voltalia

# Chapter 11: Traffic and Transport

## Transport Statement

Department: ERM
Project: Bowshiel Solar Farm and BESS
Document Code: 0733784

May 2025

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# 11 TRAFFIC AND TRANSPORT

## 11.1 Introduction

### 11.1.1 Background

11.1.1.1 This Transport Statement (TS) has been undertaken by Environmental Resources Management Ltd (ERM) on behalf of Voltalia UK Ltd ('the Applicant') in relation to an application to the Energy Consents Unit ('ECU') to construct and operate a ground-mounted solar photovoltaic ('PV') and Battery Energy Storage System (BESS) ('the Proposed Development'). The Proposed Development site will extend to a total area of 190 hectares. The solar will have a generating capacity of up to approximately 165MW (AC). The BESS will be comprised of up to 40 BESS units with a capacity of up to 80MW.

11.1.1.2 The Proposed Development is located on land approximately 2.4 kilometres (km) south of the village of Cockburnspath, Scottish Borders, at the closest point to the Proposed Development boundary ('the Site').

11.1.1.3 The purpose of the TS is to assess the traffic and transport impacts associated with the Proposed Development and in particular the impacts of an increase in HGV numbers associated with the construction of the Proposed Development. The anticipated impacts to be assessed will consist of detailed estimates of types and quantities of construction vehicles, assessment of the proposed Site Entrance, the junction onto the public road network, and an overview of the operational characteristics of the Proposed Development with regards to the operational phase. This report will also include an overall assessment of the transportation implications of the Site on non-motorised users. Measures to minimise or mitigate the impacts of these additional movements will be outlined where appropriate.

11.1.1.4 This TS has considered the feedback received as part of the Environmental Impact Assessment (EIA) Scoping Opinion received from the ECU in January 2025. A summary of the consultation relevant to traffic and transport is presented in **Table 11.1**.

TABLE 11.1 SCOPING FEEDBACK AND RESPONSE

| CONSULTEE | TYPE AND DATE | SUMMARY OF CONSULTATION RESPONSE | RESPONSE TO CONSULTEE |
|---|---|---|---|
| Energy Consents Unit (ECU) | Scoping Response - December 2024 | Transport Scotland notes that they have concerns with regard to any intensification of traffic movements at the existing Bowshiel junction and the ability of the junction to accommodate HGV turning movements safely. In addition, the minor arm of this junction has restricted running width, with passing places provided. Transport Scotland will require to be satisfied that sufficient space exists at the | It is proposed that A1(T) will be upgraded to facilitate the movement HGV during the construction phase. Details of the proposed improvements including a swept path analysis are included in **Technical Appendix 11.1** of this Report.<br>The Applicant would seek to engage in dialogue with Transport Scotland on the proposed improvements |

| CONSULTEE | TYPE AND DATE | SUMMARY OF CONSULTATION RESPONSE | RESPONSE TO CONSULTEE |
|---|---|---|---|
| | | approach to the junction to allow two HGVs to pass so as to prevent any incoming vehicles backing up onto the trunk road. | separately. It is requested that this work is undertaken post consent and is secured through an appropriately worded condition of consent<br><br>Mitigation measures required to be complied with to minimise the impact of construction traffic during the construction of the Proposed Development and to alleviate against risks are detailed in **Section 11.6** of this chapter. |
| Scottish Borders Council (SBC) | Scoping Response – April 2025 | SBC notes that no public roads maintained by SBC will be used as part of the site access route.<br><br>SBC outline that due to the private road forming part of a public right of way, its impact on public access should be assessed and Transport Scotland should be consulted on the use of the access from the A1(T). | Mitigation measures to reduce the traffic impact on NMU are detailed in **Section 11.6.7** of this chapter. |

11.1.1.5 The layout and technical details of the Proposed Development are provided in **Volume 1, Chapter 3: Development Description** and this report is supported by the following figure and appendices:

- **Volume 2, Figure 11.1**: Transport Plan
- **Volume 3, Technical Appendix 11.1**: Access Junctions Design and Swept Path Analysis; and
- **Volume 3, Technical Appendix 11.2**: Construction Development Programme

## 11.1.2 Report Structure

11.1.2.1 Following this introductory section, This TS is structured as follows:

- Section 11.1– Introduction;
- Section 11.2 – Policy Review;
- Section 11.3 – Existing Conditions;
- Section 11.4– The Proposed Development;
- Section 11.5 – Traffic Impact Assessment;

- Section 11.6 – Traffic Mitigation; and
- Section 11.7 – Conclusion.

## 11.2 Policy Context

11.2.1.1 This section summarises relevant transport policy and guidance which has been considered in preparation of this TS and is detailed in **Table 11.2**.

TABLE 11.2 POLICY AND GUIDANCE

| AUTHOR | POLICY/GUIDANCE TITLE | POLICY DESCRIPTION | NOTES |
|---|---|---|---|
| The Scottish Government | National Planning Framework 4 (NPF4) (2024) [1] | This provides a statement of the Scottish Government's policy on nationally important land use planning matters. In relation Energy, Policy 11 notes that "*Development proposals for all forms of renewable, low carbon and zero emission technologies will be supported*". In addition, the NPF highlights that project design and mitigation will demonstrate how impacts on road traffic and trunk roads during construction will be addressed as well as cumulative impacts.<br>In terms of new developments, the NPF highlights the importance of considering the impact on the surrounding transport network, such as within Policy 13:<br>*"Where a development proposal will generate a significant increase in the number of person trips, a transport assessment/statement will be required to be undertaken in accordance with the relevant guidance"*. | This report has considered the impact of construction traffic (including cumulative impacts) on the surrounding road network associated with the Proposed Development and appropriate mitigation measures have been proposed to minimise any adverse impact where necessary. |
| Scottish Borders Council | Local Development Plan 2 (LDP2) 2024[2] | The LDP sets out land use proposals and planning policies intended to guide development and inform planning decisions within the area.<br>In relation to transport development and infrastructure, Policy IS4 states that the council will support proposals that: | This report has considered the impact of construction traffic on the surrounding road network associated with the Proposed Development and proposed mitigation measures to |

