11 Glossary

AADT	Annual Average Daily Traffic
ADMS-6	Atmospheric Dispersion Modelling System model for point sources
APIS	Air Pollution Information System
AQAL	Air Quality Assessment Level
AQC	Air Quality Consultants
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
CAZ	Clean Air Zone
CEMP	Construction Environmental Management Plan
CHP	Combined Heat and Power
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMP	Dust Management Plan
EFT	Emission Factor Toolkit
EPUK	Environmental Protection UK
EU	European Union
EV	Electric Vehicle
Exceedance	A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure
HDV	Heavy Duty Vehicles (> 3.5 tonnes)
HMSO	Her Majesty's Stationery Office
IAQM	Institute of Air Quality Management
JAQU	Joint Air Quality Unit
kph	Kilometres Per hour
kW	Kilowatt
LAQM	Local Air Quality Management
LDF	Local Development Framework
LDV	Light Duty Vehicles (<3.5 tonnes)

µg/m^3	Micrograms per cubic metre
MCPD	Medium Combustion Plant Directive
MW_{th}	Megawatts Thermal
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides (taken to be NO_2 + NO)
NPPF	National Planning Policy Framework
OEP	Office for Environmental Protection
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides
OLEV	Office for Low Emission Vehicles
PAN	Planning Advice Note
PC	Process Contribution
PEC	Predicted Environmental Concentration
PM_{10}	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
$PM_{2.5}$	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
PPG	Planning Practice Guidance
RDE	Real Driving Emissions
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TEA	Triethanolamine – used to absorb nitrogen dioxide
WHO	World Health Organisation

12 Appendices

A1 Construction Dust Assessment Procedure

A1.1 The criteria developed by IAQM (2024) divide the activities on construction sites into four types to reflect their different potential impacts. These are:

- demolition;
- earthworks;
- construction; and
- trackout.

A1.2 The assessment procedure includes the four steps summarised below:

STEP 1: Screen the Need for a Detailed Assessment

A1.3 An assessment is required where there is a human receptor within 250 m of the boundary of the site and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s), or where there is an ecological receptor within 50 m of the boundary of the site and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

A1.4 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is negligible and that any effects will be 'not significant'. No mitigation measures beyond those required by legislation will be required.

STEP 2: Assess the Risk of Dust Impacts

A1.5 A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emission magnitude (Step 2A); and
- the sensitivity of the area to dust effects (Step 2B).

A1.6 These two factors are combined in Step 2C, which is to determine the risk of dust impacts with no mitigation applied. The risk categories assigned to the site may be different for each of the four potential sources of dust (demolition, earthworks, construction and trackout).

Step 2A – Define the Potential Dust Emission Magnitude

A1.7 Dust emission magnitude is defined as either 'Small', 'Medium', or 'Large'. The IAQM guidance explains that this classification should be based on professional judgement, but provides the examples in Table A1-1.

Table A1-1: Examples of How the Dust Emission Magnitude Class May be Defined

Class	Examples
Demolition	
Large	Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >12 m above ground level

Class	Examples
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12 m above ground level
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months
Earthworks	
Large	Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
Medium	Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3 m – 6 m in height.
Small	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.
Construction	
Large	Total building volume >75,000 m^3, on site concrete batching; sandblasting
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber)
Trackout [a]	
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m
Medium	20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m
Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m

[a] These numbers are for vehicles that leave the site after moving over unpaved ground.

Step 2B – Define the Sensitivity of the Area

A1.8 The sensitivity of the area is defined taking account of a number of factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentration; and
- site-specific factors, such as whether there are natural shelters to reduce the risk of wind-blown dust.

A1.9 The first requirement is to determine the specific sensitivities of local receptors. The IAQM guidance recommends that this should be based on professional judgment, taking account of the principles in Table A1-2. These receptor sensitivities are then used in the matrices set out in Table A1-3, Table A1-4 and Table A1-5 to determine the sensitivity of the area. Finally, the sensitivity of the area is considered

in relation to any other site-specific factors, such as the presence of natural shelters etc., and any required adjustments to the defined sensitivities are made.

Step 2C – Define the Risk of Impacts

A1.10 The dust emission magnitude determined at Step 2A is combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts with no mitigation applied. The IAQM guidance provides the matrix in Table A1-6 as a method of assigning the level of risk for each activity.

STEP 3: Determine Site-specific Mitigation Requirements

A1.11 The IAQM guidance provides a suite of recommended and desirable mitigation measures which are organised according to whether the outcome of Step 2 indicates a low, medium, or high risk. The list provided in the IAQM guidance has been used as the basis for the requirements set out in Appendix A6.

STEP 4: Determine Significant Effects

A1.12 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'.

A1.13 The IAQM guidance recognises that, even with a rigorous dust management plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all of the time, for instance under adverse weather conditions. The local community may therefore experience occasional, short-term dust annoyance. The scale of this would not normally be considered sufficient to change the conclusion that the effects will be 'not significant'.

Table A1-2: Principles to be Used When Defining Receptor Sensitivities

Class	Principles	Examples
Sensitivities of People to Dust Soiling Effects		
High	users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land	dwellings, museum and other culturally important collections, medium and long term car parks and car showrooms
Medium	users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land	parks and places of work
Low	the enjoyment of amenity would not reasonably be expected; or there is property that would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land	playing fields, farmland (unless commercially-sensitive horticulture), footpaths, short term car parks and roads
Sensitivities of People to the Health Effects of PM_{10}		
High	locations where members of the public may be exposed for eight hours or more in a day	residential properties, hospitals, schools and residential care homes
Medium	locations where the people exposed are workers, and where individuals may be exposed for eight hours or more in a day.	may include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}
Low	locations where human exposure is transient	public footpaths, playing fields, parks and shopping streets
Sensitivities of Receptors to Ecological Effects		
High	locations with an international or national designation and the designated features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species	Special Areas of Conservation with dust sensitive features
Medium	locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or	Sites of Special Scientific Interest with dust sensitive features

Class	Principles	Examples
	locations with a national designation where the features may be affected by dust deposition	
Low	locations with a local designation where the features may be affected by dust deposition	Local Nature Reserves with dust sensitive features

Table A1-3: Sensitivity of the Area to Dust Soiling Effects on People and Property[5]

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table A1-4: Sensitivity of the Area to Human Health Effects [5]

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m³	>10	High	Medium	Low	Low

[5] For demolition, earthworks and construction, distances are taken either from the dust source or from the boundary of the site. For trackout, distances are measured from the sides of roads used by construction traffic. Without mitigation, trackout may occur from roads up to 250 m, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
		1-10	Medium	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table A1-5: Sensitivity of the Area to Ecological Effects [5]

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table A1-6: Defining the Risk of Dust Impacts

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

A2 EPUK & IAQM Planning for Air Quality Guidance

A2.1 The guidance issued by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017) is comprehensive in its explanation of the place of air quality in the planning regime. Key sections of the guidance not already mentioned above are set out below.

Air Quality as a Material Consideration

"Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:

- the severity of the impacts on air quality;
- the air quality in the area surrounding the proposed development;
- the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and
- the positive benefits provided through other material considerations".

Recommended Best Practice

A2.2 The guidance goes into detail on how all development proposals can and should adopt good design principles that reduce emissions and contribute to better air quality management. It states:

"The basic concept is that good practice to reduce emissions and exposure is incorporated into all developments at the outset, at a scale commensurate with the emissions".

A2.3 The guidance sets out a number of good practice principles that should be applied to all developments that:

- include 10 or more dwellings;
- where the number of dwellings is not known, residential development is carried out on a site of more than 0.5 ha;
- provide more than 1,000 m^2 of commercial floorspace;
- are carried out on land of 1 ha or more.

A2.4 The good practice principles are that:

- New developments should not contravene the Council's Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new "street canyon", as this inhibits pollution dispersion;
- Delivering sustainable development should be the key theme of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads;

- The provision of at least 1 Electric Vehicle (EV) "rapid charge" point per 10 residential dwellings and/or 1000 m^2 of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made available;
- Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety;
- All gas-fired boilers to meet a minimum standard of <40 mgNOx/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:
  - Spark ignition engine: 250 mgNOx/Nm^3;
  - Compression ignition engine: 400 mgNOx/Nm^3;
  - Gas turbine: 50 mgNOx/Nm^3.
- A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of 275 mgNOx/Nm^3 and 25 mgPM/Nm^3.

A2.5 The guidance also outlines that offsetting emissions might be used as a mitigation measure for a proposed development. However, it states that:

"It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the "damage cost approach" used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential".

A2.6 The guidance offers a widely used approach for quantifying costs associated with pollutant emissions from transport. It also outlines the following typical measures that may be considered to offset emissions, stating that measures to offset emissions may also be applied as post assessment mitigation:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.

Screening

Impacts of the Local Area on the Development

"There may be a requirement to carry out an air quality assessment for the impacts of the local area's emissions on the proposed development itself, to assess the exposure that residents or users might experience. This will need to be a matter of judgement and should take into account:

- the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;
- the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;
- the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular nitrogen dioxide), that would cause unacceptably high exposure for users of the new development; and
- the presence of a source of odour and/or dust that may affect amenity for future occupants of the development".

