

Chapter 12: Transport Assessment

Tables

Table 12.1: Scoping responses

Table 12.2: Anticipated vehicle movements during the construction phase

Figures

Figure 12.1: Proposed Access Routes

Chapter 12: Transport Assessment

12.1 Introduction

This chapter will consider the potential impact of the construction, operation and eventual decommissioning of the proposed Herds Hill Wind Farm on the regional and local transport network. It outlines the methodology and criteria used to assess the significance of potential impacts and what measures will be taken to mitigate any significant impact.

An assessment has been made on the magnitude of the residual impact combined with receptor sensitivity to determine the significance of the impact.

The assessment of significance of impact involves both the assessment of the baseline data and the use of professional judgement.

This assessment has been produced after the successful development of Sanquhar Community Wind Farm. The proposed access route for Herds Hill Wind Farm will utilise the same route, as all the construction traffic and abnormal loads (turbine components) were safely delivered to the original Sanquhar Wind Farm Site in Autumn 2017 without incident.

12.2 Transport Assessment

This chapter of the Environmental Statement (ES) estimates the volume and type of traffic generated in relation to the proposed development and considers the likely effects of this traffic. Road traffic generated by the proposal will arise primarily during the construction phase of the wind farm development.

This Transport Assessment considers:

- The potential routes to the proposed development area.
- Any modifications required to the local road network to allow the abnormal load deliveries of the wind turbine components.
- Potential effects on traffic as a result of the proposed development.
- Required mitigation to minimise any impact and a description of any residual effects.

12.3 Policy

Relevant transport and traffic guidance described in the following planning advice and guidance documents have been considered for this assessment:

PAN 75: Planning for Transport

Paragraphs 40 and 41 state:

'SPP17 requires a transport assessment to be produced for significant travel generating developments. Transport Assessment is a tool that enables delivery of policy aiming to integrate transport and land use planning...'



Herds Hill Wind Farm

All planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail will be proportionate to the complexity and scale of impact of the proposal...'

Guideline for the Environmental Assessment of Road Traffic, Institute of Environmental Assessment, 1993

The 'Guidelines for the Environmental Assessment of Road Traffic' produced by the Institute of Environmental Management and Assessment (IEMA, 1993) have been consulted for this assessment. The IEMA Guidelines suggest two broad rules which can be used as a screening process to identify the appropriate extent of the assessment area. These are:

- Rule 1 - Include Road links where traffic flows would increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) would increase by more than 30%.
- Rule 2 - Include any other specifically sensitive areas where traffic flows would increase by 10% or more.

The guidelines are intended for the assessment of the environmental effect of road traffic associated with major new developments.

This assessment has also been undertaken in line with the Transport Assessment Guidance (2012) produced by Transport Scotland.

Development Plan Policy

The Planning Statement which accompanies this ES, provides a detailed description of the planning and renewable energy policy context relevant to the application.

Relevant policy guidance applicable to traffic and transport from the Dumfries and Galloway Local Development Plan (2019) has been considered and utilised during the design and evolution of the Herds Hill Wind Farm, to ensure the proposal is compliant with these policies.

The relevant planning policies associated with traffic and transport matters relating to the proposed scheme, are outlined below and are also individually assessed in the separate Planning Statement, which accompanies this application.

Dumfries and Galloway Local Development Plan 2 (LDP2) (2019)

Policy T2: Location of Development/Accessibility:

All development proposals will be expected to:

- Prioritise personal travel by mode in the following order: walking, cycling, public transport and lastly car and other motorised vehicles.
- Be well served by the most sustainable modes of travel available and provide opportunities for a modal shift from private car use to more sustainable transport, including active travel, wherever possible.
- Fit with the policies and recommendations of the Local Transport Strategy.

Access Requirements:



- Consider accessibility issues early on and ensure street layout and design are part of the design and planning process from the beginning, taking account of statutory equal opportunities obligations relating to accessibility and be designed for the safety and convenience of all potential users.
- Incorporate appropriate on and/off site mitigation measures, where required, provided through developer contributions where necessary which might include: improvements, enhancements or additions to the walking/cycling network (connecting into existing local pedestrian or cycle networks or wider green networks) and public transport services, as well as road improvements and new roads.
- Incorporate an appropriate level of parking provision to the maximum standards as outlined in SPP (having regard to the travel modes and service which will be available) and also include adequate cycle parking.