[1] The Scottish Government, National Planning Framework 4. Available at: https://www.gov.scot/publications/national-planning-framework-4/ [Accessed: 12/05/2025]
[2] Scottish Borders Council (2024). Local Development Plan. Available at: https://www.scotborders.gov.uk/downloads/download/1655/adopted-ldp2---volume-1 (Accessed: 12/05/2025)

| AUTHOR | POLICY/GUIDANCE TITLE | POLICY DESCRIPTION | NOTES |
|---|---|---|---|
| | | • "have no unacceptable adverse impact on the natural and built environment; and<br>• have no unacceptable adverse impact on occupiers of adjacent land".<br>To support this, the LDP acknowledges that a Transport Assessment/Statement and developer contributions will be required when a development generates "significant travel demand". | minimise any adverse impact where necessary. |
| Department for Transport (DfT) | Design Manual for Roads and Bridges (DMRB) – CD 123[3] | Details the geometric design standard for at-grade priority and signal-controlled junctions. | Has been used within this report to appraise the standard of existing infrastructure, in particular the Site entrance junction. |
| Department for Transport (DfT) | Design Manual for Roads and Bridges (DMRB) – CD 109[4] | Details the design requirements and advice to derive design speed and the appropriate values of geometric parameters for use in the design of the road alignment | Has been used within this report to determine the required stopping sight distance (metres) as part of junction visibility splay assessment. |
| Transport Scotland | Transport Assessment Guidance (2012)[5] | Sets out the methodology for preparation of a Transport Assessment. | Transport Assessments are normally associated with developments which are expected to cause a long-term, or |

[3] Department for Transport, DMRB CD 123 - Geometric design of at-grade priority and signal-controlled junctions. Available at: https://www.standardsforhighways.co.uk/search/962a81c1-abda-4424-96c9-fe4c2287308c [Available at: 12/05/2025]
[4] Department for Transport, DMRB CD 109 – Highway Link Design. Available at: https://www.standardsforhighways.co.uk/search/c27c55b7-2dfc-4597-923a-4d1b4bd6c9fa [Available at: 12/05/2025]
[5] Transport Scotland, Transport Assessment Guidance. Available at: https://www.transport.gov.scot/media/4591/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012_1.pdf [Accessed: 12/05/2025]

| AUTHOR | POLICY/GUIDANCE TITLE | POLICY DESCRIPTION | NOTES |
|---|---|---|---|
| | | | permanent, change in traffic flow or composition. It is therefore of limited relevance for the Proposed Development, where the principal traffic effects will be short-term and associated with construction. |
| Institute of Environmental Management and Assessment (IEMA,2023) | Guidelines for the Environmental Assessment of Road Traffic & Movement[6] | Sets out guidelines for determining the appropriateness and significance of traffic effects as a result of a proposed development. The following criteria should be applied for determining where further assessment is required:<br>• Routes where traffic is predicted to increase by 30% or more; and<br>• On highly sensitive routes where traffic is predicted to increase by 10% or more. | This guidance is primarily intended to apply to Environmental Impact Assessments; however, the quoted thresholds are useful for determining where temporary traffic increase may be significant. |

[6] Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement. Available at: iema-report-environmental-assessment-of-traffic-and-movement-rev07-july-2023.pdf [Accessed: 12/05/2025]

## 11.3 Existing Conditions

### 11.3.1 Overview

11.3.1.1 This section of the TS describes the existing conditions on and around the Proposed Development Site focussing on the Site location, access arrangements and the surrounding highway network, including its accident record. **Volume 2, Figure 11.1: Transport Plan** shows the location of the Site and surrounding highway and path network which is assessed below.

### 11.3.2 Highway Infrastructure

#### A1(T)

11.3.2.1 The A1 is part of the trunk road network in Scotland and provides a connection from Edinburgh to the border with England at Berwick upon Tweed passing through both East Lothian and the Scottish Borders Council (SBC)areas. The A1 runs southeast to northwest in the vicinity of the Study Area and provides a key link to other major roads within SBC where the Site is located. The A1(T) is a good standard single carriageway with stretches of dual carriageway (in the vicinity of the Site) along the route and is subject to the national speed limit, which is enforced by the presence of speed cameras. Transport Scotland manages the A1(T) and the road is operated by Amey (as maintenance contractor for Scotland Southeast Area). A route of this type and size has a capacity of circa 57,600 vehicles movements per day[7].

#### Bowshiel Farm Road

11.3.2.2 Bowshiel Farm Road is an unclassified no through road providing access to a single farm complex (Bowshiel Farm house) from the A1(T). Bowshiel Farm Road is a single carriageway road with a rural aspect, with restricted width although it appears there are some informal passing places to facilitate two-way vehicle movements on the road. The road is unlit, has no footway provision or cycling facilities, is bound by mainly grass verges and forms part of the Public Right of Way (PRoW) network in the area.

11.3.2.3 It is acknowledged that concerns have been raised by Transport Scotland regarding the suitability of the Bowshiel Farm junction with the A1(T) to accommodate Heavy Goods Vehicle (HGV), therefore it would require mitigation measures to minimise the impact of construction traffic. This is detailed further in Section 11.6.3 of this Chapter.

### 11.3.3 Non-Motorised User Network

11.3.3.1 As noted above, Bowshiel Farm Road which provides access to the Site is also a PRoW (CLOC/BB84/1) and provides a link to a Core Path 189 located southwest of the Site, but outside of the Site boundary. It is acknowledged that PRoW CLOC/BB84/1 will be impacted

[7] Standards for Highways (2013) Volume 15, Economic Assessment of Road Schemes in Scotland, DMRB.

by construction traffic, however it is considered that appropriate construction environmental measures can be put in place to manage the effects. A review of Sustrans' National Cycle Network (NCN) map and the Scottish Broders Cycle Route map indicates that there are no cycle routes in the vicinity of the Site.