Impacts of the Development on the Local Area

A2.7 The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the following apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; and/or
- more than 1,000 m^2 of floor space for all other uses or a site area greater than 1 ha.

A2.8 Coupled with any of the following:

- the development has more than 10 parking spaces; and/or
- the development will have a centralised energy facility or other centralised combustion process.

A2.9 If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, which sets out indicative criteria for requiring an air quality assessment. The stage 2 criteria relating to vehicle emissions are set out below:

- the development will lead to a change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- the development will lead to a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- the development will lead to a realigning of roads (i.e. changing the proximity of receptors to traffic lanes) where the change is 5m or more and the road is within an AQMA;
- the development will introduce a new junction or remove an existing junction near to relevant receptors, and the junction will cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights or roundabouts;

- the development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; and
- the development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor.

A2.10 The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.

A2.11 On combustion processes (including standby emergency generators and shipping) where there is a risk of impacts at relevant receptors, the guidance states that:

"Typically, any combustion plant where the single or combined NOx emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NOx gas boiler or a 30kW CHP unit operating at <95mg/Nm^3.

In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.

Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable".

A2.12 Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area, provided that professional judgement is applied; the guidance importantly states the following:

"The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive 'trigger' for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realised in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality".

A2.13 Even if a development cannot be screened out, the guidance is clear that a detailed assessment is not necessarily required:

"The use of a Simple Assessment may be appropriate, where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence. Similarly, it may be possible to conduct a quantitative assessment that does not require the use of a dispersion model run on a computer".

A2.14 The guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this report.

Assessment of Significance

A2.15 There is no official guidance in the UK in relation to development control on how to describe the nature of air quality impacts, nor how to assess their significance. The approach within the EPUK/IAQM guidance has, therefore, been used in this assessment. This approach involves a two stage process:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- a judgement on the overall significance of the effects of any impacts.

A2.16 The guidance recommends that the assessment of significance should be based on professional judgement, with the overall air quality impact of the development described as either 'significant' or 'not significant'. In drawing this conclusion, the following factors should be taken into account:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts;
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts;
- the potential for cumulative impacts and, in such circumstances, several impacts that are described as 'slight' individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a 'moderate' or 'substantial' impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health; and
- the judgement on significance relates to the consequences of the impacts; will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals.

A2.17 The guidance is clear that other factors may be relevant in individual cases. It also states that the effect on the residents of any new development where the air quality is such that an air quality objective is not met will be judged as significant. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.

A2.18 A judgement of the significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this assessment is provided in Appendix A3.

A3 Modelling Methodology

Model Inputs

A3.1 The impacts of emissions from the proposed generators have been predicted using the ADMS-6 dispersion model. ADMS-6 is a new generation model that incorporates a state-of-the-art understanding of the dispersion processes within the atmospheric boundary layer. The model has been run to predict the contribution of the proposed generator emissions to annual mean concentrations of nitrogen oxides and PM (assumed to be both $PM_{2.5}$ and PM_{10}), the 99.79th percentile of 1-hour mean nitrogen oxides concentrations, and the 90.4th percentile of 24-hour mean PM_{10} concentrations. Model input selections are summarised in Table A3-1, and, where considered necessary, discussed further below. Input emission parameters are presented later in Table A3-3.

Table A3-1: Summary of Model Inputs

Model Parameter	Value Used
Terrain Effects Modelled?	No
Variable Surface Roughness File Used?	Yes – 12 km x 12 km Cartesian grid at 50 m resolution
Urban Canopy Flow Used?	No
Building Downwash Effects Modelled?	Yes
Meteorological Monitoring Site	Heathrow Airport
Meteorological Data Years	2019-2023
Dispersion Site Surface Roughness Length (m)	N/A (variable surface roughness file used)
Dispersion Site Minimum MO Length (m)	30
Met Site Surface Roughness Length (m)	0.2
Met Site Surface Minimum MO Length (m)	30

A3.2 The backup diesel generator plant proposed to be installed into the development will have an assumed net fuel input of 8121 kW_{th}, which is equivalent to a fuel consumption of 817.7 litres per hour of diesel oil. The generator will be capable of delivering 3120 kVA on demand. Emissions will rise to roof level in one of the 47 flues. Hoare Lea has advised that the backup generator plant will operator for up to 1 -hour per month each in accordance with the maintenance schedule. The exhaust volume flow rate for the diesel generator has been calculated based on the complete combustion of the assumed diesel oil composition in Table A3-2 and the following typical values for diesel generators of this size:

- 100% load;
- 460.7 ˚C exit temperature; and
- 97.3% excess air in (set so that the calculated exhaust gas mass flow matched that on the technical datasheet for the plant).

Table A3-2: Typical Diesel Fuel Composition

Elemental Component	Diesel Oil
Carbon	86.5%
Hydrogen	13.2%
Oxygen	0.3%
Net Calorific Value (LHV) (MJ/kg)	42.82
Gross Calorific Value (HHV) (MJ/kg)	45.70
HHV/LHV	1.07
Liquid Density @ 15°C (kg/m^3)	835

A3.3 Entrainment of the plume into the wake of the buildings (the so-called building downwash effect) has been taken into account in the model. The building dimensions and flue location have been obtained from drawings provided by Hoare Lea. The location of the flue is shown in Figure A3-1 along with the modelled buildings and their heights. The flue has been modelled at a height of 31 m (1 m above the roof level).

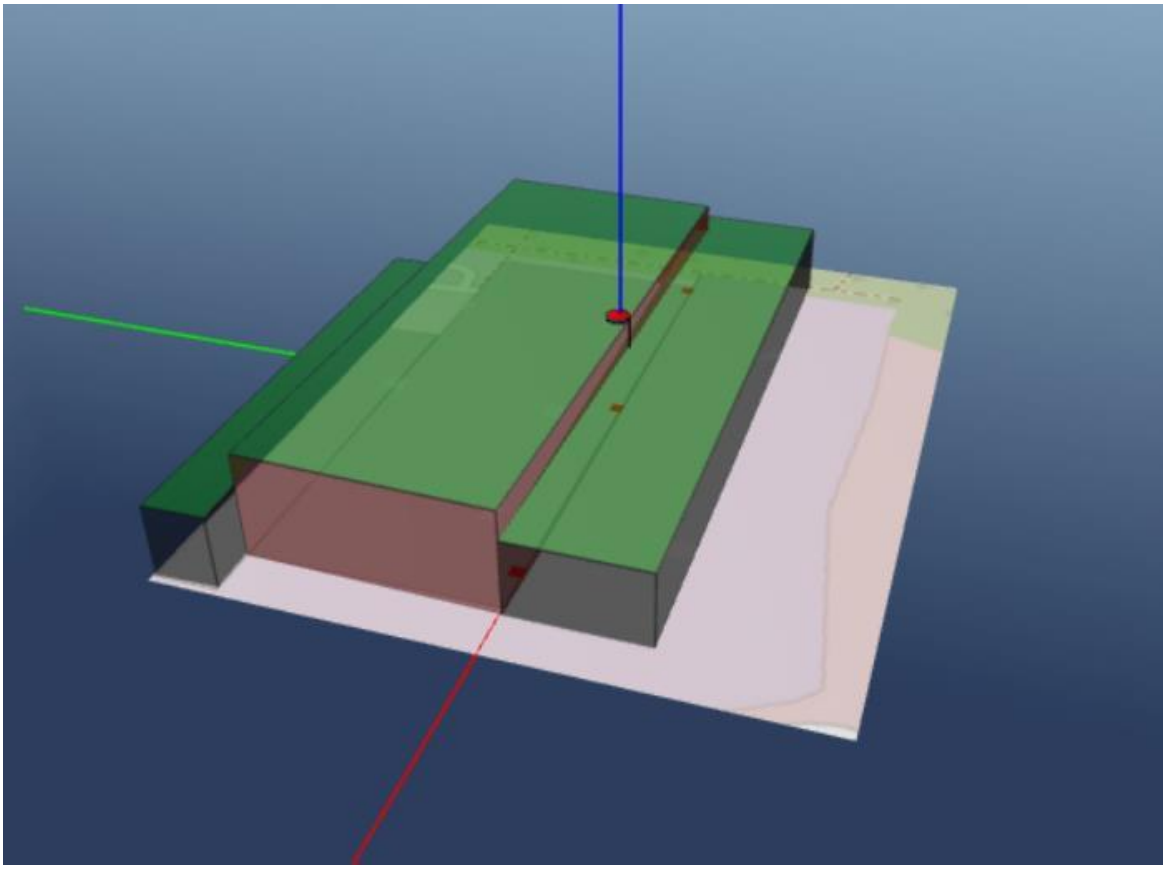

Figure A3-1: Flue Location & Modelled Buildings

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

A3.4 The emissions from the diesel generators have been modelled as a single flue, as they will be tested individually; the emission parameters employed in the modelling are set out in Table A3-3. Further details of the proposed diesel generators parameters are provided in Appendix A4.

