are assessed against the 2020 baseline traffic flows in order to determine the magnitude of change at *Appendix 11.A*. A summary of the key percentage changes in traffic flow is set out in Table 11.13.

Table 11.13: Percentage Change in Traffic Flow (Cumulative Peak Construction)

	Weekday (24 hour)		Weekday (maximum hourly period)		Saturday (24 hour)		Saturday (maximum hourly period)	
	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *
Link 1: A198 between A1 overbridge and A198 roundabout	0.9 %	3.3 %	6.3 % (19:00 -20:00)	5.6 % (10:00 - 11:00)	0.9 %	3.7 %	13.5 % (07:00 - 08:00)	12.4 % (08:00 – 09:00)

	Weekday (24 hour)		Weekday (maximum hourly period)		Saturday (24 hour)		Saturday (maximum hourly period)	
	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *
Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads	1.2 %	4.9 %	7.7 % (06:00-07:00)	7.9 % (12:00-13:00 & 16:00-17:00)	1.2 %	5.7 %	19.3 % (07:00-08:00)	16.2 % (08:00-09:00)
Link 3: B6371 between the A198 / B1361 roundabout and Alder Road	2.0 %	11.5 %	20.7 % (06:00-07:00)	20 % (10:00-11:00)	2.0 %	14.0 %	42 % (07:00-08:00)	77 % (11:00-12:00)
Link 4: A198 east of the B6371 / B1361 roundabout	0.0 %	0.0 %	0.3 % (06:00-07:00)	0.0 %	0.0 %	0.0 %	0.3 % (07:00-08:00)	0.0 %
Link 5: B1361 west of the B6371 / A198 roundabout	0.0 %	0.0 %	0.3 % (06:00-07:00)	0.0 %	0.0 %	0.0 %	0.4 % (07:00-08:00)	0.0 %
Link 6: A1 east of A198	0.0 %	0.2 %	N/A	N/A	0.0 %	0.2 %	N/A	N/A
Link 7: A1 west of A198	0.6 %	2.6 %	N/A	N/A	0.7 %	1.8 %	N/A	N/A
Link 8: B6371 between Alder Road	3.0 %	35.5 %	55 % (06:00-07:00)	69 % (09:00-10:00)	2.8 %	32.4 %	66 % (07:00-08:00)	385 % (08:00-09:00)

	Weekday (24 hour)		Weekday (maximum hourly period)		Saturday (24 hour)		Saturday (maximum hourly period)	
	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *	Total Vehs *	HGVs *
and South Lorimer Place								
Link 9: B6371 between South Lorimer Place and B1348	3.1 %	47.8 %	62 % (06:00-07:00)	98 % (09:00-10:00)	2.8 %	28.7 %	71 % (07:00-08:00)	228 % (08:00-09:00)
Link 10: B1348 Edinburgh Road	2.1 %	20.2 %	52.2 % (06:00-07:00)	36 % (09:00-10:00)	1.6 %	11.5 %	53 % (07:00-08:00)	68 % (08:00-09:00)

* two-way traffic flows

- 133 The assessments of the cumulative peak construction results in the IEMA thresholds being exceeded for the following road links:
- Link 3: B6371 between the A198 / B1361 roundabout and Alder Road;
 - Link 8: B6371 between Alder Road and South Lorimer Place;
 - Link 9: B6371 between South Lorimer Place and B1348; and
 - Link 10: B1348 Edinburgh Road.
- 134 The baseline traffic flows, the increases in traffic flows and the resultant percentage increases (magnitude of change) on these four road links for the cumulative peak construction are the same as those for the peak OnTW construction. This is because the construction traffic flows generated by the Proposed New Settlement, Blindwells, do not generate any traffic along these four road links. Therefore, the assessments undertaken for the OnTW on these four road links are the same as the cumulative peak construction assessment scenario and the same residual effects are envisaged.
- 135 Of the other six road links, Table 11.13 above shows that the IEMA thresholds are not exceeded. On this basis, the cumulative peak construction traffic flows will result in imperceptible effects along link 1 (A198 between A1 overbridge and A198 roundabout), link 2 (A198 between the B6371 / B1361 roundabout and the A1 slip roads), link 4 (A198 east of the

B6371 / B1361 roundabout), link 5 (B1361 west of the B6371 / A198 roundabout), link 6 (A1 east of A198) and link 7 (A1 west of A198).