### 11.3.4 Baseline Traffic Flows

11.3.4.1 Baseline traffic flow data for the A1(T) in the vicinity of the Site was obtained from the Department for Transport (DfT)[8] traffic count data site. The latest manual count was undertaken in 2023. The Annual Average Daily Flow (AADF) for 2023 is summarised in **Table 11.3** below and the count location is shown in **Volume 2, Figure 11.1: Transport Plan**.

TABLE 11.3 EXISTING ANNUAL AVERAGE DAILY FLOW (2023)

| ROAD/LOCATION | TOTAL AADF | HGV AADF | HGV % OF TOTAL AADF |
|---|---|---|---|
| A1 near Cockburnspath, DfT Point ID 80523 | 10,195 | 1,163 | 11.4 % |

### 11.3.5 Road Traffic Collision Assessment

11.3.5.1 An analysis of the RTC data has been undertaken to establish a road safety baseline and identify any inherent road safety issues on the surrounding road network, including on the Site access route. This RTC analysis has been undertaken using collision data from the online resource Crashmap[9] covering the five-year period between 2019 – 2023.

11.3.5.2 Collisions are categorised according to the severity of injuries sustained by those involved:

- 'Slight' is defined as a collision in which nobody is fatally or seriously injured, but at least one person is slightly injured;
- 'Serious' injuries are those which result in hospitalisation or death more than 30 days after the incident; and
- 'Fatal' results in the death of one or more persons at the scene of the collision or within 30 days of the incident.

11.3.5.3 A total of 2 RTCs (1 'Slight and 1 'Serious') on the A1(T) were recorded between the dates stated above. The locations of the identified RTCs are noted on **Volume 2, Figure 11.1: Transport Plan**.

11.3.5.4 Both RTCs were located approximately 1.7 km south of the Site and are attributed to driver decision error. No clear trends or strongly identifiable hotspots or high numbers of collisions

[8] UK Government, Department for Transport, Road Traffic Statistics. Available at: https://roadtraffic.dft.gov.uk/manualcountpoints/50510. Accessed on 17/03/2025.
[9] Crashmap.co.uk, CrashMap Data: Great Britain 1999-2023. Available at: https://www.crashmap.co.uk/Search [Accessed: 12/05/2025]

involving HGVs were apparent within the data and no RTCs were identified within the vicinity of the A1(T) / Bowshiel Farm Road junction.

## 11.4 The Proposed Development

### 11.4.1 Proposed Development Elements

11.4.1.1 The Proposed Development will consist of the following elements among others:

- Array of solar panels mounted metal frames;
- Inverters and transformers;
- Battery Energy Storage System (BESS);
- Temporary Construction Compound (TCC) which will be surfaced with aggregate;
- Fencing and secure entrance gates;
- Access tracks; and
- Access junctions onto public road.

11.4.1.2 Full details of the Proposed Development are set out in **Volume 1, Chapter 3: Development Description** of the Environmental Impact Assessment Report (EIAR).

### 11.4.2 Proposed Development Access

11.4.2.1 Access to the Site will be via the existing A1(T) / Bowshiel Farm Road junction with immediate access to the developable area taken off Bowshiel Farm Road, which is also a PRoW. Given the anticipated intensification of use of this existing access junction off the A1(T), concerns have been raised by Transport Scotland regarding the suitability of this junction to accommodate Heavy Goods Vehicles (HGV). Therefore, a plan showing the proposed widening required to ensure that two 16.5 m articulated HGV turning into/egressing the junction and passing each other has been provided. The subsequent swept path analysis undertaken shows that subject to the improvement in place, that the Site can be accessed in in forward gear.

11.4.2.2 A visibility splay assessment has also been undertaken using a setback distance of 9 m for a simple priority junction. This indicated that a visibility splay of 215 m in either direction from both junctions can be achieved, subject to the minor trimming of existing vegetation.

11.4.2.3 In addition to the above, 2 new access junctions will be constructed off Bowshiel Farm Road to provide access to the various land areas. Following construction, these accesses be used for infrequent general Site maintenance and inspection which will be via LGV or 4x4 vehicles, typically less than once a week during the operation phase. It is acknowledged that there is likely to be the occasional HGV delivery to the BESS area during the operational phase should there be the need to replace any of the BESS components.

11.4.2.4 Detailed drawings of the proposed new Site entrances are provided in **Volume 3, Technical Appendix 11.1: Access Junctions Design and Swept Path Analysis**.

### 11.4.3 Construction Vehicle Routing

11.4.3.1 All construction vehicles approaching the Site will be directed to use the approved approach route to Site. The origin of all construction traffic is currently unknown and is likely to be distributed throughout the region, however, all construction traffic including Abnormal Load Vehicles will access/egress the Site during the construction phase via Bowshiel Farm Road from the A1(T) as shown in **Volume 2, Figure 11.1: Transport Plan**.

11.4.3.2 All Abnormal Indivisible Loads will be delivered to the Site under escort in accordance with permits issued by the Council and Transport Scotland. Prior to the commencement of construction works on Site, an Abnormal Load route Assessment will be prepared and submitted to the Council and Transport Scotland for approval. It is assumed the requirement for this assessment would be secured by an appropriately worded planning condition.

### 11.4.4 Construction Programme and Timescales

11.4.4.1 Details on the construction programme and timescales are set out in **Volume 1, Chapter 3 Development Description** of the EIA Report. Subject to the necessary consents being granted, construction of the Site is anticipated to commence in the third quarter of 2028, and it is anticipated to take approximately 18 months to complete.