Table A3-3: Plant Specifications and Modelled Emissions and Release Conditions

Parameter	Value
Specified Net Fuel Input (kW)	8121
Calculated Gross Fuel Input (kW)	8667.2
Flue Internal Diameter (m)	0.7
Calculated Exhaust Mass Flow Rate (kg/h)	20293.3
Calculated Actual Exhaust Volume Flow (m^3/s) [a]	11.74
Calculated Exit Velocity (m/s)	30.5
Specified Exhaust O_2 Content (%)	9.9
Specified Exhaust H_2O Content (% v/v)	7.3
Specified Exhaust Temperature (°C)	460.7
Calculated Normalised Exhaust Volume Flow (Nm^3/s) [b] K15	2.608
Specified NOx Emission Rate (mg/Nm^3) [b]	2346.1
Calculated NOx Emission Rate (g/s)	6.118
Specified PM Emission Rate (mg/Nm^3) [b]	4.6
Calculated PM Emission Rate (g/s)	0.012
Flue Location (x,y)	(502919.75, 176291.37)
Modelled Flue Height Above Ground (m)	31

[a] Not normalised.

[b] 'Normal' here refers to 5% O_2, 0˚C, 101.325 kPa and 0% H_2O.

A3.5 Hourly sequential meteorological data in sectors of 10 degrees from Heathrow Airport for 2019-2023 have been used in the model. The Heathrow Airport meteorological monitoring station is located at Heathrow Airport, approximately 7 km to the east of the proposed development. Both the application site and the Heathrow Airport meteorological monitoring station are located in the southwest of England where they will be influenced by the effects of inland meteorology in flat-lying topography. The topography of the model domain is similar to that around the meteorological monitoring station and measurements from this site are considered to provide the most robust basis to predict meteorology within the model domain. Wind roses for the site for the years 2019-2023 are provided in Figure A3-2 - Figure A3-6. Raw data were provided by the Met Office and processed by AQC for use in ADMS.