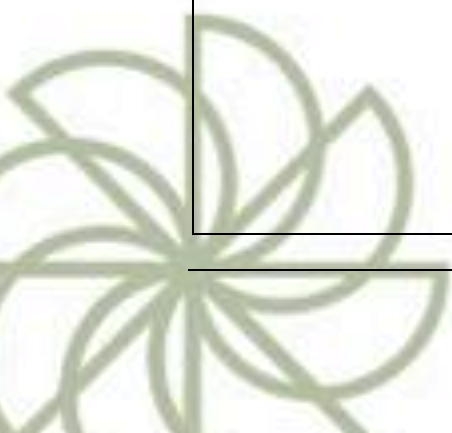
Where site Masterplans are prepared, they should include consideration of the impacts of proposals on the local and strategic road network, the strategic rail network, paths and cycle routes.

12.4 Scoping Consultation

During the scoping process with Dumfries and Galloway Council, a Scoping Opinion was provided (dated 25/08/2023) which included comments from the Roads and Infrastructure department relating to access, traffic and transport matters for the Herds Hill Wind Farm proposal. Details of this scoping consultation is summarised in Table 12.1, along with brief commentary regarding the actions undertaken by the Applicant and the Agent, and the work provided in this ES which are all relevant to transport and traffic associated with the construction and operation of the wind farm.

Table 12.1: Scoping responses.

<u>Scoping Response summary</u>	<u>Actions undertaken</u>
<ul style="list-style-type: none"> • Form a Transport Assessment Report. • Agree a Construction Traffic Management Plan (CTMP) with the Local Authority. • Consult Transport Scotland regarding access routes utilising the Trunk Road network. • Consult with Forest Managers and Timber Hauliers. • Identify the full extent of any proposed off-site road accommodation and mitigation works on public roads. • All proposals should be supported by a swept path analysis. 	<ul style="list-style-type: none"> • Transport Assessment Report has been completed. • A Construction Traffic Management Plan (CTMP) and an Abnormal Loads Traffic Management Plan (ALTMP) will be completed after planning consent, but prior to construction, secured by a planning condition. • The agent is in contact with Forest Managers and Timber hauliers in relation to other projects, so will discuss following planning approval. • Transport Scotland was consulted on 26/09/2023. • Swept Path Analysis to be provided following planning consent, however using the same access route as the operational Sanquhar Wind Farm and the consented Sanquhar II Wind Farm.



12.5 Proposed Access to Site

The access route for the operational Sanquhar Wind Farm utilised the King George V Port. It is the closest port to the site with suitable access roads to the site. For the original Sanquhar Wind Farm, two different routes were used to transport the abnormal loads, one for the blades and one for the tower sections and nacelle components. It is therefore proposed that these two viable routes for abnormal loads will be used for Herds Hill Wind Farm. The two options, Route A and Route B, are shown on Figure 12.1.

Route A involves abnormal loads being transported from the King George V Port onto the M8, before turning onto the M77 and heading southwest towards Kilmarnock. The route then takes the A76 and heads southeast through Cumnock and New Cumnock until they reached the C125n just before Kirkconnel, where the traffic then turn right along the C125n to the site entrance.

Route B involves the abnormal loads being transported from the King George V Port, through Glasgow and heads south on the M74 until they reach Junction 41 of the M6, where they would then use the junction to change their direction from southbound to northbound. The loads then routed north on M6/M74, exited the M74 at Junction 22 in a westbound direction on the A75 towards Dumfries; this manoeuvre is not possible when travelling southbound on the M74. The abnormal loads were then routed north on the A76 through Thornhill and Sanquhar. The abnormal loads then turned left onto the C125n from which they accessed the site.

12.6 Public Highways

Once the final abnormal load access route has been determined, which will depend on the turbine manufacturer selected to provide the 3 turbines, full Swept Path Analysis (SPA) will be conducted on the route at locations where existing highway geometry is restrictive or where new tracks join an existing public highway. The SPA will confirm that abnormal loads can safely negotiate a specific section of the route, or, to what extent any modifications are required within the highway boundary.

Prior to any deliveries of large components, a 'trial run' will be conducted with the chosen haulage contractor to confirm the route can be negotiated safely. Representatives from the relevant Local Roads Departments will be invited to attend the 'trial run'.