### 11.4.5 Construction Traffic Composition

11.4.5.1 Construction traffic generated by the Proposed Development will primarily be associated with the importation of construction materials including solar panels, support structures, electrical equipment, and other construction materials. It is expected that many of these materials will be transported to the Site by HGVs or HGV low-loader while an abnormal load vehicle is expected to be used for the delivery of the transformer.

11.4.5.2 Aggregates would be transported to the Site using rigid tipper HGVs. As no on-site batching is anticipated, all concrete will be ready-mix and will be imported by HGV concrete mixer. Fuel will be delivered by an HGV fuel tanker; it is anticipated that this would be a small rigid type of tanker due to the small amount of plant required on Site. A crane, if required, will travel to and from the Site under its own power.

11.4.5.3 Other vehicles associated with construction of the Proposed Development can be expected from construction workers and other Site personnel accessing the Site. Construction personnel are expected to primarily use car or van to access the Site.

### 11.4.6 Construction Traffic Volume

11.4.6.1 An indicative programme of anticipated construction traffic associated with the Site is provided in **Volume 3**, **Technical Appendix 11.2: Construction Development Program** and is expected to run for approximately 18 months. The following sub-sections provide detail for each element of work. Detailed assumptions have been made in estimating material quantities.

### Site Mobilisation and Demobilisation

11.4.6.2 At the commencement of the project, plant, equipment, and welfare facilities will be brought to the Site and the TCC will be formed. This is expected to require up to 15 HGV deliveries or 30 two-way HGV movements at the commencement and end of the construction period (60 two-way movements overall).

11.4.6.3 During Site demobilisation, most of this equipment will be removed from Site. Vehicle movements for demobilisation will result from empty HGVs and low loaders travelling to Site and then departing loaded.

### Access Tracks & Hardstandings

11.4.6.4 It has been estimated that approximately 5,400 m of new access tracks will be required on Site. These tracks will be formed to a width of 4 m and to a depth of 0.8 m with an additional 0.2 m surface layer dressing. Therefore, the volume of material (aggregate) required for the construction of the access tracks is approximately 21,641 $m^3$.

11.4.6.5 The proposed Temporary Construction Compound (TCC) will make up an area of approximately 9,000 $m^2$. Aggregate will be laid at a depth of 0.5 m, therefore approximately 4,500 $m^3$ of aggregate will be required to be delivered to Site.

11.4.6.6 The customer substation will make up an area of 7.5 $m^2$. Aggregate will be laid at a depth of 0.3m, therefore approximately 2 $m^3$ of aggregate will be required to be delivered to Site.

11.4.6.7 Hardstanding in relation to the power transformer bund area will make up an area of 57.4 $m^2$. Aggregate will be laid at a depth of 1.15 m, therefore approximately 66 $m^3$ of aggregate will be required to be delivered to Site.

11.4.6.8 The customer switch room and control house will make up an area of 14.4 $m^2$. Aggregate will be laid at a depth of 0.5 m, therefore approximately 7 $m^3$ of aggregate will be required to be delivered to Site.

11.4.6.9 Hardstanding in relation to the Power Conversion System (PCS) foundations will make up an area of 384 $m^2$. Aggregate will be laid at a depth of 0.2 m, therefore approximately 77 $m^3$ of aggregate will be required to be delivered to Site.

11.4.6.10 Overall, the aggregate required to construct the access tracks and hardstandings areas throughout the Site will make up a combined 26,300 $m^3$. Presuming that all aggregate will be delivered to Site via tipper lorries with a volumetric capacity of 9 $m^3$, this will require approximately 2,922 vehicle loads, or 5,845 two-way HGV movements.

### Solar Panel

11.4.6.11 Solar Panels will be transported to Site via the use of a maximum length 16.5 m HGV. Once delivered, the panels will be stored on Site before being installed later. While the exact number of panels will be subject to the technology available at during procurement, enough panels will be installed to provide up to 165 MW of generating capacity. Based on this capacity, it is estimated that up to 287,631 solar panels will be required for the Proposed Development.

11.4.6.12 A typical container can carry approximately 600 panels, therefore the total number of loads which will be required for panel delivery is estimated to be 479, or a total of approximately 959 two-way HGV vehicle movements required for this element of works.

11.4.6.13 Up to 144 $m^3$ of steel will be required for piles and frames of the solar panels, which will require an additional 16 HGV deliveries, or 32 two-way HGV movements.

### BESS Containers, PCS & Transformers

11.4.6.14 The Proposed Development is expected to require up to 40 BESS containers. Based on the expected HGV capacity of 6 containers per HGV, there are estimated to be approximately 7 deliveries or 13 two-way movements which will take place over a three-month period to deliver the containers. The construction of the BESS containers will require a total of 22 $m^3$ of concrete (RF) and 6 tonnes of Rebar for the foundations laid to a depth of approximately 1.4m.

11.4.6.15 For PCS, 20 units are expected to be required which will generate approximately 3 deliveries or 7 two-way movements, based on an assumed capacity of 6 units per HGV. The PCS foundations will require approximately 384 $m^3$ of concrete and 96 tonnes of rebar to enable the component's construction.

11.4.6.16 In addition, 10 transformer units are expected resulting in an estimated 3 deliveries and 7 two-way movements, based on a capacity of 3 units per HGV load. The transformer foundations will require approximately 320 $m^3$ of concrete and 80 tonnes of rebar for construction.

11.4.6.17 Overall, the delivery of individual components, separate to the material required for construction, will require approximately 13 HGV deliveries, or 27 two-way movements.

11.4.6.18 In addition to the above, an approximate total of 726 $m^3$ of concrete will be required to be delivered to Site in relation to these components. Presuming that all concrete will be delivered to Site via tipper lorries with a volumetric capacity of 9 $m^3$, this will require approximately 81 vehicle loads, or 161 two-way HGV movements.