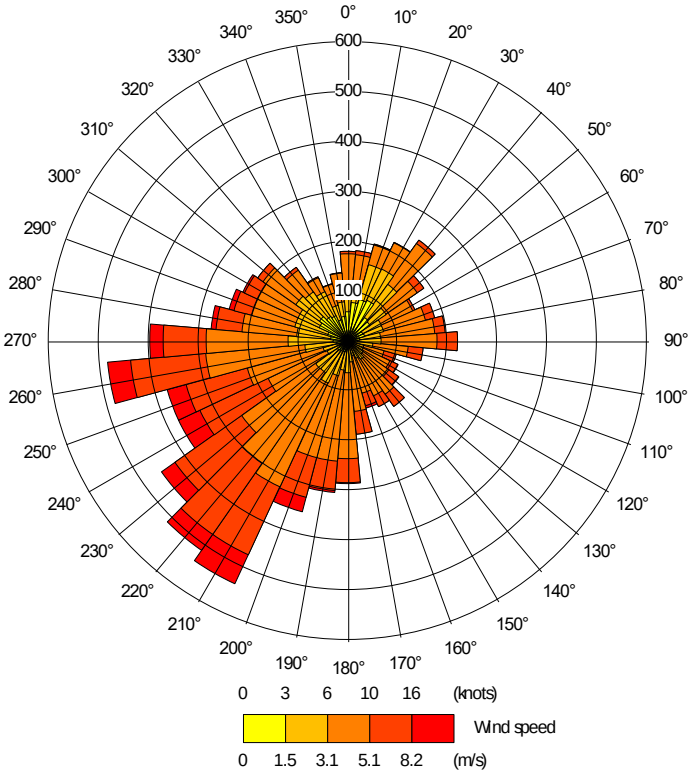

Figure A Error! No text of specified style in document.**-1: Wind Rose 2019**

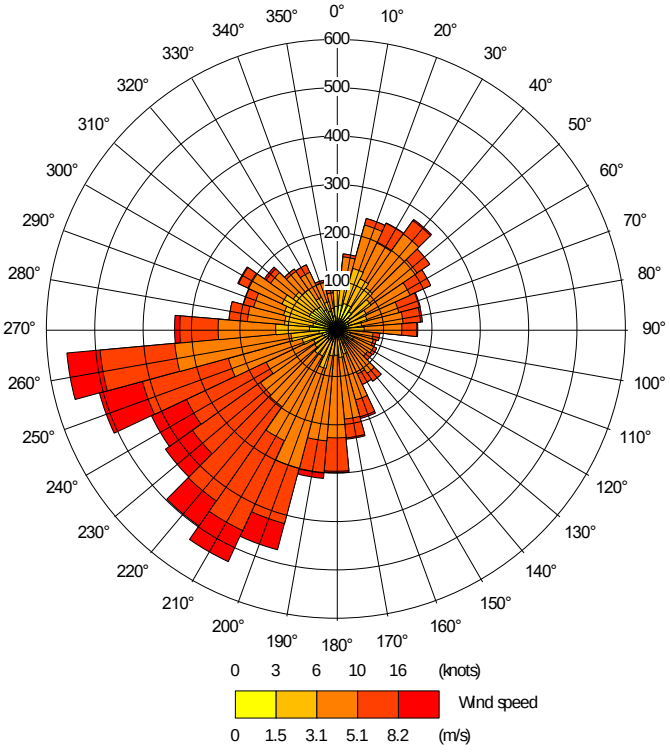

Figure A Error! No text of specified style in document.**-2: Wind Rose 2020**

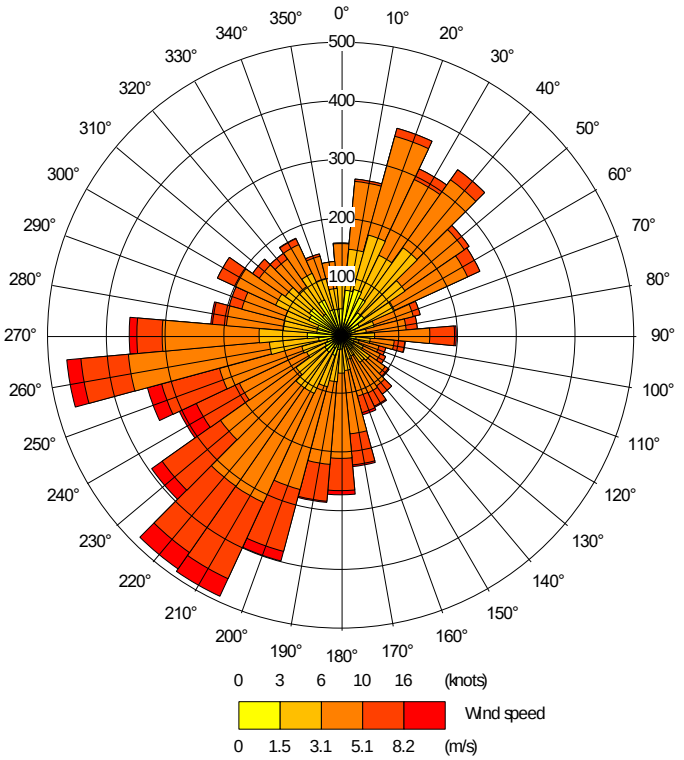

Figure A Error! No text of specified style in document.**-3: Wind Rose 2021**

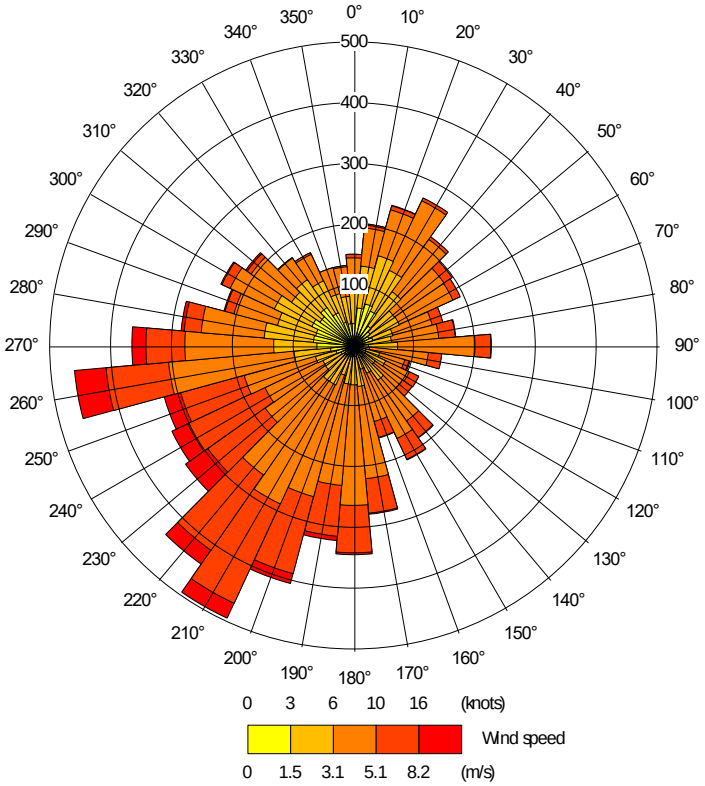

Figure A Error! No text of specified style in document.**-4: Wind Rose 2022**

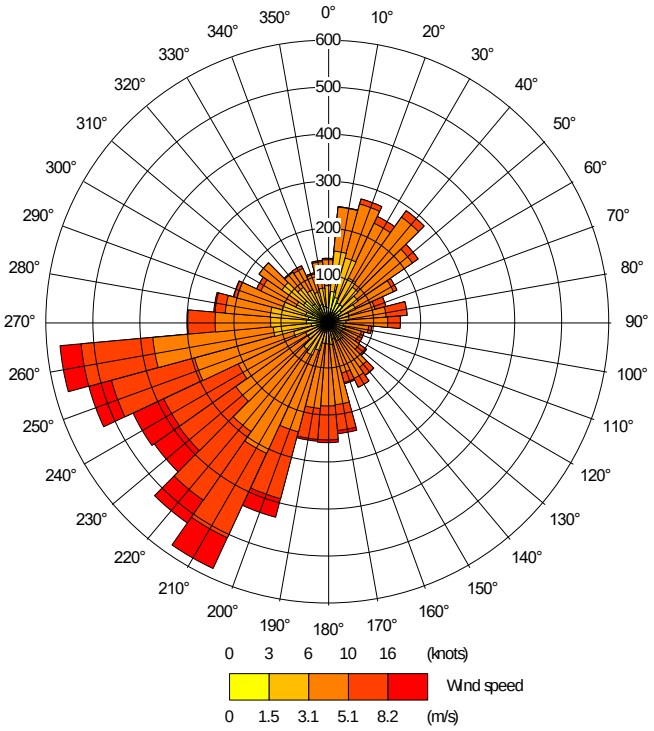

Figure A Error! No text of specified style in document.**-5: Wind Rose 2023**

Post-processing

A3.6 Emissions from the proposed diesel generators will be predominantly in the form of nitrogen oxides (NOx) and PM_{10}. ADMS-6 has been run to predict the contribution of the proposed diesel generators emissions to annual mean concentrations of nitrogen oxides and PM, and to the 99.79th percentile of 1-hour mean nitrogen oxides concentrations and the 90.4th percentile of 24-hour mean PM_{10} concentrations. For the initial screening of the process contributions, the approach recommended by the Environment Agency (2005) has been used to predict nitrogen dioxide concentrations, assuming that:

- annual mean NO_2 concentration = annual mean NOx concentration multiplied by 0.7; and
- 99.79th percentile of 1-hour mean NO_2 concentrations = 99.79th percentile of 1-hour mean NOx concentrations multiplied by 0.35.

A4 Energy Plant Specifications

A4.1 The proposed development includes 47 diesel generators. Specifications for these generators, upon which the assessment has been based, is shown in Table A4-1.

Table A4-1: Energy Plant Specifications

Parameter	Value	Restriction
Gross Peak Fuel Input (kW)	8667.2	Max
Hours of Use per Annum	564	Max
Annual Fuel Input (kWh/annum)	4,888,303	Max
Exhaust Temperature (°C)	460.7	Min
Flue Internal Diameter (m)	0.7	Max
Efflux Velocity (m/s)	30.50630	Min
NOx Emission Rate (mg/Nm^3)[a]	2346.1	Max
PM Emission Rate (mg/Nm3)[a]	4.6	Max
Condensing	No	-

[a] 'Normal' here refers to 5% O_2, 0˚C, 101.325 kPa and 0% H_2O.

A4.2 The restrictions set out in Table A4-1 should be adhered in order to ensure that the final plant design does not lead to impacts greater than those modelled. To further emphasise these, the final design should adhere to the following minimum specifications:

- the generators must be designed such that it will operate with a minimum efflux velocity of 30.5 m/s to allow for good initial dispersion of emissions;
- a generator with a maximum total rated output of 3900 kVA must include a flue outlet with a maximum internal diameter of 0.7 m at the exit point, terminating at least 1 m above the roof level;
- all stacks should discharge vertically upwards and be unimpeded by any fixture on top of the stack (e.g. rain cowls);
- the generator plant must conform to the US EPA Tier 2 emissions standards (optimised engine). Compliance with these standards will be confirmed prior to occupation, based on:
  - monitoring undertaken on the actual installed plant; or
  - manufacturer guaranteed performance levels supported by type approval monitoring undertaken by the equipment supplier.
- in order to attain these values, relevant catalyst or alternative abatement may be required.

A4.3 If the design of the energy centre deviates significantly from the modelled specification, additional future modelling may be required in order to ensure that there are no significant adverse air quality impacts.

A4.4 The following measures should be adhered to in order to ensure adequate dispersion of emissions from discharging stacks and vents. These include the following:

- discharges should be vertically upwards and unimpeded by cowls or any other fixtures on top of the stack. However, the use of coning or of flame traps at the tops of stacks is acceptable. In the case of discharge stacks (whether single or multiple stack) with shrouds or casings around the stack(s), the stack(s) alone should extend above the shroud or casing. This extension should be at least 50% of the shroud or casing's greatest lateral dimension;
- irrespective of the pollutant discharge, there are minimum discharge stack heights based on the heat release and the discharge momentum. These can be calculated following calculations set out in the guidance note, but the absolute minimum value is 1 m;
- no discharge stack should be less than 3 m above the ground or any adjacent area to which there is general access. For example, roof areas and elevated walkways;
- a discharge stack should never be less than the height of any building within a distance of 5 times the stack height; and
- a discharge stack should be at least 3 m above any opening windows or ventilation air inlets within a distance of 5 times the stack height.

A5 Professional Experience

Martin Peirce, BSc (Hons), MSc, MIEncSci, MIAQM

A5.1 Mr Peirce is an Associate Director with AQC and has some thirty years' experience in environmental modelling and assessment, most relating to air quality and carbon and greenhouse gases (GHGs). He has extensive experience in the calculation of emissions to air and compiling emission inventories, for both local air quality assessments and carbon footprinting. For air quality, he also has extensive expertise in modelling the atmospheric dispersion of pollutants for comparison against regulatory limits and for assessment of health and environmental impacts. He has prepared assessments in support of Environmental Impact Assessments (EIA), permit applications and planning applications (under both Town and Country Planning Act (TCPA) and Development Consent Order (DCO) regimes), and has acted as expert witness. He has particular experience in modelling aviation and transport sources, non-road mobile machinery, construction and industrial sources.

Jack Buckley, BSc (Hons) MSc MIEnvSc MIAQM

A5.2 Mr Buckley is a Principal Consultant with AQC. He has over seven years' experience in the field of air quality, carrying out technical work for a range of projects, including road and rail infrastructure schemes, residential and mixed-use developments and industrial facilities. Jack has produced air quality, greenhouse gas and climate change assessments for numerous EIA schemes, using qualitative and quantitative methods, and has air quality monitoring experience. He also has a strong understanding of relevant local, regional and national policies, having been seconded to the Greater London Authority to undertake technical reviews of planning applications, and has assisted in the development of new Air Quality Neutral and Air Quality Positive guidance. Jack completed a BSc (Hons) in Chemistry and an MSc in Environmental Science and Management, with both dissertations investigating the performance of low-cost air quality sensors. He is a Member of both the Institute of Air Quality Management and the Institution of Environmental Sciences.

Faye Wilder, BSc (Hons) MSc

A5.3 Miss Wilder is an Assistant Consultant with AQC and joined the company in 2023. During her BSc Geography degree at the University of Birmingham, she developed an interest in air quality, which continued into her MSc in Environmental Management at the University of Reading. Her master's thesis investigated personal air pollution exposure across microenvironments using wearable air pollution sensors, and how this varied from fixed air pollution monitoring stations.

A6 Construction Mitigation

A6.1 Table A6-1 sets out a list of best-practice measures from the IAQM guidance (IAQM, 2024) that should be incorporated into the specification for the works. These measures should ideally be written into a Dust Management Plan. Some of the measures may only be necessary during specific phases of work, or during activities with a high potential to produce dust, and the list should be refined and expanded upon in liaison with the construction contractor when producing the Dust Management Plan.