All details relating to SPA and proposed construction specifications would be agreed and approved by the relevant Local Roads Department and/or Transport Scotland.

A Construction Traffic Management Plan (CTMP) will be agreed with the relevant Local Authority Roads Department prior to construction commencing.

A minimum of two weeks notification will be given to D&G Council prior to the commencement of any works.

D&G Council Structures Division will also be consulted, and any structures identified on the proposed abnormal load route will be assessed to ensure they are suitable for the transportation of abnormal load components. This work would be commissioned once the abnormal load route and vehicle configurations were established. An Abnormal Loads Traffic Management Plan (ALTMP) will be agreed with Transport Scotland prior to any abnormal load deliveries commencing.

It should be noted that the majority of these elements to the public road network have already been completed and were approved by Transport Scotland and Dumfries and Galloway Council accordingly for the completed Sanquhar Community Wind Farm, plus other wind farm developments in the area.

12.7 Construction Vehicle Specification

During the construction phase of the development, the following vehicles are likely to use the access route:

- Mobile cranes
- Concrete mixers
- Flat-back delivery lorries
- Light Vehicles for construction personnel.

All vehicles selected and used will be dependent on the chosen contractor's construction methodology. In addition to the vehicles listed above, specialist delivery vehicles (abnormal loads) will be utilised by the turbine manufacturer to deliver the turbine components to the site. Again, the exact vehicle specifications will be dependent upon the chosen turbine manufacturer and their haulage contractor. The movement of the cranes required will be carefully considered ensuring that they only use permitted routes.

The abnormal load delivery vehicles often have active rear-wheel-steer, which enables the tail-end of the trailer to negotiate corners much more efficiently. All of the vehicles, being classed as 'abnormal load' will be accompanied to the site by either police escort or abnormal loads escort, arranged at the developer's expense and with prior consultation with Transport Scotland, the relevant Local Authority Roads Department and Police Scotland.

12.8 Vehicle Movements

The predicted vehicle movements generated from the construction of the wind farm are outlined below. The number of deliveries has been calculated based on the expected quantities of material and equipment required, together with the agent's previous experience in wind farm construction.

Preliminaries

Prior to the start of the main construction works, a small number of HGVs will access the site, transporting construction equipment and site accommodation. It is estimated that this would consist of approximately 70 deliveries transporting excavators, dumpers, compactors and site offices, welfare facilities and supplies. These deliveries are envisaged to take place over a 2-week period and would be no greater than typical farm deliveries already taking place.

Track Construction

To access the wind farm site, the existing site entrance and access tracks at Sanquhar Wind Farm would be utilised. Therefore, only small sections of new access tracks will be required to get from the existing access track to each new turbine base. New access tracks will be constructed using stone sourced from a borrow pit located on site. Due to the Agent's previous work on the site for the operational Sanquhar Wind Farm, it is well known that the rock available from the onsite borrow pits is of suitable quality, and that the quantity of stone available is more than sufficient for the construction of the proposal. Associated equipment such as dumpers, excavators and a stone crusher

Herds Hill Wind Farm

would be required which were equated for in the preliminary movement of vehicles in the paragraph above.

Turbine Foundation Construction

Each of the 3 turbines will have a concrete foundation approximately 300m³ in volume. The concrete will be sourced from local ready-mix facilities, and it is assumed that standard 10m³ capacity lorries will be used for delivery. 95 deliveries will therefore be generated for the delivery of concrete to site.

Concrete deliveries represent the largest volume of heavy traffic generated and the concrete will be delivered from a local, offsite concrete batching plant.

Steel reinforcement will also be required for each turbine foundation. Each foundation will require roughly three deliveries of reinforcement. Therefore 9 deliveries of steel will be required over the construction period.

Foundation bolts or inserts may also be required. These are steel sections which are cast into the concrete foundation and used for connecting the foundation to the wind turbine tower; 2 vehicle journeys are likely to be generated by this.

Turbine Component Delivery

Each turbine tower will be delivered in sections and assembled on site. Turbine towers are generally split into three sections for transport to site and therefore will generate 9 deliveries.

The nacelles are delivered as complete units, requiring 3 deliveries. The blades will be transported one at a time therefore 9 deliveries will be generated.

One delivery of switchgear, transformers, spare equipment and controllers etc. would be required per turbine, totalling 3 deliveries.

Electrical cabling would be delivered separately, which is anticipated to generate 5 deliveries.