11.4.6.19 An approximate total weight of 181 tonnes of rebar will be required to be delivered to Site in relation to these components. Presuming that rebar will be delivered to Site via tipper lorries with a weight capacity of 20 tonnes, this will require approximately 9 vehicle loads, or 18 two-way HGV movements.

### Combiner Boxes, Cabling, Centralised Inverter & Transformers

11.4.6.20 The Proposed Development is expected to house 598 combiner boxes, and it is assumed that 50 boxes can be delivered per HGV. Based on this ratio, it is estimated that approximately 12 HGV deliveries or 24 two-way movements will be required.

11.4.6.21 Alongside the boxes, a total of 2,016 cable drums will be required for the Proposed Development which will contain the cabling for the Site. Based on an assumed capacity of 30 drums per HGV it is estimated that there will be approximately 67 deliveries or 134 two-way movements for the delivery of cabling.

11.4.6.22 There are expected to be 24 Centralised Inverter and Transformer Units required for the Site. Based on an assumed capacity of 6 units per HGV load, an approximate total of 4 deliveries and 8 two-way movements are expected. In relation to the transformer units, an approximate total of 69 $m^3$ of concrete and 17 tonnes of rebar will also be required for construction. This will require an approximate total of 15 and 2 two-way HGV movements in relation to the delivery of concrete and rebar respectively.

11.4.6.23 Overall, the delivery of individual components (including concrete and rebar) will require approximately 92 HGV deliveries, or 183 two-way movements.

### Substation Compound

11.4.6.24 Construction of the substation compound will commence once the access tracks are complete. The substation control room containing grid transformers will be installed within the substation compound. The transformers will be transported as abnormal indivisible loads (AILs) due to their weight and overall dimensions.

11.4.6.25 A total of 8 AILs are expected to be required to deliver these components. Typical AIL vehicles are able to retract to the size of a standard HGV on their return trip, resulting in 8 HGV movements leaving the Site and an overall total of 16 two-way movements.

11.4.6.26 All of the components related to the substation compound will require an approximate total of 299 $m^3$ of concrete to form the foundations, which will require approximately 33 HGV deliveries, or 66 two-way movements. These components will also require a total of 75 tonnes of rebar for construction, which will require approximately 4 HGV deliveries, or 8 two-way movements.

11.4.6.27 Overall, 37 vehicle loads or 74 two-way HGV movements will be required to construct the concrete and rebar elements of the substation compound.

### Auxiliary Delivery Items

11.4.6.28 As per the Site layout, additional items will be required to be delivered to Site. These items are highlighted in **Table 11.4** below:

TABLE 11.4 AUXILIARY DELIVERY ITEMS

| ITEM | NO. UNITS | NO. OF UNITS PER HGV | NO. OF HGV LOADS | 2-WAY HGV MOVEMENTS |
|---|---|---|---|---|
| BESS Switch room and O&M | 3 | 3 | 1 | 2 |
| Underground Water Tank | 1 | 1 | 1 | 2 |
| Total HGV Loads | - | - | 2 | 4 |

11.4.6.29 A total of 2 HGV loads have been assumed to deliver these items to Site, resulting in 4 two-way movements.

11.4.6.30 The approximate total volume of concrete required to construct the above components is 10 $m^3$, and will require approximately 1 HGV delivery, or 2 two-way movements. An approximate total of 2.5 tonnes of rebar will also be required for construction of the above components, which will require approximately 1 HGV delivery, or 2 two-way movements.

11.4.6.31 Overall, approximately 4 vehicle loads, or 8 two-way HGV movements will be required to construct the components listed within the auxiliary delivery items list.

### Miscellaneous Deliveries

11.4.6.32 It is estimated that there will be approximately 100 two-way vehicle movements associated with miscellaneous deliveries (including fencing, gates, security cameras, cranes, skips etc.) in order to maintain the compound areas and running of the Site during construction. This equates to approximately 6 two-way movements per month.

11.4.6.33 Construction of fencing, gates and erection of security cameras will require an approximate total of 47 $m^3$ of concrete to form the foundations, which will require approximately 5 HGV deliveries, or 11 two-way movements. An approximate total of 12 tonnes of rebar will also be required for construction, which will require approximately 1 HGV delivery, or 2 two-way movements.

### Fuel

11.4.6.34 Fuel for plant will be required on the Site regularly through construction, which is estimated to result in one HGV fuel tanker delivery per month during the construction programme or two two-way movements per month, and a total of 36 two-way movements during the construction programme.

### Staff

11.4.6.35 Staff levels will vary through construction depending on the operations being undertaken. It is anticipated that during the peak period of construction; 150 staff will be onsite. For the purposes of this assessment, it has been assumed that 10% of the onsite staff will travel by private car with the remaining staff traveling by minibuses (10 per bus). For private vehicle trips, the most recent National Travel Survey[10]private vehicle occupancy rate of 1.5 people per vehicle was used as the basis for determining car trips.