Table A6-1: Best-Practice Mitigation Measures Recommended for the Works

Measure	Desirable	Highly Recommended
Communications		
Develop and implement a stakeholder communications plan that includes community engagement before and during work on site		✓
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager		✓
Display the head or regional office contact information		✓
Dust Management Plan		
Develop and implement a Dust Management Plan (DMP) approved by the Local Authority which documents the mitigation measures to be applied, and the procedures for their implementation and management		✓
Site Management		
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken		✓
Make the complaints log available to the local authority when asked		✓
Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book		✓
Monitoring		
Undertake daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust. Record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of the site boundary, with cleaning to be provided if necessary	✓	

Measure	Desirable	Highly Recommended
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when asked		✓
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions		✓
Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction (IAQM, 2018)		✓
Preparing and Maintaining the Site		
Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible		✓
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site		✓
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period	✓	✓
Avoid site runoff of water or mud		✓
Keep site fencing, barriers and scaffolding clean using wet methods	✓	✓
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below	✓	✓
Cover, seed, or fence stockpiles to prevent wind whipping	✓	✓
Operating Vehicle/Machinery and Sustainable Travel		
Ensure all vehicles switch off their engines when stationary – no idling vehicles		✓
Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable		✓
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)	✓	

Measure	Desirable	Highly Recommended
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials		✓
Implement a Travel Plan that supports and encourages sustainable staff travel (public transport, cycling, walking, and car-sharing)	✓	
Operations		
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems		✓
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate		✓
Use enclosed chutes, conveyors and covered skips		✓
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate		✓
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods		✓
Waste Management		
Avoid bonfires and burning of waste materials		✓
Measures Specific to Demolition		
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust)	✓	
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground		✓
Avoid explosive blasting, using appropriate manual or mechanical alternatives		✓
Bag and remove any biological debris or damp down such material before demolition		✓
Measures Specific to Earthworks		
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable	✓	
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	✓	

Measure	Desirable	Highly Recommended
Only remove the cover from small areas during work, not all at once	✓	
Measures Specific to Construction		
Avoid scabbling (roughening of concrete surfaces), if possible	✓	
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place		✓
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery	✓	
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust	✓	
Measures Specific to Trackout		
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use		✓
Avoid dry sweeping of large areas		✓
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport		✓
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;		✓
Record all inspections of haul routes and any subsequent action in a site log book;		✓
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems or mobile water bowsers, and regularly cleaned;		✓
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);		✓
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and		✓
Access gates should be located at least 10 m from receptors, where possible		✓

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Appendix 3: Noise Assessment (Sharps Redmore, Acoustic Consultants. November 2024.)

SHARPS REDMORE

ACOUSTIC CONSULTANTS • Established 1990

Report

Noise Assessment

Manor Farm, Poyle Road, Slough

Prepared by
Gary King. MIOA MCIEH

Date 15 November 2024
Project No: 2422464

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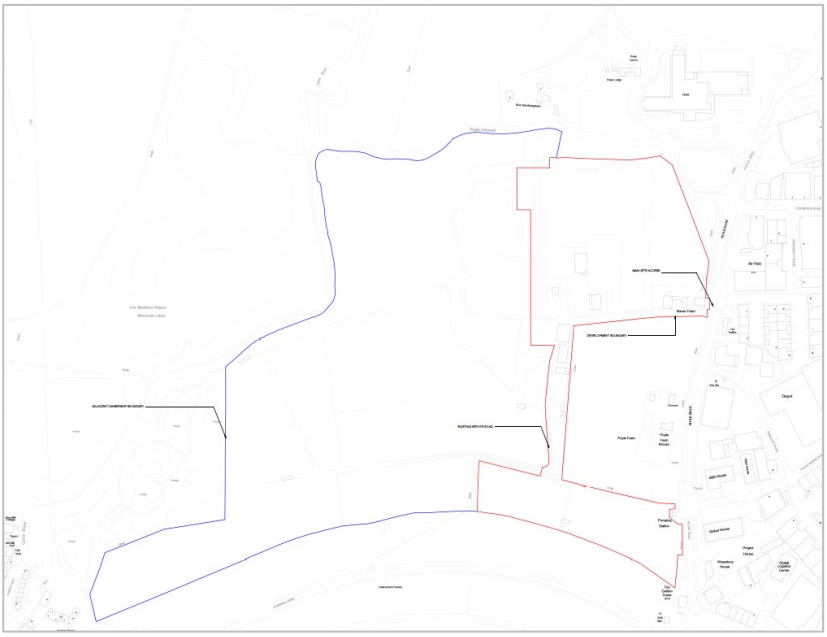
Contents

Appendices

1.0 Introduction

1.1 Sharps Redmore (SR) has been instructed to undertake a noise assessment in relation to a proposed data centre and battery energy storage facility on land to the west of Poyle Road, Slough. The site location is shown in Figure 1 below:

FIGURE 1: Site Location



1.2 The Site is made up of two separate parcels connected by an access road, as shown above. The northern parcel (Parcel A) is previously developed land, currently in commercial/industrial use, with hardstanding areas used for car parking and a storage service yard. SR understands that this part of the site has extant planning consent[1] for B2 use buildings in the connection with the processing of concrete which was granted on appeal. The southern part of the site (Parcel B) is of arable nature with thick hedgerow boundaries. Both sites are located within the administrative area of Slough Borough Council.

1.3 The character of the surrounding area is largely commercial, with Poyle Trading Estate located on the opposite side of Poyle Road, beyond which is the M25 and London Heathrow Airport. Hilton London Heathrow Airport Hotel is located to the north of the Site. Existing noise levels are dominated from planes taking off and landing at London Heathrow Airport and from distant road traffic on the M25 which is approximately 800m to the east of the site.

1.4 Residential uses are located in the wider area and include Poyle Park Farm to the north, and north-east, Poyle Farm House and Floroma which are located on land to between the northern and southern parcels and the residential accommodation above the Golden Cross Public House to the south east of Parcel B.

[1] Planning application P/10076/006 - Use Class B2 buildings and areas of hardstanding and open land used in connection with the processing of concrete (including concrete crushing and screening) to produce hardcore (the hardstanding and open land that has B2 use covers much of this part of the Site and is licensed to accept 85,000 tonnes per annum and for the storage of circa 80,000 cubic metres on site).

1.5 Planning permission is being sought for a data centre with electrical sub-station (Parcel A) and a Battery Energy Storage System (BESS) on the southern part of the site (Parcel B). Access to the northern parcel will be obtained from an existing access on Poyle Road, with access to the southern parcel provided along an existing track to the rear of the agricultural field in the middle of the sites.

1.6 The purpose of this report is to assess the impact of noise from proposed development on the noise sensitive receptors identified above. This report considers relevant noise policy and guidance (Section 2.0) and existing baseline noise levels (Section 3.0). Noise data used to predict noise from data centre is included in Section 4.0 with the impact of noise from both the data centre and BESS are considered in section 5.0 of this report.

2.0 Assessment methodology and criteria

National Policy

2.1 The National Planning Policy Framework (NPPF), December 2023, sets out the Government's planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 191 of the NPPF states the following:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation".

2.2 Guidance on the interpretation of the policy aims contained within the NPPF is contained within National Planning Policy Guidance (NPPG). The NPPG introduces the concept of a noise exposure hierarchy based on likely average response. The guidance contained in the NPPG is summarised in the table below:

TABLE 1: Noise Exposure Hierarchy

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not noticeable	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise.	Observed Adverse Effect	Mitigate ad reduce to a minimum

Response	Examples of Outcomes	Increasing Effect Level	Action
	Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.		
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.3 The NPPF and NPPG reinforce the March 2010 DEFRA publication, "Noise Policy Statement for England" (NPSE), which states three policy aims, as follows:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life."*

2.4 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

"… all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."

Local Policy

2.5 In terms of local policy regard is had to the Policy EN1 of the Saved Local Plan and Policy 8 of the Slough Local Development Framework Core Strategy (2006 – 2026), which require that developments should be of a high quality of design and not give rise to unacceptable (SR emphasis) level of pollution.

2.6 In reference to unacceptable levels of pollution local policy is consistent with the aims of the NPPF in that the significance of an impact must be taken into account when determining planning applications.

Design Guidance

2.7 Neither national or local policy provide any objective guidance on noise however it is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source may be determined by several methods, as follows:

i) The effect may be determined by reference to guideline noise values. British Standard (BS) 8233:2014 and World Health Organisation "Guidelines for Community Noise" contain such guidelines.

ii) Alternatively, the impact may be determined by considering the change in noise level that would result from the proposal, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road.

iii) Another method is to compare the resultant noise level against the background noise level (L_{A90}) of the area. This is the method employed by BS 4142:2014 to determine the impact of noise of an industrial or industrial type nature. It is best suited to the assessment of steady or pseudo-steady noise.

Guideline noise values

2.8 There are a number of guidance documents that contain recommended guideline noise values. These are discussed below.

2.9 British Standard 8233:2014 is principally intended to assist in the design of new dwellings; however, the Standard does state that it may be used in the assessment of noise from new sources being brought to existing dwellings.

2.10 The original BS 8233 was based on the advice contained in the draft World Health Organisation document "Guidelines for Community Noise". This document was released in final form in 2000. The World Health Organisation guidance is referenced in the NPSE.

2.11 The WHO advice is the most useful, comprehensive, and pertinent advice in this case, because it is not specific to the circumstances of the assessment. Instead, it provides guidance on acceptable limits in, for example, schools, dwellings and offices.

2.12 The WHO guideline values are appropriate to what are termed "critical health effects". This means that the limits are at the lowest noise level that would result in any psychological, physiological or sociological effect. They are, as defined by NPSE, set at the Lowest Observed

Adverse Effect Level (LOAEL), but do not define the level above which effects may be considered significant (SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.

