

Appendix 13.1 Construction Traffic Management Strategy

This page is intentionally blank



Pencloe Windfarm

Pencloe Wind Energy Limited

Construction Traffic Management Strategy

1 | 2

17 June 2016



Pencloe Wind Farm

Project No: KU024002
 Document Title: Construction Traffic Management Strategy
 Document No.: 1
 Revision: 2
 Date: 17 June 2016
 Client Name: Pencloe Wind Energy Limited
 Client No: Client Reference
 Project Manager: Jo Moran
 Author: Joseph M Campbell
 File Name: \\europe.jacobs.com\glasgow\Projects\Data\Pencloe Construction Traffic Management Plan\Deliverables\KU024002-Pencloe Wind Farm-Construction Traffic Management Strategy v1.1.docx

Jacobs U.K. Limited

95 Bothwell Street
 Glasgow, Scotland G2 7HX
 United Kingdom
 T +44 (0)141 243 8000
 F +44 (0)141 226 3109
 www.jacobs.com

© Copyright 2016 Jacobs U.K. Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This report has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Document history and status

Revision	Date	Description	By	Review	Approved
0	10/06/16	Draft for client review	JC	CW	JM
1	16/06/16	Revision following client comments	JC	CW	JM
2	17/06/16	Revision following final client comments	JC	CW	JM

Contents

1.	Introduction.....	1
2.	Construction Impacts.....	3
3.	Construction Traffic Management Strategy.....	8

1. Introduction

1.1 Background

Jacobs have been commissioned by Pencloe Wind Energy Limited (the Applicant) to prepare a Construction Traffic Management Strategy (CTMS) in support of the proposed Pencloe Windfarm, located south of New Cumnock in East Ayrshire. As part of ongoing consultation between East Ayrshire Council and the Applicant, Ayrshire Roads Alliance (ARA) have requested that the Applicant illustrate how construction traffic associated with the proposed development will be managed safely when using the C90 Afton Road. Given that two other windfarm developments, Afton (consented) and Lorg (in planning) are proposing to use the Afton Road, the CTMS takes account of the potential for the construction programme of another windfarm to take place concurrently with Pencloe Windfarm, and how traffic generated by both sites will be managed.

For the purposes of this assessment, it is assumed that construction of both Pencloe Windfarm and Lorg Windfarm will occur at the same time, as this is currently considered the most likely cumulative scenario. An assessment of this scenario will provide ARA with evidence that construction traffic associated with both windfarms can be managed effectively and with minimal detriment to the local road network and identified sensitive receptors.

Therefore, this CTMS will set out high level management and mitigation measures to minimise the transport impact during the construction phase of the proposed Pencloe Windfarm development, while taking cognisance of the potential for Lorg Windfarm to be constructed at the same time.

The CTMS only applies to the construction stage of the Pencloe Windfarm and does not apply to the operation of the windfarm as this will only generate a small number of vehicle trips to undertake maintenance work.

A detailed Construction Traffic Management Plan (CTMP) will be prepared post-consent, which will expand on the measures proposed within the CTMS. It is proposed that the CTMP will be prepared in consultation with ARA and will be a live document to be updated as works progress.

1.2 Pencloe Windfarm

The proposed Pencloe Windfarm lies within an extensive area of forestry plantation known as Carsphairn Forest. New Cumnock is the closest settlement to the site, lying some 2.5 km to the north at its nearest point to the site boundary, with Dalmellington located some 11 km to the west. Afton Reservoir is located approximately 1.5 km to the southeast.

The proposed development will consist of 19 wind turbines, with associated infrastructure including wind turbine foundations, external transformers, access tracks, on-site substation, control building and underground power cables.

Planning permission for the proposed development is currently being sought for an operational life of 25 years, at the end of which the proposed development will be decommissioned, or an application will be submitted to extend its operational life.

Subject to planning approval, the construction is currently programmed to begin in early 2018 with completion 18 months later.

1.3 Lorg Windfarm

The proposed Lorg Windfarm is located approximately 7km to the south of Pencloe Windfarm in a clearing within the Southern Uplands Forest area, approximately 12.3 km southwest of Sanquhar and approximately 11 km northeast of Carsphairn village.

The proposed development will consist of up to 15 wind turbines, with similar associated infrastructure as Pencloe Windfarm.