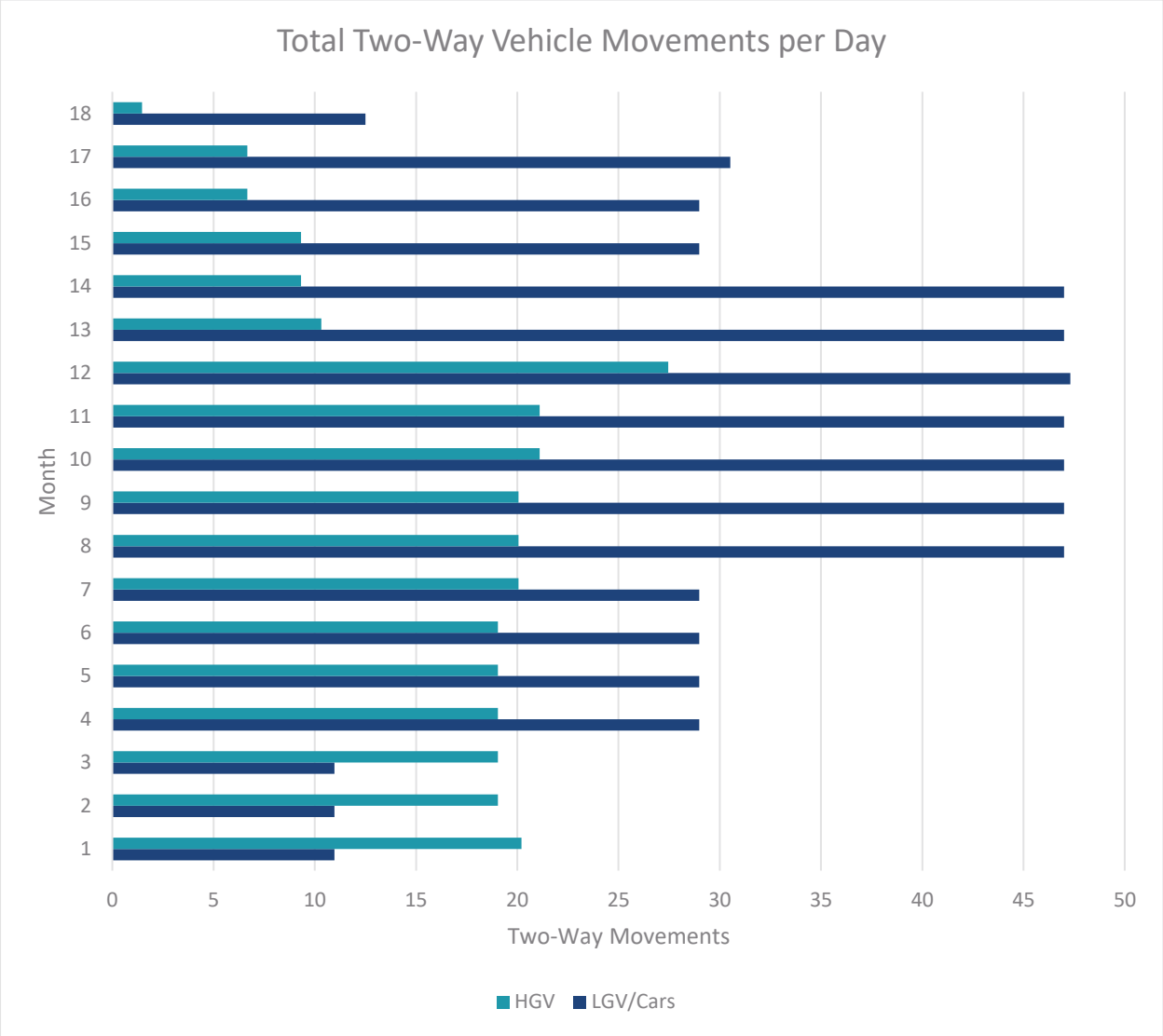
11.4.6.36 Following this methodology, on the busiest typical day for staff onsite, staff will generate 10 private vehicles (20 two-way movements) and approximately 14 minibus movements (27 two-way trips). Assuming a 26-day working month, this would equate to a total of 1,222 two-way vehicle movements generated by staff, during the typical busiest month of the construction programme.

[10] National Travel Survey, Average car or van occupancy. 2023. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017064/nts0905.ods

## Overall Delivery Programme

11.4.6.37 An indicative program of anticipated construction traffic during the construction phase is provided in **Volume 2**, **Technical Appendix 11.2: Construction Development Program** and a summary of the vehicle movements is shown in **Chart 11.1** below.

CHART 11.1 TOTAL DAILY TWO-WAY VEHICLE MOVEMENTS




11.4.6.38 As indicated in **Chart 11.1**, the peak of construction is expected to occur in Month 12 of the 18-month construction programme. During the peak month, there are approximately 1,952 two-way movements, made up of 1,230 car/van movements and 714 HGV movements including AILs. Assuming a 26-day working month, this would equate to a maximum of 75 two-way vehicle movements per day which would consist of 47 car/van movements and 27 two-way HGV movements (that is 14 vehicles arriving and the same 14 vehicles departing) per day as shown in **Chart 11.1**. In the months preceding the peak month, the average daily HGV movements is 21 two-way movements.

11.4.6.39 Following the peak month, all HGV impacts would reduce from a maximum of 27 two-way HGV movements per day to a daily average of 8 two-way HGV movements and then to a maximum of 2 movements per day during the latter stages of the construction phase.

## 11.5 Traffic Impact Assessment

### 11.5.1 Peak Traffic Increase

11.5.1.1 Baseline traffic flow data was only available for the A1(T). Bowshiel Farm Road is a no through road which provides access to a single farm complex and therefore the baseline traffic flow will be negligible

11.5.1.2 **Table 11.5** indicates the predicted increase in traffic on the A1(T) during the peak phase of construction.

TABLE 11.5 PREDICTED PEAK MONTH AVERAGE DAILY FLOW (ADF) - A1(T)

| REF | ALL VEHICLES | | | HGV ONLY | | |
|---|---|---|---|---|---|---|
| | BASELINE | BASELINE + PROPOSED DEVELOPMENT | % INCREASE | BASELINE | BASELINE + PROPOSED DEVELOPMENT | % INCREASE |
| 1 | 10,195 | 10,270 | 0.7% | 1,163 | 1,191 | 2.4% |

11.5.1.3 As indicated in **Table 11.5** above, the peak increase in traffic is 0.7% for all vehicles and 2.4% for HGVs on the A1(T). This increase is negligible and is likely to be within the existing daily variation in traffic flow on this route and therefore not significant as per the IEMA Guidelines.

11.5.1.4 It should also be noted that the above is only during the peak month, month 12 of construction. During the remaining construction period, traffic would be lower and would be less than half of the peak for HGV deliveries during the final 5 out of 18 months.

11.5.1.5 On Bowshiel Farm Road, the increase in monthly traffic levels is expected to be negligible as the road currently only provides access to the Bowshiel Farm House.