2.13 The WHO LOAEL guideline values are summarised in the following table.

TABLE 2: WHO Guidelines

Document	Level	Guidance
World Health Organisation "Community Noise 2000"	L_{AeqT} = 55 dB	Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	L_{AeqT} = 50 dB	Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	L_{AeqT} = 35 dB	Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	L_{AeqT} = 30 dB	Sleep disturbance, night-time (indoors)
	L_{AMAX} = 60 dB	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
	L_{AMAX} = 45 dB	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)

2.14 In 2018 the WHO published the "Environmental Noise Guidelines for the European Region" (ENGER). The new WHO Environmental Noise Guidelines (page 28) explain that *"The current environmental noise guidelines for the European Region supersede the CNG from 1999. Nevertheless, the GDG* (Guideline Development Group) *recommends that all CNG indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid"*. Hence the CNG remain relevant to this assessment.

2.15 The WHO ENGER brings together the latest research on the effects of specific types of noise on health in relation to transportation noise sources (road, rail and aircraft noise exposure), wind turbines and leisure noise. Hence in direct relation to the specific proposal that this noise assessment considers, the new WHO ENGER are not of material consideration.

Changes in noise level

2.16 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dB are equivalent to a doubling of loudness. This guidance has been accepted by Inspectors, at Inquiry, to encompass changes in noise levels in the index $L_{Aeq,T.}$ in relation to road traffic noise and therefore if of limited use in this case.

2.16 The following table shows the response to changes in noise level (known as the Semantic Scale).

TABLE 3: Change in noise level

Change in noise level L_{AeqT} dB	Response	Impact
<3	Imperceptible	None
3 - 5	Perceptible	Slight
6 - 10	Up to a doubling	Significant
11 – 15	More than a doubling	Substantial
> 15	-	Severe

BS 4142:2014+A1:2019

2.18 As discussed, this BS described a method for rating and assessing sound of industrial and/or commercial nature according to the following summary process:

i) Carry out a numerical assessment of the noise, taking into the character and areas of uncertainty, by comparing the noise against the existing background noise level. The greater the difference between the two, the greater the impact.

ii) By considering the noise impact against the context in which it is placed. There are many contextual points to consider when considering an assessment of sound impact including the following:

- The absolute level of sound.
- The character and level of the specific sound compared to the existing noise climate.
- The sensitivity of the receptors.
- The time and duration that the specific sound occurs. The conclusions of assessments undertaken using alternative assessment methods, for example WHO guideline noise values or change in noise level.
- The ability to mitigate the specific sound through various methods, for example by screening, the selection of quiet plant equipment, the use of attenuators, through the imposition of noise management plans and good practice, façade design and layout/orientation.
- The form and scale and scale of a development. For example, does not the proposed development involve a new industrial/commercial premise or is the proposal the installation of new plant or an extension to an existing premises?

2.19 It is therefore entirely possible that whilst the numerical outcome of a BS 4142 assessment is indicative of adverse or even significant adverse impact, when the proposal is considered in context the significance of the impact is reduced to an acceptable level.

Local Design Guidance

2.20 SR is not aware of any local design guidance; however, reference is made to advice provided by SBC on the data centre on the former Akzonobel Decorative Paints Facility[2], Wexham Road, Slough. Condition 12 of the outline planning application requires that from 'normal' operation of the data centre that rating noise level from plant should not exceed the existing background noise levels by more than 2 dB and that noise levels should not exceed 55dB L_{Aeq1hr} during (0700 -2300hrs) and 45 dB L_{Aeq1hr} during night time 2300 – 0700 hours). It is assumed that a similar approach would be acceptable in this case.

2.21 Whilst there are no similar conditions for emergency conditions, reference is made in the noise assessment submitted to discharge Condition 12 of internal noise levels not exceeding the recommended internal guidelines in BS 8233. Based on windows closed with a level difference (inside to outside) of 30dB, this would equate to an external noise level of 65 dB during the day and 60 dB during the night.

2.22 The impact of noise depends on many factors, not just noise level, but also duration and time of day the noise occurs. For testing conditions which will only occur during the day and for short periods of time it is therefore considered a higher noise criteria would apply compared to normal operations that occur 24-hours a day. As advised above the guidance in BS 4142 states that a noise level of 'around 5dB' is an indication of adverse impact and a level difference of 'around 10dB' is an indication of a significant adverse impact. The primary aim of the NPPF is the avoidance of significant adverse impacts, and therefore it is suggested that for testing conditions noise levels should not exceed the background level by more than 5dB.

Suggested Criteria

- Normal Operations (Data Centre and BESS)– Background Level (BL) + 2dB
- Testing Operations (Data Centre only) – Background Level (BL) +5dB
- Emergency Operations (Data Centre only)– External Noise Levels 60 dB L_{AeqT} (night)

[2] Planning Application Reference P/00072/096

3.0 Environmental Noise Survey

3.1 To determine existing baseline sound levels a noise survey was carried out between 9 and 11 July 2024. Measurements were carried out at three locations as shown in Figure 2 below. The locations were chosen to represent the noise sensitive properties identified in Table 4.

FIGURE 1: Monitoring Locations

TABLE 4: Survey Locations details

	Equipment used	Details
1	Norsonic 140 Type 1 sound level meter	Microphone positioned on tripod at boundary of site with Heathrow Hotel. Location considered representative of Hotel (R1) and properties to north east of the site (R2)
2	Norsonic 140 Type 1 sound level meter	Microphone positioned in free-field conditions on northern boundary of Parcel B. Location chosen to be representative of Poyle Farm House (R3) and Florama (R4)
3	Norsonic 118 Type 1 sound level	Microphone positioned in free field conditions on south east corner of Parcel B. Location chosen to be representative of Golden Cross PH (R5) and Poyle Mobile Home Park (R6)
Weather conditions during the survey were dry, warm with light winds		
All SLM's were calibrated before and after the survey with no drift in accuracy found.		

3.2 At location 1 measurements were recorded over from midday on 9th July until 2200 hours on 10th July, at location 2 from 1300 hours on 9th until 1500 hours on 10th July and at location 3 from 1415 hours on 9th until 1100 hours 11th July 2024. Measurements at each location were recorded continuously during the survey period at 5-minute intervals. Survey results are presented in Figures 3 – 5 below.

