

Root Power (South) Limited

**Proposed Battery Energy Storage System
Luzlow Lane, Werrington
Transport Statement**

July 2025

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Client Commission			
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LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown and CVs are available upon request to demonstrate our experience and credentials.

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PROPOSED BATTERY ENERGY STORAGE SYSTEM LUZLOW LANE, WERRINGTON TRANSPORT STATEMENT

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I. INTRODUCTION

I.1 Background

- 1.1.1 Local Transport Projects Ltd (LTP) has been commissioned to produce a Transport Statement (TS) in support of a full planning application (ref: SMD/2024/0568) for a proposed Battery Energy Storage System (BESS) on land to the west of Luzlow Lane in Werrington, Staffordshire. A plan of the proposed site layout is provided as ES Figure 1.2.
- 1.1.2 The local planning authority for the site is Staffordshire Moorlands District Council (SMDC) and the local highway authority is Staffordshire County Council (SCC).
- 1.1.3 LTP has also been commissioned to produce a Construction Traffic Management Plan (CTMP) (LTP, 2025) to support the application, with the CTMP outlining the approach to mitigating the impact of construction traffic at the site.

I.2 Scope

- 1.2.1 This report is written in accordance with the Government's '*National Planning Policy Framework*' (MHCLG, 2024) and '*Planning Practice Guidance*' (MHCLG, 2014), with the scope outlined below:

- **Introduction & Description of Proposals:**
 - Description of the development site, including location and any existing access arrangements;
 - Summary of relevant planning and allocation history for the site;
 - Description of the proposed development including site layout and proposed access arrangements.
- **Site Assessment:** Site assessments to determine existing traffic conditions, such as posted speed limits, road restrictions, highway geometry, on-street parking restrictions and any other relevant features of the local area.
- **Road Casualty Appraisal:** Examination of road collision records (5-year study period) and assessment of the road safety impact of the proposed development on the local highway network.
- **Traffic Impact:**
 - Calculation of the projected construction and operational trip generation for the proposed development;
 - Assessment of the likely impact of the proposed development on the operation of the local highway network.
- **Access Appraisal:** Assessment of the suitability of the proposed access from the public highway, based on swept path analysis of the largest vehicle expected to visit the site and also consideration of visibility splays available from the proposed site access location.

- **Conclusions:** Conclusions summarising the outcomes of the TS, including a commentary on the suitability of the proposals in terms of road safety and traffic impact.

1.2.2 This TS report has been prepared in accordance with the above scope and reference has been made to the following documents where appropriate:

- National Planning Policy Framework (MHCLG, 2024);
- Staffordshire Moorlands Local Plan (SMDC, 2020);
- Planning Practice Guidance (MHCLG, 2014);
- Staffordshire Local Transport Plan (SCC, 2011);
- Manual for Streets 2: Wider Application of the Principles (CIHT, 2010);
- Guidance on Transport Assessment (DfT, 2007a); and
- Manual for Streets (DfT, 2007b).

2. SITE BACKGROUND

2.1 Site Location, Existing Use & Planning History

- 2.1.1 The proposed BESS is to be installed on existing agricultural land to the west of Luzlow Lane in Werrington, Staffordshire and is bound on all sides by agricultural land. The approximate location and boundary of the site and proposed access track alignment is highlighted in red in Image 1 below.

Image 1: Site Location



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- 2.1.2 It is understood that there have been no recent pertinent planning applications relating to the application site.

2.2 Development Proposals & Access Arrangements

- 2.2.1 The report is based upon the proposals outlined on the site layout plan provided as ES Figure 1.2. The development proposals will be seeking full planning consent to provide a BESS contained within a fenced compound and separate transformer, with further details expected to be submitted as part of the planning application.
- 2.2.2 It is expected that the delivery and construction/installation period of the proposed BESS is expected to be 12-14 months. The trip generation projections associated with the proposed development are presented in Section 6 of this report.

- 2.2.3 Vehicular access to the site is to be provided via an existing field access connecting with Luzlow Lane on the eastern site boundary, which is expected to be widened as part of the development to accommodate the largest construction vehicle movements. An assessment of the achievable visibility splays at the existing access is presented in Section 5 of this report. The access is expected to be utilised during the construction, installation, and maintenance periods.

Photo 1: Existing Field Access on Luzlow Lane



- 2.2.4 Vehicle parking for site workers during all stages of construction and operation will be accommodated on-site with no vehicles allowed to park or wait on the adjoining highway network during any stage of the development.