Similarly, planning permission for the proposed development is currently being sought for an operational life of 25 years, at the end of which the proposed development will be decommissioned, or an application will be submitted to extend its operational life.

For the purposes of this assessment, it is assumed that the construction programme will run concurrently with that of Pencloe and begin in early 2018 with completion 18 months later.

2. Construction Impacts

2.1 Traffic Generation and Distribution to the Road Network

2.1.1 Until supply contracts have been placed for the materials required on site, details of the origin of construction vehicles and the route they will take will not be known for certain. Notwithstanding this, it is anticipated that 100% of construction traffic will route to site from the north via New Cumnock and Afton Road.

2.1.2 As detailed within the Environmental Statement (ES) submitted as part of the Section 36 application for Pencloe Windfarm, an Abnormal Load Route Assessment (ALRA) for the development was based on access using the C90 Afton Road to get to the site entrance at Pencloe Farm where it leaves the public road network. In the vicinity of the proposed development, Turbine Delivery Vehicles will access the site as follows:

- Southwest on B741 Mossmark;
- South on Afton Road; and
- Proposed site access off Afton Road at Pencloe Farm, approximately 3.5 km south of the B741 Mossmark / Afton Road priority junction.

2.1.3 Estimates of traffic generation associated with the construction phase of the proposed development have been identified within the respective Environmental Statements for both Lorg and Pencloe, and include transportation of the following:

- plant / materials in relation to site mobilisation and set up of site compound;
- geotextile materials to construct site roads;
- aggregate to construct site roads, areas of hardstanding etc. (for Pencloe the majority of aggregate will be sourced on site from borrow pits, for Lorg the traffic assessment has conservatively assumed that all aggregate for construction will come from outside the site);
- concrete or raw materials to batch concrete on site;
- steel reinforcement;
- base rings for turbines;
- transformers;
- sand bedding for cabling;
- cabling for turbines;
- turbine components (including abnormal loads);
- cranes for turbine erection;
- miscellaneous items; and
- construction staff trips.

- 2.1.4 Table 2.1 overleaf summarises the predicted monthly trip generation, by vehicle type, associated with the construction of the proposed Pencloe Windfarm development while Table 2.2 summarises the estimated daily traffic movements throughout the 18 month construction programme. The estimated construction traffic numbers for Pencloe detailed within the ES are based on a 21 turbine layout, however following submission of the planning application, the proposed number of turbines has reduced to 19. As such a pro-rata reduction in Pencloe construction traffic has been applied, in order to ensure that a realistic estimate of construction traffic is assessed.

Table 2.1 Estimated Monthly Construction Traffic Movements for Pencloe Windfarm

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
Total LGV Movements	663	590	590	590	699	699	699	1169	988	988	941	941	796	796	615	615	434	688	13504
Total Abnormal Load Movements	0	0	0	0	0	0	0	0	0	0	35	34	33	33	0	0	0	2	138
Total HGV Movements	634	551	493	149	264	260	264	724	724	717	660	623	492	492	417	417	35	150	8066
OVERALL TOTAL	1297	1141	1083	739	963	959	963	1893	1713	1705	1636	1598	1321	1321	1033	1033	469	840	21707

All traffic movements shown in this table are two-way flows.

Table 2.2 Estimated Daily Construction Traffic Movements for Pencloe Windfarm

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
Monthly Vehicle Trips	1297	1141	1083	739	963	959	963	1893	1713	1705	1636	1598	1321	1321	1033	1033	469	840	21707
No. of Days*	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Average Total per Day	65	57	54	37	48	48	48	95	86	85	82	80	66	66	52	52	23	42	
Average HGV Total per Day	32	28	25	7	13	13	13	36	36	36	35	33	26	26	21	21	2	8	
Average LGV Total per Day	33	30	30	30	35	35	35	58	49	49	47	47	40	40	31	31	22	34	

* Proposed hours of construction from 07:00-19:00 Mon-Fri; and 07:00-13:00 Sat. This assessment is based on a 5 day working week only in order to ensure that a robust assessment is undertaken. All traffic movements shown in this table are two-way flows.

- 2.1.5 The predicted number of HGV trips has been estimated using design information and average load capacities of HGVs. As detailed in Table 2.1, the total number of off-site vehicle movements generated during the preparation and construction of the proposed Pencloe Windfarm is estimated to be 21,707 over the 18 month construction period. This figure includes 138 abnormal load movements, 8,066 HGV movements and 13,504 car / light vehicle movements.
- 2.1.6 From Table 2.1, it is clear that month 8 is predicted to experience the greatest level of construction traffic, with a total of 1,893 two-way trips predicted. This equates to an average of 95 two-way movements per day in month 8, of which 36 of the two-way movements are HGVs, as detailed within Table 2.2.