11.5.1.6 Special consideration has been given to the potential impacts of opposing HGV traffic and the users of the PRoW **Section 11.6** of this TS.

### 11.5.2 Operational Traffic

11.5.2.1 Vehicle movements generated during the operational phase of the Proposed Development will comprise activities associated with inspection, monitoring, and general Site up-keep. It is anticipated that such visits will occur once per week on average and be via van or other similarly sized vehicles.

11.5.2.2 Due to the low numbers of vehicle movements anticipated, it is unlikely that the operation of the Proposed Development will have any significant impact on the road network. The Proposed Development is not intended to attract visitors, and therefore it is not anticipated to generate other types of trips other than for regular maintenance.

11.5.2.3 The effect of operational traffic is therefore expected to be negligible and has been scoped out of this assessment. This is considered acceptable by Transport Scotland.

### 11.5.3 Decommissioning Phase

11.5.3.1 Traffic and transport effects associated with decommissioning of the Proposed Development are expected to comprise removal of all solar PV array infrastructure including modules, mounting structures, cabling, and switching stations. These would be removed from the Site and recycled or disposed of in accordance with good practice and market conditions at that time.

11.5.3.2 Traffic associated with decommissioning of the Proposed Development will be the same or less than that experienced during construction as the activities associated with decommissioning are expected to be similar to the construction phase, albeit in reverse. It is not possible to accurately forecast baseline environment including traffic flow levels 40 years into the future. For these reasons, further work would be undertaken, and appropriate traffic management procedures agreed with the Scottish Borders Council and Transport Scotland at the time of decommissioning. As the construction phase represents a worst-case assessment, the decommissioning phase has been scoped of this assessment. This is considered acceptable by Transport Scotland.

### 11.5.4 Cumulative Traffic

11.5.4.1 As part of this TS, a review of other committed developments in the area that has the potential to result in cumulative traffic and transport effects has concluded that any potential overlap in routes for general construction traffic is limited to the A1(T).

11.5.4.2 The A1(T) is a good standard trunk road which is well used by HGVs and has sufficient capacity to accommodate temporary increases in traffic levels. On that basis and given that any developments would be subject to appropriate planning conditions, no cumulative assessment of traffic effects has been undertaken.

### 11.5.5 Impact on Road Safety

11.5.5.1 Bowshiel Farm Road / A1(T) junction and sections of Bowshiel Farm Road are considered too narrow for two HGVs, or an HGV and a farm truck, to pass each other safely and as such the predicted increase in traffic during construction may have an effect on safe operation of this section of the route. In relation to road traffic collisions, in the absence of any identifiable accident hotspots, the very minor temporary increase in traffic is not sufficient to have a significant impact on road safety. The overall impact of the Proposed Development on road safety after the implementation of the proposed traffic management measures, Section 11.6 of this TS, is negligible.

### 11.5.6 Impact on the Non-motorised User Network

11.5.6.1 As outlined in **Section 11.3**, there is no footway provision along the road links within the Study Area, however, Bowshiel Farm Road is designated as a PRoW and may be used by non-motorised users. Therefore, the minor intensification of traffic and in particular HGV traffic on the access routes during the construction phase will likely result in a decrease in non-motorised user amenity (as well as an increase in fear and intimidation) on this corridor. Hence, consideration has been given to the potential impacts of HGV traffic on the non-motorised user network in **Section 11.6** of this TS.

## 11.6 Traffic Mitigation

11.6.1.1 This section of the report covers the mitigation measures required to be complied with to minimise the impact of construction traffic during the construction of the Proposed Development and to alleviate against risks. It is proposed that these measures will be included as part of a Construction Traffic Management Plan (CTMP) for the Site.

11.6.1.2 Prior to the commencement of construction works on Site, a CTMP will be prepared and submitted to the Council for approval. The requirement for the CTMP would be secured by an appropriately worded condition of consent. This CTMP will provide specific timings of construction phases and will consider the specific details of how construction will be managed.

### 11.6.2 Route to Site

11.6.2.1 Drivers of all delivery vehicles will be provided with a driver's card clearly showing the approved route to access the Site and that access from non-approved routes is prohibited. Directional signage will be installed on the route to Site, and to enforce the proposed traffic management procedures. Additionally, it is noted that Bowshiel Farm Road form part of the SBC's PRoW network. In order to protect the integrity of the PRoW, a pre/post road condition survey will be carried out for the carriageway on the routes to the Site (Bowshiel Farm Road) in conjunction with SBC Road Maintenance Department to identify and defects and how they will be rectified.

11.6.2.2 Bowshiel Farm Road is deemed too narrow to narrow to allow for two opposing HGVs to pass each other, therefore, in order to prevent the risk of obstruction of these routes due to construction traffic, additional passing places might be required. These will be reviewed as part of the pre/post condition survey of the delivery route which could be included as a condition of any such planning permission.

11.6.2.3 In addition to the above, consideration should be given to the implementation of a vehicle booking system and a hold-off area for the duration of construction. A hold off area will be identified where approaching delivery vehicles can safely pull off the road and contact the Site Manager or Banksman via mobile phone. Only once permission to make the final approach to Site has been received should drivers proceed beyond the hold off area. The Site Manager or Banksman will control the flow of delivery vehicles to ensure that opposing vehicles do not meet on Bowshiel Farm Road.

### 11.6.3 Bowshiel Farm Road/A1(T) Junction

11.6.3.1 Concerns were raised by Transport Scotland regarding the suitability of this junction to accommodate the short-term increase in HGVs during the construction phase. A plan showing the proposed widening required to ensure that two 16.5 m articulated HGV turning into/egressing the junction and passing each other is included in **Volume 3, Appendix 11.1: Access Junctions Design and Swept Path Analysis**. The swept path analysis undertaken shows that subject to the improvement in place, that the Site can be accessed in in forward gear.