FIGURE 3: Survey Results – Location 1

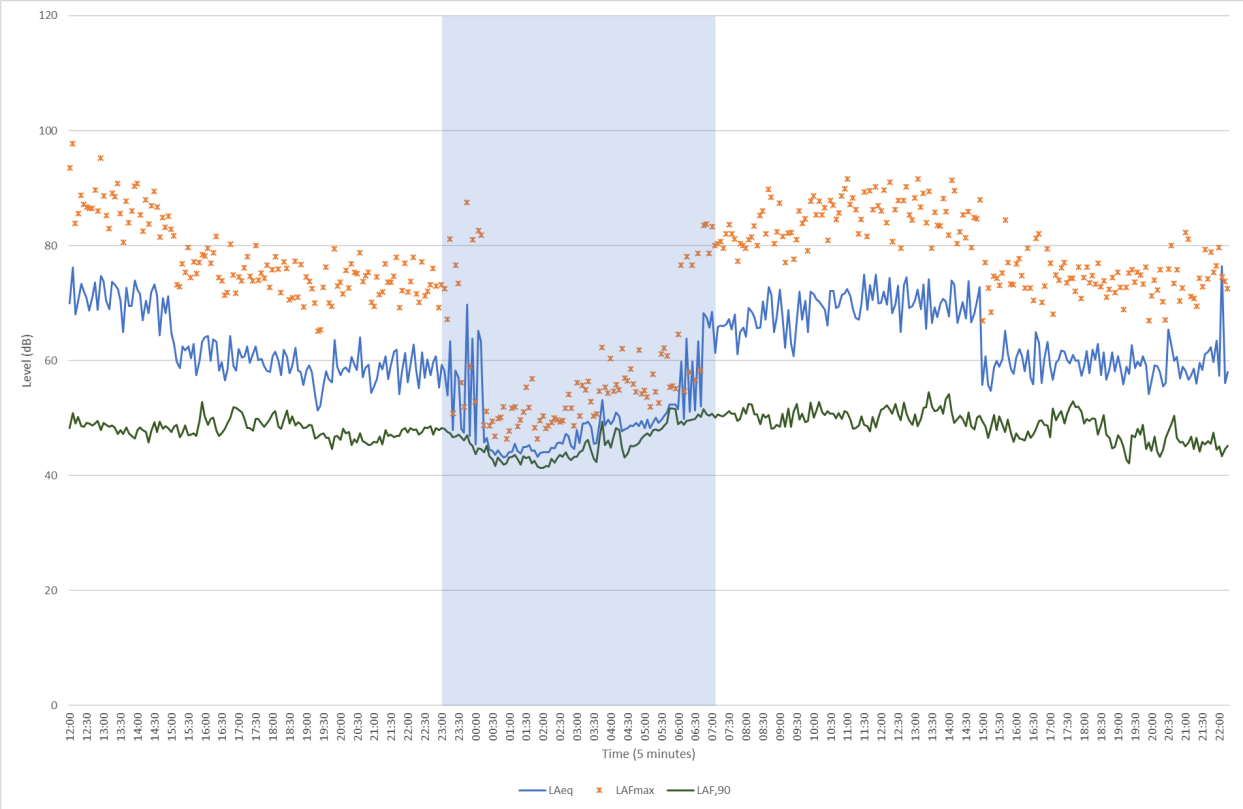


FIGURE 4: Survey Results – Location 2

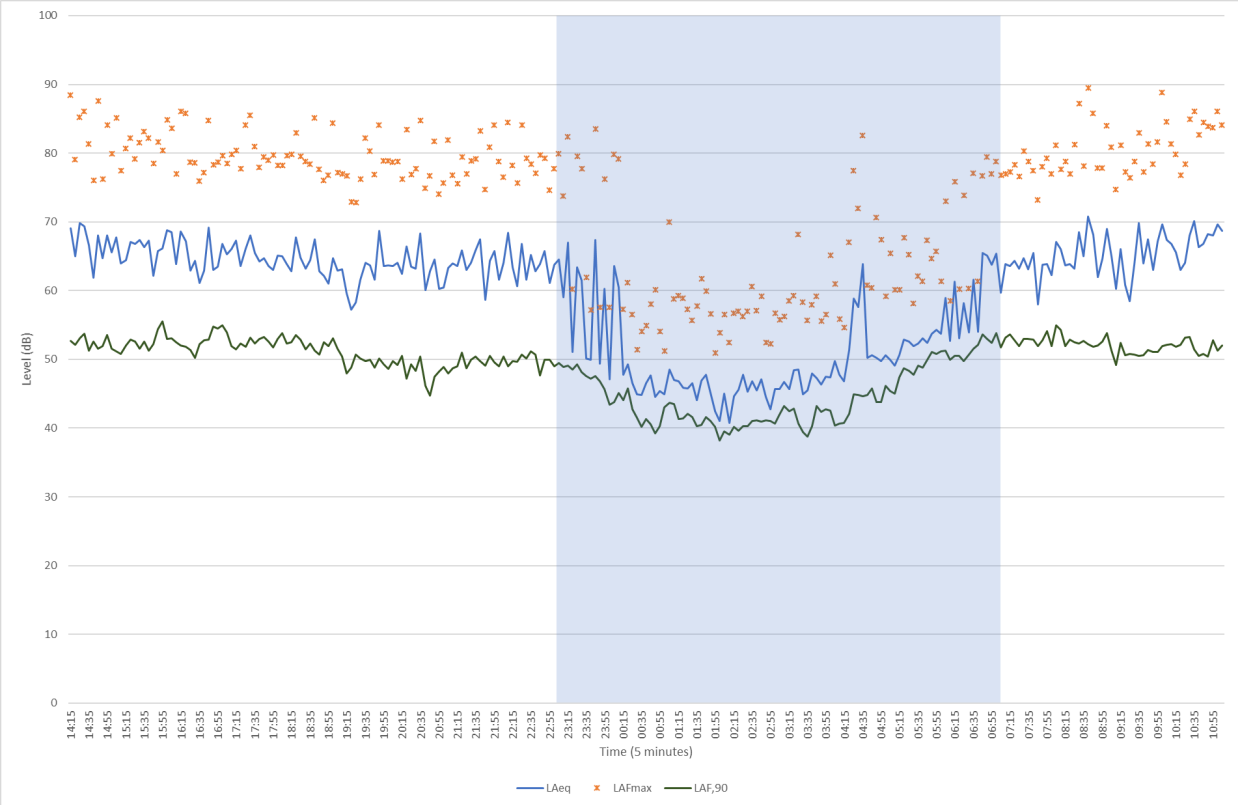


FIGURE 5: Survey Results – Location 3

3.2 Based on the survey results measured the ambient (L_{AeqT}) and background ($L_{A90,T}$) at each location has been determined during the day time (0700 and 2300 hours) and night time period (2300 – 0700 hrs) periods has been determined. The representative background sound levels have been determined by a modal analysis of the measurements carried out at each location. The modal analysis is included in Appendix B to this report.

TABLE 5: Survey Results

Location	Day time (0700 – 2300 hours)			Night Time (2300 – 0700 hours)		
	$L_{Aeq16hr}$ dB	L_{A90T} dB	$L_{Afmax\ (range)}$	L_{Aeq8hr} dB	L_{A90T} dB	$L_{Afmax\ (range)}$
1	67	51	65 - 95	57	44	46 - 88
2	66	53	72 – 88	57	44	51 – 84
3	66	54	71 - 88	56	44	55 - 83

3.3 During the day existing noise levels are dominated by noise from London Heathrow airport with planes flying over the site at regular intervals. Flights continue into the night time period up to 23:30 and start again around 0600 hours. This is evident from the survey results shown in Figures 3-5 above. Background noise levels across all three locations were around 44 dB.

4.0 Noise Input Assumptions and Predicted Noise Levels

4.1 The main noise consideration from the proposed development is noise from operation of plant, including chillers and standby generators serving the data centre and plant at the BESS. To determine noise levels from site activity SR has used SoundPLAN computer modelling software. SoundPLAN calculates the overall L_{Aeq} at defined receptors in accordance with relevant standards including BS 4142:2014. This calculation is based on a number of input parameters, including noise source data, barriers, topography, intervening ground conditions and other buildings in the area.

4.2 The physical elements of the following models such as location, layout, topography and location of noise sources have been taken directly from the planning application drawings and site observations. For the noise source data SR has used manufacturer's data (where available) and where this is not available i.e. where plant selection has not been confirmed, noise data from SR own library from similar sites. The noise source input data used in the assessment is summarised below. Full details of the plant are included in Appendix C.

Input Assumptions

Data Centre

Chillers (x 90)

Generators (x45) – 3 banks of 15

For the purpose of assessment, it has been assumed that exhaust is above height of gantry screen.

BESS

PowerTitan 2.0 Energy Storage System – Number of units 48

Inverter, LV voltage panel, transformer – Number of units 24

*Daytime - Assumed all plant operating 100% capacity at ambient temperature up to 35^{o}C

*Night time – LV Voltage Panel, 100%, PowerTitan 2 units – 50% at ambient temperature up to 25^{o}C.

*Based on information from BESS at Bustleholme, West Midlands

4.3 Daytime receptors are model at 1m above ground level, with night time models based on upper floor receptors, with following exceptions:

R2, R4 and R6 – Ground Level (day and night)

R1 – Upper floor of hotel (day and night)

R5 – Upper Floor (day and night)

4.4 Based on the above approach the following scenarios have been modelled:

Data Centre

- Normal operation (Day and Night) – All chillers operating – No generators
- Emergency Operation Night Time – All chillers and all standby generators operating
- Testing Operation Daytime – All chillers and 3 generators on test

BESS

- Normal Operations – Day and Night

Combined

- Normal Operations – Data Centre + BESS (Day and Night)

4.5 Noise from ancillary plant, including electrical sub-station located on the southern side of the data centre, has not been included as there is insufficient information available to enable a detailed assessment to be carried out. However, based on experience of similar sites noise from this type of plant (including the sub-station) is insignificant compared to the plant assessed and therefore unlikely to change the predicted noise levels.

4.6 Noise levels have been predicted at the following receptors as identified in Figure 2. Acoustic models showing the predicted noise levels are shown in Appendix D and are summarised in the Table below.

TABLE 6: Predicted Noise levels L_{AeqT}

			Receptors – Predicted Noise Level dB					
			R1	R2	R3	R4	R5	R6
Data Centre	Normal	Day	44	39	37	38	32	30
	Normal	Night	44	39	38	38	32	30
	Emergency	Night	60	55	46	46	43	40
	Testing	Day	54	47	40	42	37	34
BESS	Normal	Day	36	33	49	49	51	40
	Normal	Night	30	26	43	35	46	35
Combined		Day	45	40	49	49	51	40
Combined		Night	44	39	44	40	46	46

Uncertainty

4.7 The above predicted noise levels are based on manufacturer's noise data and where the final details of the plant are not known (as in the case of the data centre) on noise data determined from similar developments. There is, therefore, a degree of uncertainty in the assessment results. To minimise impact of any uncertainty, the development has been designed with screening around both the data centre chillers and generator gantry. If required this screening, which is currently a louvred weather screen could be replaced with an acoustic louvred screen. The acoustic performance of the screen (if required) will depend on the final selection of the plant.

5.0 Noise Assessment

5.1 To determine the impact of noise from the proposed development, SR has considered the following scenarios as shown below. In each case the assessment has been carried out in accordance with the guidance in BS 4142. Taking into account the existing high ambient noise levels it is not considered that noise from plant would have any notable features likely to attract attention and therefore the specific levels calculated in section 4.0 of this report can be considered to be the rating level. The noise criteria used is based on BS 4142 and as set out in section 2.0 of this report

- Data Centre – Normal Operation – Chillers only (day and night)
- Data Centre – Testing Operations – Daytime only
- Data Centre – Emergency Operations – Night time
- BESS – Normal Operation – (day and night)
- Overall (Data Centre + BESS) – Normal Operation – (day and night)

Data Centre - Normal Operations

TABLE 7: Daytime (0700 – 2300 hours)

Receptor Ref	Rating Level dB (Table 6)	Background Level (BL) dB	Noise Criteria (BL+2dB)	Meets Criteria Yes/No
1	44	51	53	Yes
2	39	51	53	Yes
3	37	53	55	Yes
4	38	53	55	Yes
5	32	54	56	Yes
6	30	54	56	Yes

TABLE 8 : Night time (2300 – 0700 hours)

Receptor Ref	Rating Level dB (Table 6)	Background Level (BL) dB	Noise Criteria (BL+2dB)	Meets Criteria Yes/No
1	44	44	46	Yes
2	39	44	46	Yes
3	38	44	46	Yes
4	38	44	46	Yes
5	32	44	46	Yes
6	30	44	46	Yes

5.2 During both daytime and night time periods predicted noise levels from normal operation of the data centre will be no greater than existing background noise levels and no additional mitigation measures are required.