2.2 Cumulative Construction Impacts

- 2.2.1 Chapter 13 (Traffic and Transport) of the Pencloe ES, considers the cumulative impacts of traffic associated with the proposed development and a number of nearby windfarm developments. The baseline traffic was obtained from Automatic Traffic Counters (ATCs) on the road network.
- 2.2.2 A robust cumulative assessment was undertaken within the ES, which assumed that the busiest construction month of five nearby windfarm developments (including Pencloe Windfarm) would occur at the same time.
- 2.2.3 Since then the cumulative situation has changed and as stated previously, in order to address comments from ARA in relation to the C90 Afton Road, this CTMS will consider a cumulative assessment whereby the busiest construction month of both Pencloe and Lorg Windfarms occur at the same time. It is considered this remains a robust cumulative assessment as while there may be some overlap in the construction programmes of both sites, it is unlikely that the busiest month of construction will occur at the same time. Notwithstanding this, should construction for both developments overlap, then management and mitigation measures to offset potential adverse effects would be applied. Further details of mitigation are provided in Section 3.
- 2.2.4 The cumulative assessment undertaken within the ES identified that eight sections of the wider road network are predicted to experience an increase in vehicle movements generated by both developments. This cumulative assessment will focus on the following sections of the local road network in the vicinity of the development:
- B741 west of New Cumnock; and
 - Afton Road south of B741
- 2.2.5 In the interests of undertaking a robust assessment, coupled with the uncertainties over how general construction traffic will route to each development, a potential worst case assessment of traffic impact has been undertaken. While it is acknowledged that 100% of construction traffic will route via Afton Road, it has also been assumed that 100% of construction traffic will pass the counter on the B741 west of New Cumnock. In reality, it is expected that a proportion of construction traffic will route via the A76 and as such the additional traffic on the B741 will be considerably less than the total number assessed, thus resulting in a lower overall impact.

Table 2.3 ATC Counters Experiencing a Cumulative Effect (Pencloe and Lorg Windfarms)

Route	Lorg Two-way Daily Traffic	Pencloe Two-way Daily Traffic	Total Two-way Cumulative Daily Traffic	Two-way Projected AADT Baseline	Two-way Projected AADT Baseline + Cumulative	Percentage Increase
B741 west of New Cumnock	391	95	486	2,028	2,514	24.0%
Afton Rd south of B741	391	95	486	672	1,158	72.3%

* Lorg two-way daily traffic flow obtained from Lorg Windfarm ES. Lorg construction traffic is estimated to be considerably higher than Pencloe, this is due to the assumption that all aggregate will be delivered to site.

2.3 Summary of Cumulative Assessment Impacts

- 2.3.1 It is illustrated in Table 2.3 that the B741 west of New Cumnock will experience a percentage increase of less than 30% and this equates to a negligible impact according to the methodology outlined within the Traffic and Transport chapter of the Pencloe Windfarm ES. A moderate impact is predicted on Afton Road (between 60% and 90%) with a percentage increase of 72.3%.
- 2.3.2 It is noted that the B741 is currently operating significantly below capacity. Furthermore Afton Road is also currently operating significantly below capacity (6,720 two-way flow per day). Assuming the peak month of construction occurs at the same time for Pencloe and Lorg windfarms, which is highly unlikely, the total vehicles per day on this road (including baseline traffic) will be 1,158. As such, it is clear that the road is currently operating below its capacity and will continue to do so with the addition of the worst case traffic flows associated with both wind farms. Notwithstanding this, it is recognised that traffic levels on the Afton Road are currently low, and the increased number of different types of vehicles will represent a considerable intensification of use. Due to the carriageway width of Afton Road, mitigation in the form of road widening and provision of passing places will be provided. The proposed mitigation is shown in a separate mitigation design submission by SWECO for Pencloe Wind Energy Limited, and submitted alongside this CTMS.

3. Construction Traffic Management Strategy

3.1.1 Measures to minimise the transport impact during the construction phase of the Pencloe Windfarm development, while taking cognisance of the potential for Lorg Windfarm to be constructed at the same time are described in turn below.