### 11.6.4 Temporary Signage

11.6.4.1 Prior to the commencement of construction, the appointed contractor will install temporary construction phase signage on the approved route to the Site. The required signage will fall into two broad categories; directional signage on the approved route to the Site and warning signage.

11.6.4.2 Directional signage should be located at key points on the approved route to the Site with the purpose of reinforcing the route and preventing delivery vehicles from using the wrong route.

11.6.4.3 Warning signage will be located at key locations on access route within the vicinity of the Site (including the core path network) to warn members of the public of the likelihood of encountering construction traffic. This will minimise any adverse impacts caused by construction traffic on the local road network associated with the construction of Proposed Development.

11.6.4.4 Advisory signage such as 'Heavy Plant Crossing' and 'Construction Site Access' signs on approach to the junction between the A1(T) and Bowshiel Farm Road, from both the north and south should be installed. Any additional signage e.g., for speed restriction and Temporary Traffic Regulation Order (TTRO), will be subject to a separate application to Scottish Borders Council and their consenting process.

### 11.6.5 Banksman

11.6.5.1 During the construction phase of the Proposed Development, it is proposed that the appointed contractor consider the services of a banksman at the Site access junction to manage the entrance and egress of vehicles at the Site. The banksman will be responsible for administering the delivery vehicle booking system, communicating with the hold off area, and for ensuring that vehicles arriving and departing the Site have a clear run through Bowshiel Farm Road.

11.6.5.2 A banksman would ensure that HGVs only leave the Site when the road is clear. Vehicles associated with the Proposed Development must not park on the public road and banksmen should ensure that vehicles do not have to wait on the main road before turning onto the Site.

### 11.6.6 Wheel Washing

11.6.6.1 If required, to prevent the deposition of mud on the public highway, the appointed contractor would install and operate wheel washing facilities at the Site entrance junction during construction.

11.6.6.2 These facilities will remain in place for the duration of the construction phase of the Proposed Development. Steps should be taken to prevent the deposition of mud and debris on the public road, and if this occurs then road cleaning should immediately be undertaken.

### 11.6.7 Non-motorised users

11.6.7.1 As detailed in **Section 11.3.3**, Bowshiel Farm Road which is used to gain access to the Site is a PRoW and would be impacted during the construction phase. It is proposed that the route is kept open throughout construction phase and a management strategy is required to address the interaction between the PRoW and the Site during the construction phase. Management solutions to be determined by the appointed contractor prior to construction may include:

- Potential re-routing of the PRoW section which currently overlaps with the construction traffic route; for example, routing from the A1(T) junction north and around the permitter of the Site Boundary before directing path users south to the point where it currently meets Core Path 189. As an alternative, people using the PRoW will be directed south to join the Southern Upland Way/Core Path 189 which links to other PRoW paths to the vicinity of the Site;

- Maintain the PRoW in its current route but with enhanced signage to warn users of moving vehicles and signage for drivers to maintain a slow speed for the safety of non-motorised users;

- Temporary closure of the PRoW to prevent or restrict access of the PROW to facilitate public safety during the construction phase, if required; and

- Active management plan for crossing points and shared use access routes for PRoW, taking into account delivery timescales and movement of plant and machinery etc.

11.6.7.2 It is considered that implementation of any of the above measures would demonstrates that the assessed risk can be mitigated. The appointed contractor would decide on the most appropriate measures following a review Site conditions and the operational requirements prior to construction.

## 11.7 Conclusion

11.7.1.1 This Transport Statement has considered the likely impact of traffic generated by the Proposed Development on the local transport network. A detailed review of the type and quantity of vehicles associated with each element of the construction project has been provided along with an approximate construction programme.

11.7.1.2 Construction of the Proposed Development will run for a 18 month period and will generate approximately 22,581 vehicle movements. It is expected that during the peak month of construction, approximately 75 two-way vehicle movements will occur per day consisting of 47 car/van movements and 27 HGV movements on average. This assessment has

concluded that this increase is negligible in terms of the existing traffic flow and the capacity of the routes in question. The predicted increase is temporary and would cease following completion of the short-term construction of the Proposed Development.

11.7.1.3 Access to the Site will be taken from the existing Bowshiel Farm Road / A1(T) Junction which will have to be upgraded to allow two HGVs to pass each other at the junction. A visibility splay assessment has been undertaken which demonstrates that a visibility splay of 215 m in either direction can be achieved subject to the minor removal of vegetation in the south. A swept path analysis has also been undertaken which demonstrates that the largest anticipated vehicle, which is a 16.5 m articulated HGV and that the Site can be accessed in in forward gear.

11.7.1.4 Two additional junctions off Bowshiel Farm Road providing immediate access to the Proposed Development parcels have also been designed to accommodate the largest type of vehicle anticipated at the Site. Each entrance has also been assessed for visibility against the DMRB standard, and the achievable splays are deemed acceptable.

11.7.1.5 Traffic management procedures have been proposed within this report to mitigate the constraints identified and to ensure the safe operation of the approach route to the Site during construction. Determination of the final details of these traffic management measures will occur once a contractor has been appointed and can be secured via an appropriately worded condition of consent. Overall, it is considered that following the implementation of the proposed mitigation and traffic management procedures, the overall impact of construction traffic on the surrounding road network is expected to be minimal.

11.7.1.6 As the Site will not be manned, operational traffic is expected to be minimal and would be conducted by smaller vehicles. The impact of this on the wider highway network is therefore expected to be negligible.

11.7.1.7 It is thus concluded that if the Proposed Development proposals are progressed, this TS has demonstrated that it complies with transport policy and the level of traffic associated with the proposals will have **No Significant** impact on the surrounding highway network. Therefore, as the impact on the Site is not expected to be severe, the Proposed Development is considered to be in accordance national and local policy, including Scottish Borders Council's LDP2 which highlights that a new development must not have a negative impact on natural and built environment.