3. SITE ASSESSMENT

3.1 Local Highway Network

- 3.1.1 As previously mentioned in Section 2.2, the site is to be accessed from Luzlow Lane utilising the existing field access which is expected to be widened as part of the proposals to accommodate the largest construction vehicle movements. Luzlow Lane is a two-way single carriageway that measures approximately 5.7m in width and is subject to a derestricted speed limit (60mph) within the vicinity of the site. The road provides access to Bagnall Road and Thorney Edge Road via a priority junction approximately 900m to the north of the site access and Armshead Road and Thorney Edge Road approximately 60m to the south of the access. There are not any existing waiting or parking restrictions in place on Luzlow Lane within the vicinity of the site.

Photo 2: Luzlow Lane



- 3.1.2 Approximately 60m to the south of the existing site access, Luzlow Lane forms a priority crossroads junction with Thorney Edge Road (to the east) and Armshead Road (to the west) with an existing farm access forming the southern arm of the crossroads.

Photo 3: Luzlow Lane/Armshead Road/Thorney Edge Road Crossroads

- 3.1.3 Armshead Road is a two-way single carriageway measuring approximately 6.2m in width and is subject to a derestricted speed limit (60mph) in the vicinity of the crossroads junction with Luzlow Lane and Thorney Edge Road, although the speed limit reduces to 40mph approximately 180m to the south-west of the junction. The speed limit reduces again to 30mph on the approach to the built-up extents of Werrington, with the road providing access to Rownall Road via a priority crossroads junction, which in turn provides access to the A52 approximately 60m to the south of the junction with Armshead Road.
- 3.1.4 The A52 forms a major east-west road running between Newcastle-under-Lyme and Mablethorpe in Lincolnshire via Derby, Nottingham, Grantham, Boston and Skegness. Locally, the road forms a two-way single carriageway measuring approximately 6.3m in width and is subject to a 40mph speed limit. The A52 provides access to the A520 approximately 1.1km to the east of the Rownall Road junction and the A5009 and Bucknall Road approximately 5.5km to the west via signalised crossroads.
- 3.1.5 Luzlow Lane approximately 900m to the north of the site access forms a simple priority T-junction with Bagnall Road and Thorney Edge Road. Bagnall Road is a two-way single carriageway measuring approximately 6.7m in width and is subject a derestricted speed limit (60mph). The road continues to the north-west providing access to Bagnall village.

3.2 Access Via Sustainable Modes

- 3.2.1 Due to the rural nature of the site, the sustainable transport provision (e.g. walking, cycling and public transport) is limited within the vicinity of the site. Furthermore, the nature of a BESS development means that trips by construction staff via sustainable modes are unlikely to be feasible.

4. ROAD COLLISION APPRAISAL

4.1 Collision Record

- 4.1.1 Personal Injury Collision (PIC) data for the highway network local to the site for the most recent available five-year study period (01/01/2018 to 31/12/2022) was obtained via a search of the Department for Transport's (DfT) road safety data (DfT, 2023).
- 4.1.2 A single collision occurred within the study area, which includes sections of Luzlow Lane, Armshead Road and a number of local junctions. The study area extents and the location of the collision are indicated on the plan included as ES Figure 7.2. Table 1 below outlines further details of the collision that occurred within the study area.

Table 1: Collision Summary

Factor	Collision Data
Date	22 nd May 2021
Time	16:32
Lighting	Daylight
Weather	Fine no high winds
Road Surface	Dry
Casualty	Slight x 7 (2 car drivers and 5 passengers)
Location	Armshead Road (not at a junction)

4.2 Road Safety Impact

- 4.2.1 A single collision, resulting in 7 casualties, has occurred within the study area during the five-year study period. Analysis of the study collision has not revealed any identifiable existing collisions issues associated with the movements of the proposed development. Therefore, it is considered that there are not any existing road safety issues pertinent to the development of the site.
- 4.2.2 If the proposed internal layout and access junction amendments are designed with due consideration to road safety, with appropriate highway design features incorporated into the detailed design, then the proposals should not have a detrimental road safety impact on the local highway network and should not adversely affect the safety of other road users.

5. HIGHWAY ACCESS APPRAISAL

5.1 Proposed Routeing

5.1.1 The likely constraints relating to the routeing of Heavy Goods Vehicles (HGVs) associated with the construction of the site have been considered, with the proposed routeing for all large construction vehicles accessing/egressing the site during the construction phase outlined below. All large vehicles would be expected to utilise this route back to the 'A' road network, with HGVs currently expected to utilise the identified route without issue. Vehicles arriving at the site are advised to arrive via the following route:

- A52 – Rownall Road – Armshead Road – Luzlow Lane.