3.2 Proposed Carriageway Mitigation Measures

3.2.1 The detail of the proposed mitigation is contained within the following SWECO drawings:

- 116638-100-0701 to 0707 – Summary of general mitigation on Afton Road, including road widening and location and design of passing places;
- 116638-100-2601 to 2607 – Swept path assessments and required mitigation to accommodate Turbine Delivery Vehicles.

3.2.2 Further construction and layout detail is provided in drawings 116638-100-0901 to 0902 and drawing 116638-100-0708.

3.3 Development of Pencloe / Lorg Construction Task Force

3.3.1 It is proposed that the contractors associated with each of the Pencloe and Lorg developments create a Construction Task Force, the sole aim of which will be to ensure that traffic is managed safely, effectively and minimise disruption where possible on the local road network and key sensitive receptors, while at the same time allowing construction of both sites to continue to programme. As demonstrated in Table 2.3, a worst case estimate is that there would be 486 daily construction trips travelling on Afton Road during the peak month of a cumulative Lorg and Pencloe construction scenario.

3.3.2 The Task Force would meet on a regular basis, preferably weekly, in order to discuss planned construction activities and associated vehicle movements for the following week at their respective sites. Each member of the Task Force would provide a day by day breakdown of traffic movements to each site along with proposed timings and where a particularly busy day / time is highlighted, then the potential to spread and offset traffic movements would be investigated and implemented. ARA would be invited to participate in the Task Force.

3.3.3 The CTMP, which will be prepared post planning, will provide more detail on the workings of the Construction Task Force.

3.4 Delivery Control

3.4.1 In addition to participating in the Pencloe / Lorg Construction Task Force, the Pencloe site contractor will be required to plan and manage traffic movements from the site in order to minimise the impact on the surrounding road network. The contractor will consider the following measures throughout the construction programme:

- Peak hours for a construction site are generally outside of traditional network peaks and as such, where possible, deliveries (most notably abnormal loads) shall not take place within the traditional AM and PM network peak periods.

- The number of deliveries to the site shall be minimised, both through consolidated ordering of materials, rationalising of suppliers and consolidating some deliveries.
- On site waste shall be minimised through recycling and re-use to minimise the number of collections from site.
- During peak construction periods, the departure of vehicles from the Pencloe site will be controlled in order to prevent large convoys of vehicles travelling on Afton Rd at the one time.

3.5 Access Control

- 3.5.1 The principal contractor will develop a system, in conjunction with the Pencloe / Lorg Construction Task Force, for vehicles accessing the site such that their arrival and departure will be controlled.
- 3.5.2 The access point to the Pencloe site will be controlled by a security guard who will control access to the development at all times during the working day.

3.6 Parking and Loading Arrangements

- 3.6.1 All parking will be provided for within the Pencloe site in clearly defined zones only, with no impact on the local road network.
- 3.6.2 Loading will be at the individual turbine construction areas within the site which will be managed by the contractor on site. This will not obstruct any public rights of way. Further details will be provided in the CTMP that will be prepared post planning.

3.7 Proposed Working Hours and Delivery Control

- 3.7.1 It is expected that construction working hours will be conditioned by East Ayrshire Council as part of any planning consent, however typical construction hours 0730 and 1900hrs Monday to Friday and 0700 to 1400 hours on Saturday. No works are expected to take place on Sunday.
- 3.7.2 Delivery of turbine and crane components may take place outside of the hours stipulated above, subject to not less than 24 hours notice to ARA.
- 3.7.3 Further details will be provided in the CTMP that will be prepared post planning.

3.8 Sustainability

- 3.8.1 The contractor will plan and execute the construction of the development with a high regard to sustainability as one of the main objectives. With regard to this, the following objectives will be implemented:
- Minimisation of vehicles movements to / from the site.
 - Promotion of shared transport arrangements for staff.
 - Apply a reduce-reuse-reduce recycling philosophy to all waste processing activities.

3.9 Additional Details to be Provided as Part of the Post Planning Construction Traffic Management Plan

3.9.1 In addition to providing more detail on the measures proposed within this document, the CTMP which will be prepared post planning will provide detail on the following:

- Code of Conduct for HGV Drivers.
- Winter Maintenance Procedures.
- Vehicle Breakdown Procedures.
- Road Sweeping and Wheel Wash arrangements.