For the turbines to be erected, two cranes will be required on site. It is anticipated this will generate 2 deliveries to site.

The turbine hubs/rotors will require 3 deliveries.

Of these deliveries, only the turbine towers, blades and nacelles would be classed as abnormal loads (longer than 17m, and/or wider than 4m) and all other loads would be classed as normal loads.

A police escort, or other escort approved by the police, will accompany the abnormal vehicle movements. It is estimated that in total 30 escort vehicles will be required and a number of police vehicles for the convoys.

All deliveries of materials for the site will be off loaded within the site boundary.

Other Activities

Additional vehicle movements to site will be generated by the delivery of fuel, potable water and other consumables. It is estimated that over the construction period, approximately 480 journeys will be required for consumables.

Herds Hill Wind Farm

For the substation/control room building and compound, it is estimated that there will be 25 deliveries of various materials and components associated with the construction of this element of the wind farm.

Construction Personnel Transit

The number of construction personnel working on site will vary throughout the construction phase depending on the construction activities taking place. Site personnel will be transported to and from site by private, light vehicles, and it is estimated that this will average 600 journeys throughout the construction period.

The traffic movements will be over a 12-month construction period with the majority of the abnormal loads occurring towards the end of the construction period. The anticipated number of vehicle movements during the whole wind farm construction phase are summarised in Table 12.2.

Table 12.2: Anticipated vehicle movements during the construction phase.

Construction Element		Vehicle Movements (2-way)
Building Materials	Concrete	95
	Switchgear etc	3
	Substation	25
	Reinforcement	9
	Preliminaries	70
	Cables	5
	Consumables	480
	Containers & tools etc.	9
Turbine Components	Foundation Insert	2
	Tower Sections	9
	Nacelle	3
	Hub/Rotor	3
	Blades	9
	Crane	2
	Abnormal load escorts	30
Light Vehicles	Site Personnel	600

Herds Hill Wind Farm

Total Estimate:		1353
of which HGVs		693
of which Abnormal		30
of which Light		630

Operation

During the standard operation of the wind farm, there are no deliveries of fuel or the removal of waste products to be transported. Traffic to the site during operation will be limited to maintenance vehicles and can therefore be considered negligible. Site engineers will be based locally and will be required to make site visits to undertake routine maintenance. The traffic will almost entirely be limited to standard cars or vans.

Decommissioning

The wind farm will be decommissioned, and the site reinstated at the end of its 40 years of operation. Decommissioning of the wind farm will necessitate the dismantling and removal of the wind turbines and the substation/control room compound building from the site. There may also be a requirement to remove areas of hardstanding and the short lengths of access tracks, depending on the landowner's requirements. This work is estimated to take approximately 4-6 months to complete based on today's current working practices.

The dismantling of the turbines will require a crane to be transported to the site and removed on completion of the dismantling. There may also be a requirement for low loader type vehicles to remove the substation buildings.

It is estimated that the total traffic movements associated with decommissioning will be less than 50% of the traffic movements required during the construction period. It is difficult to predict the transport effects of decommissioning. However, prior to decommissioning a revised traffic assessment would be undertaken with due regard to local highway network, best practice and legislation at that time.

12.9 Statement of Significance

Construction Period

The construction of the proposed wind farm is estimated to lead to around 1353 deliveries by HGV, abnormal load vehicles and other private vehicles. Approximately 51% of these are HGV movements, 2% are abnormal loads and 47% are light vehicles.

Peak construction traffic flows are expected when concrete is being delivered to site. Turbine foundations will be poured in a single day, which will require 30 deliveries per foundation. There would be an estimated maximum of 16 deliveries of ready-mix to site in any one day. However, it is important to note that the number of days in which concrete is being delivered would be limited to approximately 6 days out of the total construction period. A delivery schedule would be made available to the local community prior to the concrete deliveries starting.

Herds Hill Wind Farm

Operational Period

Throughout the operational life of the wind farm there would be infrequent traffic movements consisting almost entirely of cars or light vans that would be required for the service and maintenance of the turbines and site. The magnitude of their impact is considered to be negligible and is therefore not considered to be significant.