5.1.2 The route back to the primary road network (described as travelling away from the site) is the above routeing reversed. The proposed construction traffic route is highlighted in blue within Image 2.

Image 2: Construction Traffic Routeing



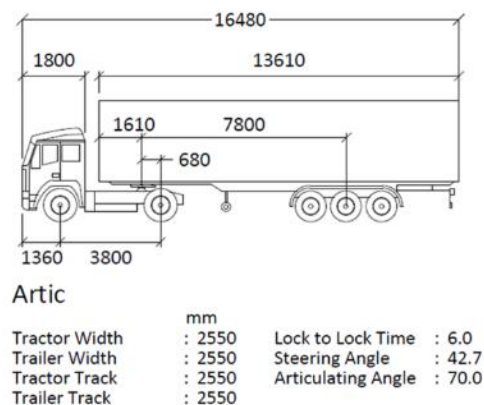
Source: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

- 5.1.3 Construction staff trips made by car and/or Light Goods Vehicles (LGVs) would also generally be expected to utilise the route outlined above to access/egress the site. Although there are not expected to be any constraints relating to cars/vans utilising Luzlow Lane to the north or Thorney Edge Road.
- 5.1.4 All relevant parties involved in making deliveries of construction materials, once the construction of the site commences, will be instructed on the above routeing arrangements before arriving/departing the site. This arrangement is to be strictly enforced, and all sub-contractors and suppliers are to be monitored to ensure that they use the defined route.

5.2 Swept Path Analysis

- 5.2.1 Swept path analysis for the site has been undertaken to establish whether the largest vehicle expected to access/egress the site can adequately navigate the site access junction with Luzlow Lane, Luzlow Lane/Armshead Road/Thorney Edge Road priority crossroads and manoeuvre within the site, with the results provided as ES Figure 7.3.
- 5.2.2 The Applicant has confirmed that the largest vehicle to access the site would be a standard articulated HGV, with the profile of the vehicle shown in Image 3 below.

Image 3: Swept Path Analysis Test Vehicle



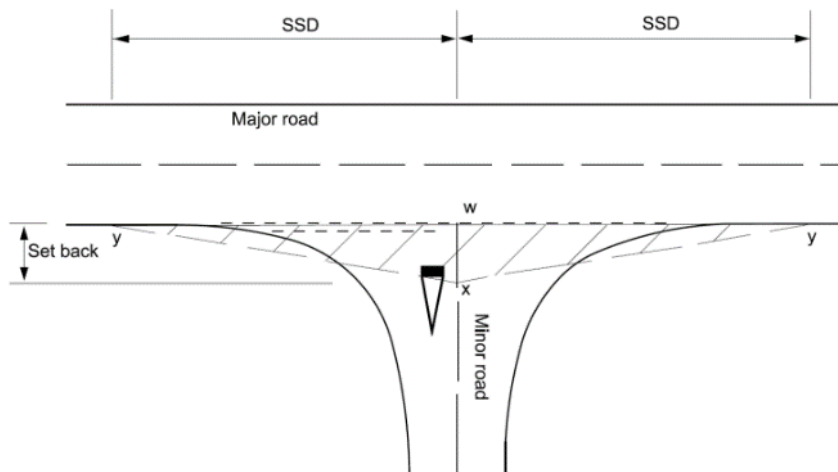
- 5.2.3 The results of the swept path analysis demonstrate that a standard articulated HGV can adequately access/egress the site via the existing access connecting with Luzlow Lane, subject to some minor widening/surfacing upgrades. The results also demonstrate that a standard articulated HGV can suitably manoeuvre along the internal access road.
- 5.2.4 Distances to overhead structures or cables have not been measured and have generally been assumed to permit the safe passage of vehicle/load combinations up to 4.95m high, unless signing is in place indicating otherwise, in accordance with *'Prevention of Strikes on Bridges over Highways'* (NR, 2014). Any signed low bridges (i.e. with a headroom of less than 5.03m) have been noted within the route assessment. Similarly, the route assessment does not consider the load bearing capacity of any bridges or structures along the proposed route, although any signed weight limits have been noted.
- 5.2.5 Although not expected to be required, any abnormal load movements on the highway would be taken in accordance with any applicable local highway authority and NH guidelines, with appropriate notification and consultation with stakeholders. It is recommended that the NH *'Electronic Service and Delivery for Abnormal Loads'* and the processes contained within the system should be utilised for the process of notifying abnormal load movements.
- 5.2.6 It is considered that if a standard articulated HGV is able to traverse the access route, then other smaller vehicles (e.g. LGVs) would also be able to adequately access and egress the site.