- 136 The magnitude of impact of the peak construction traffic flows generated by the cumulative construction traffic flows along these road links would be negligible. The significance of the increase in traffic flows along these road links as a result of the cumulative peak construction traffic flows would therefore be Negligible/Minor, thus the effect would not be significant.

11.8.2 Cumulative Effects of Operation and Maintenance

- 137 As set out above, there would be a limited requirement for vehicles to access the Application Site once it is operational. There would be occasional maintenance vehicles, however, this would not be a regular daily occurrence.
- 138 As such, there is no requirement to undertake any specific cumulative assessments of vehicles generated during the operation and maintenance of the OnTW.

11.8.3 Cumulative Effects of Decommissioning

- 139 The OnTW will be decommissioned following the end of the operational life which is not fixed but would be for the lifetime of ICOL's Offshore Wind Farm. A draft decommissioning plan will be prepared prior to construction and a final plan prior to decommissioning. This final plan will take into account any other projects and activities that are taking place at the time.

11.9 Impact Interactions

- 140 Increases in traffic flows generated by the construction of the OnTW could interact with other disciplines to have an effect from a noise and vibration, visual, air quality, dust and dirt, ecology or heritage and conservation perspective. There are direct links to the effects of noise and vibration and air quality and traffic flows have been provided to these disciplines. The effect of construction traffic upon receptors relevant to each of the above discipline is assessed within *Chapter 10: Noise and Vibration* and *Chapter 13: Air Quality*.

11.10 Additional Mitigation

- 141 As set out above, a CTMP will be prepared and agreed with the Road Authority prior to construction. The above assessments have not identified a need for any additional mitigation.

11.11 Conclusion and Residual Effects – Onshore Transmission Works

Table 11.14: Summary of effects before and with additional mitigation

Impact	Receptor	Effect (including embedded mitigation)
Construction		
Impact of Construction Traffic	Link 1: A198 between A1 overbridge and A198 roundabout	Negligible/Minor
Impact of Construction Traffic	Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads	Negligible/Minor
Impact of Construction Traffic	Link 3: B6371 between the A198 / B1361 roundabout and Alder Road	Negligible/Minor
Impact of Construction Traffic	Link 4: A198 east of the B6371 / B1361 roundabout	Negligible/Minor
Impact of Construction Traffic	Link 5: B1361 west of the B6371 / A198 roundabout	Negligible/Minor
Impact of Construction Traffic	Link 6: A1 east of A198	Negligible/Minor
Impact of Construction Traffic	Link 7: A1 west of A198	Negligible/Minor
Impact of Construction Traffic	Link 8: B6371 between Alder Road and South Lorimer Place	Negligible/Minor
Impact of Construction Traffic	Link 9: B6371 between South Lorimer Place and B1348	Negligible/Minor
Impact of Construction Traffic	Link 10: B1348 Edinburgh Road	Negligible/Minor
Decommissioning		

Impact	Receptor	Effect (including embedded mitigation)
Impact of Decommissioning Traffic	Link 1: A198 between A1 overbridge and A198 roundabout	Negligible/Minor
Impact of Decommissioning Traffic	Link 2: A198 between the B6371 / B1361 roundabout and the A1 slip roads	Negligible/Minor
Impact of Decommissioning Traffic	Link 3: B6371 between the A198 / B1361 roundabout and Alder Road	Negligible/Minor
Impact of Decommissioning Traffic	Link 4: A198 east of the B6371 / B1361 roundabout	Negligible/Minor
Impact of Decommissioning Traffic	Link 5: B1361 west of the B6371 / A198 roundabout	Negligible/Minor
Impact of Decommissioning Traffic	Link 6: A1 east of A198	Negligible/Minor
Impact of Decommissioning Traffic	Link 7: A1 west of A198	Negligible/Minor
Impact of Decommissioning Traffic	Link 8: B6371 between Alder Road and South Lorimer Place	Negligible/Minor
Impact of Decommissioning Traffic	Link 9: B6371 between South Lorimer Place and B1348	Negligible/Minor
Impact of Decommissioning Traffic	Link 10: B1348 Edinburgh Road	Negligible/Minor

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