Decommissioning Period

During the decommissioning period, HGV traffic to and from the site is likely to be approximately 50% of that experienced during the construction period, therefore it is envisaged that decommissioning will not result in a significant impact. Baseline traffic flows on all of the affected roads may be different by the end of the 40-year lifetime of the wind farm, leading to the possibility of a different impact due to traffic. However, any potential impacts would be mitigated in a similar way to during the construction phase. A decommissioning plan agreed with relevant parties would be drawn up prior to any decommissioning works being undertaken.

Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) outlining measures to facilitate the efficient transportation of turbine components and materials to site will be developed prior to commencement onsite.

The CTMP aims to minimise congestion and disruption which might affect general traffic and in particular the emergency services.

The CTMP is likely to consist of:

- A statement of which public roads are to be used by construction traffic.
- Which local towns and villages are likely to be affected by construction traffic.
- Any details of additional speed restrictions through sensitive areas.
- Details of any temporary signage to be installed.

Abnormal Load Traffic Management Plan

With regards to abnormal loads, a separate Abnormal Loads Traffic Management Plan (ALTMP) will be produced. This is likely to cover the following:

- Swept Path Analysis and associated drawings for corners and junctions along the abnormal load delivery route.
 - The movement of these loads along the A76 will be restricted to occur outside peak flow hours to minimise disruption to general traffic flows.
 - Consideration given to scheduling abnormal loads in convoys of three or as single units scheduled over discrete non-peak times.
 - A police escort, or a police approved escort, will accompany abnormal vehicle movements.
 - Appropriate temporary signage will be installed to warn other motorists of the presence of construction vehicles.
 - Road hauliers will be ordered to comply with an agreed code of conduct, considering other road users accordingly.
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Herds Hill Wind Farm

Mitigation

Although the transport assessment demonstrates that there will be a manageable traffic impact, some of the abnormal loads associated with the turbine deliveries may cause some concern to the local highway network due to their size and nature.

Mitigation methods are proposed to address and monitor the movements of these abnormal vehicles including:

- Prior to the commencement of construction, a routing strategy would be drawn up and agreed with the local police and Local Authority Roads Department.
- Local consultations would take place with the affected householders along the transportation route to inform and advise them of the traffic movements; and
- Limiting the number of vehicle movements during the peak flow hour periods (8am-9am and 5pm-6pm) and weekends.

It is important to note that TMPs have been previously developed with and approved by the Dumfries and Galloway Council for the operational Sanquhar Community Wind Farm which was built and is now operated by the Agent. This would form the basis of any subsequent TMPs requested for Herds Hill Wind Farm.

Residual Effects

Residual effects from the construction traffic are considered to be of very low significance. The nature of some of the construction and delivery vehicles will make them obvious on the highway network and very minor delays, due to slow-moving traffic, may be experienced. Compared to other power generation technologies, wind turbines can be easily and economically decommissioned and removed from the site at the end of their economic life.

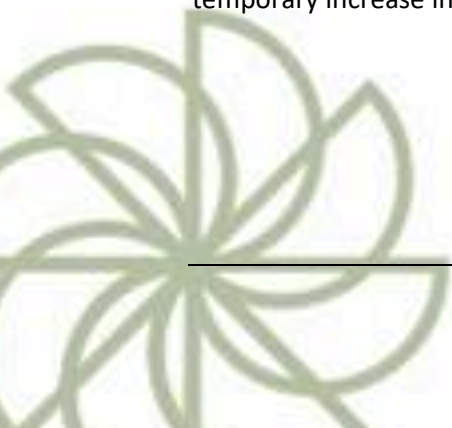
The proposed wind farm will generate a negligible increase in HGV and light vehicle movements using the local network of roads throughout the anticipated 9-to-12-month construction period and during decommissioning of the wind farm. Along the A76, any increase in traffic is likely to be unnoticeable and the impact is therefore considered to be of low magnitude.

No residual negative impact is anticipated during the operational period of the wind farm.

12.10 Conclusion




This Traffic and Transport assessment has assessed the likely significance of effects of the traffic associated with the proposed wind farm during the construction, operation and decommissioning phases.

The assessment concludes that the construction of the proposed wind farm would result in a negligible temporary increase in traffic levels on the A76 which is not considered to be significant.



397 Herds Hill

Legend

-  Site Boundary
-  Route A
-  Route B

Notes: N/A
Revisions: N/A

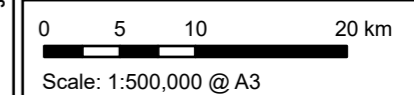


Figure 12.1- Proposed Access Routes

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