5.3 Site Access Junction Visibility Assessment

Visibility Splay Requirements

- 5.3.1 There are currently two key documents that provide guidance relating to highway design requirements; ‘*Design Manual for Roads and Bridges*’ (DMRB) (NH, 2021), which is generally more applicable to predominantly trunk road, higher speed environments, and ‘*Manual for Streets*’ (MfS) (DfT, 2007), which is generally more applicable to low-speed residential urban environments. MfS is also complemented by further guidance ‘*Manual for Streets 2*’ (MfS 2) (CIHT, 2010) for the application of the MfS principles on additional road types, such as busier streets and non-trunk roads.
- 5.3.2 In the vicinity of the existing access junction, Luzlow Lane is subject to a derestricted speed limit (60mph). To form a robust assessment, the visibility splay criteria contained within DMRB (NH, 2021) has been applied. For information, Image 4 illustrates the definition and measurement of the visibility splay distances described in this section.

Image 4: Definition of 'X' & 'Y' Distances



Source: NH, 2021

X Distance

- 5.3.3 DMRB outlines that “The minimum distance used to locate point X shall satisfy one of the following:
- 1) for direct access:
 - a) 4.5 metres; or,
 - b) 2.0 metres.
 - 2) for simple priority junctions:
 - a) 9.0 metres; or,
 - b) 2.4 metres.
 - 3) for all other priority junctions:
 - a) 9.0 metres; or,
 - b) 4.5 metres.

The minimum distance used to locate point X should be in accordance with a) for each junction/access type.

Where it is not feasible to locate point X fully in accordance with a), the minimum distance used to locate point X should be as close to a) as practicable, but no less than b).” (NH, 2021).

- 5.3.4 The visibility splays have been measured from an ‘X’ distance of 2.4m, in accordance with DMRB for ‘simple priority junctions’. It is acknowledged that a 2.0m setback distance may also be appropriate given the nature of the site.

Y Distance

- 5.3.5 The ‘Y’ distances are based on the Stopping Sight Distance (SSD), which is *“the distance within which drivers need to be able to see ahead and stop from a given speed. It is calculated from the speed of the vehicle, the time required for a driver to identify a hazard and then begin to brake (the perception-reaction time), and the vehicle’s rate of deceleration”* (CIHT, 2010).

The formula for calculating SSD (in metres) is provided as:

$$SSD = vt + v^2 / 2(d+0.1a)$$

Where

v = Speed (m/s)

t = driver perception – reaction time (seconds)

d = deceleration (m/s²)

a = longitudinal gradient (%)

- 5.3.6 Within DMRB desirable minimum SSDs are defined for specific design speeds, as reproduced in Table 2 below.

Table 2: DMRB Stopping Sight Distances

Design Speed (kph)	Design Speed (mph)	Stopping Sight Distance (m)
50	31.07	70
60	37.28	90
70	43.50	120
85	52.82	160
100	62.14	215
120	74.56	295

- 5.3.7 As shown in Table 2, there is a marked change in SSD requirements between the different design speed categories, with a requirement for 215m where vehicle speeds slightly exceed 52.8mph, and 160m slightly below this speed. As there is a derestricted speed limit (60mph) on Luzlow Lane in the vicinity of the site access, the required SSD utilising the DMRB table would be 215m to the right and left of the access, and therefore for robustness, this upper level has been applied within this appraisal.

- 5.3.8 Based on the drawing included as ES Figure 7.4, a visibility splay of 2.4m x 215m is expected to be achievable to the left of the existing access, without the apparent requirement for third-party land, although this would be subject to the cutting back and appropriate management of vegetation along the site frontage to the north.

Image 5: Visibility to the Left of the Existing Access on Luzlow Lane



- 5.3.9 A visibility splay of 2.4m x 84.6m to the right of the existing access which extends to the priority crossroads junction with Armshead Road/Thorney Edge Road is expected to be achievable within the extents of the adopted highway boundary, without the requirement for third party land, although this would be subject to the cutting back and appropriate management of vegetation along the site frontage to the south. It is noted that this is below the required 2.4m x 215m splay based on DMRB standards, however the proximity to the priority crossroads means that northbound vehicle speeds are expected to be comfortably below 60mph in both directions and therefore the achievable visibility splay is considered to be acceptable.

Image 6: Visibility to the Right of the Existing Access on Luzlow Lane



- 5.3.10 The proposed BESS development is not expected to result in a significant increase in vehicle trips once operational, with the site expected to generate between 10 and 20 vehicle trips per month. Moreover, as outlined within the accompanying CTMP (LTP, 2024), a banksman will be present at the site access during the delivery and construction periods to suitably manage construction traffic at the site.

6. VEHICLE TRIP GENERATION

6.1 Introduction

- 6.1.1 This section outlines the number of vehicle trips that the proposed development is expected to generate. Due to the atypical nature of the proposals, the level of vehicle trips expected to be generated by the proposed development has been 'built up' from a first principles approach, utilising reasonable assumptions in the absence of site-specific data.
- 6.1.2 The use of a first principles approach accords with previous DfT guidance which recommended that *"unless there is a clear valid comparable situation, the assessment trips should be constructed from first principles based on a detailed analysis of the daily operation of the proposed development"* (DfT, 2007a).
- 6.1.3 The traffic generation of the proposed BESS is likely to consist of two main elements:
- Construction phase traffic; and
 - Operational traffic.

6.2 Construction Phase Traffic Generation

- 6.2.1 The delivery and construction/installation period of the proposed BESS is anticipated to take place over a 12-14 month period, and consist of six phases:
- **Phase 1:** Site mobilisation, including highways access;
 - **Phase 2:** Site civils and earthworks;
 - **Phase 3:** BESS equipment deliveries;
 - **Phase 4:** Mechanical installation;
 - **Phase 5:** Electrical installation; and
 - **Phase 6:** Demobilisation and Site Clearance.
- 6.2.2 During the above construction period there would be trips associated with the arrival and departure of construction staff as well as the delivery of parts and construction materials.
- 6.2.3 The frequency of construction vehicle movements will depend on the individual activities undertaken; however, it is not anticipated that this would have a significant impact on the local highway network.
- 6.2.4 Table 3 summarises the estimated HGV construction traffic based on information provided by the Applicant. Details of the average daily two-way HGV movements has also been provided. Since the submission of the planning application, additional assessments have been undertaken in relation to the site levels which involves more cutting than previously considered and therefore additional HGV movements are required to facilitate the removal of excess spoil. This is expected to be undertaken in the first three months of construction, with further details provided below.

- 6.2.5 Construction traffic generation over the 12-14 month period will total approximately 934 two-way HGV movements (arrivals and departures).

Table 3: Estimated HGV Construction Traffic Generation

Construction Task	Total HGVs	Two-Way HGV Movements
Soil removal	127	254
Site scraping	189	378
Surfacing & Access Road	65	130
Battery Containers	48	96
DNO Substation	2	4
Transformer/Inverter Units	8	16
Switch rooms	2	4
Welfare/LV Control Room	1	2
Ancillary Equipment	1	2
Fencing & Gates	2	4
Miscellaneous Deliveries	20	40
Crane Deliveries	2	4
TOTAL	467	934

- 6.2.6 Information provided by the Applicant indicates that the site is expected to generate an average of 26 two-way HGV movements per day during the first three months of the construction phase when the excess spoil is removed. The daily HGV movements will reduce considerably for the remaining months of construction.
- 6.2.7 It is expected that the maximum number of construction staff on-site will vary subject to the construction schedule, with a maximum of 10 staff expected to be working on site at any one time. Staff trips will be made by cars, minibuses or vans/small LGVs. Staff vehicle movements would typically occur at the start and end of the working day and generally not coincide with the movement of large construction vehicles.
- 6.2.8 Car sharing amongst staff is to be promoted and will be a realistic travel mode for those staff who are employed by the same service company/sub-contractor (for example, civils contractor, electrical engineer).
- 6.2.9 Vehicle parking for site workers during all stages of construction will be accommodated on-site. No vehicles will park on the adjoining road network at any stage.
- 6.2.10 It is also noted that vehicle trips generated during the construction phase are temporary and would cease upon completion of the works at the site.

6.3 Operational Phase Traffic Generation

- 6.3.1 Generally, the BESS would operate on an unmanned basis. It is understood that the BESS would generate approximately between 10 and 20 vehicle trips per month to support site operations and general maintenance activities at the facility. These trips will be typically made by cars or LGVs (e.g. vans). While the temporary construction compound will be removed following construction completion, space will be retained on-site for LGVs to turn around, ensuring vehicles can enter and exit in a forward gear.

6.4 Traffic Impact

- 6.4.1 DfT guidance states that the assessment of transport impacts could be based on a threshold of *“30 two-way peak hour vehicle trips”* or *“100 or more two-way vehicle movements per day”*. This guidance acknowledged that this threshold was not to be applied rigidly, but rather that it provided a *“useful point of reference from which to commence discussions”*.
- 6.4.2 This national DfT guidance has now been superseded and replaced with the NPPF (MHCLG, 2024) and its accompanying *‘Planning Practice Guidance’* (PPG) (MHCLG, 2014). NPPF and PPG require that transport assessment is undertaken for *“developments that generate significant amounts of movement”*, although this is not defined. It is therefore acknowledged that there is no set threshold for assessment within the current national planning policy, so the proposals have been tested with reference to the previous and current guidance.
- 6.4.3 It is considered that the projected operational vehicle trip generation associated with the energy storage facility does not represent a significant amount of movement, with between 10 and 20 trips per month generated by the BESS associated with site operations and maintenance activities, and a low number of daily/peak hour movements associated with construction. The proposed development should therefore only have a negligible impact on the operation of the local highway network. Therefore, as the impact of the proposals is not expected to be severe, the proposals are considered to be in accordance with the NPPF, which states that *“development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe”* (MHCLG, 2024).

7. CONCLUSIONS

- 7.1.1 Local Transport Projects Ltd (LTP) has been commissioned to produce a Transport Statement (TS) in support of a full planning application for a proposed Battery Energy Storage System (BESS) on land to the west of New House Farm in Werrington, Staffordshire.
- 7.1.2 Vehicular access to the site is to be provided via an existing field access connecting with Luzlow Lane on the eastern site boundary, which is expected to be widened as part of the development to accommodate the largest construction vehicle movements. The access is expected to be utilised during the construction, installation, and maintenance periods.
- 7.1.3 Vehicle parking for site workers during all stages of construction and operation will be accommodated on-site with no vehicles allowed to park or wait on the adjoining highway network during any stage of the development.
- 7.1.4 A road casualty study has identified that a single Personal Injury Collision (PIC), resulting in 7 casualties, occurred within the study area during the five-year study period covering 01/01/2018 to 31/12/2022. Analysis of the study collision has not revealed any identifiable existing collision issues associated with the expected movements of the proposed development. Therefore, it is considered that there are not any existing road safety issues pertinent to the development of the site. If the internal layout and access junction amendments are designed with due consideration to road safety, with appropriate highway design features incorporated into the detailed design, then the proposals should not have a detrimental road safety impact on the local highway network and should not adversely affect the safety of other road users.
- 7.1.5 Swept path analysis for the site has been undertaken to establish whether the largest vehicle expected to access/egress the site can adequately navigate the site access junction with Luzlow Lane, Luzlow Lane/Armshead Road/Thorney Edge Road priority crossroads and manoeuvre within the site. The results of the swept path analysis demonstrate that a standard articulated HGV can adequately access/egress the site via the existing access connecting with Luzlow Lane, subject to some minor widening/surfacing upgrades. The results also demonstrate that a standard articulated HGV can suitably manoeuvre along the internal access road.
- 7.1.6 The delivery and construction/installation period of the proposed BESS is expected to take place over a 12-14 month period. During this period, there would be trips associated with the arrival and departure of construction staff and the delivery of parts and construction materials. The BESS would operate, generally, on an unmanned basis, however it is understood the facility will generate between 10 and 20 trips per month to support site operations and maintenance activities. These trips will be made by car and/or light vans.

- 7.1.7 It is considered that the projected operational vehicle trip generation associated with the BESS does not represent a significant amount of movement, with between 10 and 20 vehicle trips per month generated by the BESS associated with site operations and maintenance activities, and a low number of daily/peak hour movements associated with construction. The proposed development should therefore only have a negligible impact on the operation of the local highway network. Therefore, as the impact of the proposals is not expected to be severe, the proposals are considered to be in accordance with the National Planning Policy Framework (NPPF), which states that *“development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe”* (MHCLG, 2024).
- 7.1.8 It is concluded from the assessments of this TS that the proposed development would not be expected to have a detrimental impact in terms of road safety and traffic impact.

8. REFERENCES

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