Data Centre - Testing Operations

5.3 As part of the normal operations of the completed development, it will be necessary to routinely test the emergency generators. The specific testing regime will depend on the data centre operator requirements however testing will be limited to daytime periods only, with only a select number of generators tested each time. For the purposes of the assessment it has been assumed that the three closest generators to the Hilton Hotel will be tested to represent a reasonable worst case scenario.

TABLE 9: Day Time (0700 - 2300 hours)

Receptor Ref	Rating Level dB (Table 6)	Background Level (BL) dB	Noise Criteria (BL+5dB)	Meets Criteria Yes/No
1	47	51	56	Yes
2	54	51	56	Yes
3	40	53	58	Yes
4	42	53	58	Yes
5	37	54	59	Yes
6	34	54	59	Yes

5.4 Predicted noise levels during routine testing of emergency generators will be within the recommended noise criteria and also significantly below the existing ambient noise levels. Therefore, taking into account that testing will only occur for a relatively short period of time and limited to daytime hours only, it is not considered that noise during testing operations will cause significant adverse impact.

Data Centre – Emergency Operations

5.5 In the event of a power failure, all generators will operate simultaneously to support the demand alongside all normal cooling and ventilation plant. A power failure may occur at any time. Therefore, predicted rating levels from emergency operations have been assessed against night time background noise levels to represent a worst case scenario.

TABLE 10: Emergency Operations – Night time only (2300 – 0700 hours)

Receptor Ref	Rating Level dB (Table 6)	Recommended Noise Criteria	Meets Criteria Yes/No
1	60	60	Yes
2	55	60	Yes
3	46	60	Yes
4	46	60	Yes
5	43	60	Yes
6	40	60	Yes

5.6 The above criteria is based on windows being closed with a minimum difference of 30 dB (inside to outside) assumed. Based on this approach internal noise levels at all receptors will be no greater than 30 dB L_{AeqT} and within the internal guideline in BS 8233. SR is aware

that the Hilton Hotel (R1) has been designed to take into account noise from air craft noise at London Heathrow airport and the acoustic performance of the building is far greater than 30 dB. It is also noted that all rooms at the hotel have air conditioning. It is therefore not considered that noise during emergency operations will cause significant adverse impacts in line with policy aims of NPPF.

BESS – Normal Operations

5.7 For the BESS on the southern parcel of land (Parcel B), it has been considered that all plant will operate at 100% capacity and 50% capacity at night. This based on information provided from a similar BESS at Bustleholme.

TABLE 11: BESS daytime (0700 – 2300 hours)

Receptor Ref	Rating Level dB (Table 6)	Background Level (BL) dB	Noise Criteria (BL+2dB)	Meets Criteria Yes/No
1	36	51	46	Yes
2	33	51	46	Yes
3	49	53	46	Yes
4	49	53	46	Yes
5	51	54	46	Yes
6	40	54	46	Yes

TABLE 12: BESS night time (2300 - 0700 hours)

Receptor Ref	Rating Level dB (Table 6)	Background Level (BL) dB	Noise Criteria (BL+2dB)	Meets Criteria Yes/No
1	30	44	46	Yes
2	26	44	46	Yes
3	43	44	46	Yes
4	35	44	46	Yes
5	46	44	46	Yes
6	35	44	46	Yes

5.8 Noise from the operation of BESS will be within the recommended daytime and night time criteria.

Overall (Data Centre + BESS)

5.9 Noise effects are generally localised and individual noise sources only have a cumulative effect if they are in close proximity. In relation to the development, the receptors to the north (R1 and R2) are not impacted by noise from BESS and similarly the impact of the data centre on properties to the south (R5 and R6) is considered negligible. Therefore, in terms of cumulative impact the main consideration are Poyle Farm House (R3) and Floroma (R4). Table 13 presents the cumulative noise level from normal operation of the data centre and BESS on these properties. The predicted levels take into account the noise reduction from screening the BESS.

TABLE 13: Cumulative Impact (Data Centre +BESS) night time (2300 - 0700 hours)

Receptor Ref	Rating Level dB (Table 6)	Background Level (BL) dB	Noise Criteria (BL+2dB)	Meets Criteria Yes/No
3	44	44	46	Yes
4	40	44	46	Yes

5.11 Taking into account the mitigation cumulative noise levels from both data centre and BESS will be within the recommended night time criteria.

6.0 Summary and Conclusion

6.1 SR has carried out an noise assessment of a proposed development at Manor Farm, Poyle Road, in the administrative area of Slough Borough Council. The development will include a data centre on the northern part of the site (Parcel A) and Battery Energy Storage Site (BESS) on the southern part (Parcel B).

6.2 A survey of existing noise levels has been carried out to establish the level and character of existing noise levels. Noise levels are dominated during the day by air craft noise at Heathrow airport which is approximately 1.7km to the east of the site. During periods when no flights take place background noise levels are dictated by road traffic on the M25. Based on measured background noise levels and advice provided by SBC on similar developments within the area, noise criteria have been determined taking into account the advice in BS 4142:2014.

6.3 Noise levels from site operations have been predicted using SoundPLAN computer modelling and the following concluded:

- Noise from operation of the data centre, during normal, testing and emergency operations will be within recommended criteria;
- Noise from BESS during daytime and night hours will be within the recommended criteria; and
- Nosie from combined operation of BESS and Data Centre will be within the recommended noise criteria

6.4 It is therefore concluded noise from proposed development in line with policy aims of the NPPF and SBC Local Plan noise from proposed development will not cause a significant or unacceptable impact of noise sensitive properties in the area,

APPENDIX A

ACOUSTIC TERMINOLOGY

Acoustic Terminology

A1 Noise, defined as unwanted sound, is measured in units of decibels, dB. The range of audible sounds is from 0 dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB, i.e. 50 dB + 50 dB = 53 dB. Increases in continuous sound are perceived in the following manner:

1 dB increase - barely perceptible.

3 dB increase - just noticeable.

10 dB increase - perceived as twice as loud.

A2 Frequency (or pitch) of sound is measured in units of Hertz. 1 Hertz (Hz) = 1 cycle/second. The range of frequencies audible to the human ear is around 20Hz to 18000Hz (or 18kHz). The capability of a person to hear higher frequencies will reduce with age. The ear is more sensitive to medium frequency than high or low frequencies.

A3 To take account of the varying sensitivity of people to different frequencies a weighting scale has been universally adopted called "A-weighting". The measuring equipment has the ability automatically to weight (or filter) a sound to this A scale so that the sound level it measures best correlates to the subjective response of a person. The unit of measurement thus becomes dBA (decibel, A-weighted).

A4 The second important characteristic of sound is amplitude or level. Two units are used to express level, a) sound power level - L_w and b) sound pressure level - L_p. Sound power level is an inherent property of a source whilst sound pressure level is dependent on surroundings/distance/directivity, etc. The sound level that is measured on a meter is the sound pressure level, L_p.

A5 External sound levels are rarely steady but rise or fall in response to the activity in the area - cars, voices, planes, birdsong, etc. A person's subjective response to different noises has been found to vary dependent on the type and temporal distribution of a particular type of noise. A set of statistical indices have been developed for the subjective response to these different noise sources.

A6 The main noise indices in use in the UK are:

L_{A90}: The sound level (in dBA) exceeded for 90% of the time. This level gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background sound level" of an area.

L_{Aeq}: The equivalent continuous sound level in dBA. This unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the intermittent noise". In other words, the energy average level. This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as aircraft and trains.

L_{A10}: The sound level (in dBA) exceeded for 10% of the time. This level gives an indication of the sound level during the noisier periods of time in any given sample. It has been used over many years to measure and assess road traffic noise.

L_{AMAX}: The maximum level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.

A7 The sound energy of a transient event may be described by a term SEL - Sound Exposure Level. This is the L_{Aeq} level normalised to one second. That is the constant level in dBA which lasting for one second has the same amount of acoustic energy as a given A weighted noise event lasting for a period of time. The use of this unit allows the prediction of the L_{Aeq} level over any period and for any number of events using the equation;

$$L_{AeqT} = SEL + 10 \log n - 10 \log T \text{ dB}.$$

Where

n = Number of events in time period T.

T = Total sample period in seconds.

A8 In the open, known as free field, sound attenuates at a rate of 6 dB per each doubling of distance. This is known as geometric spreading or sometimes referred to as the Inverse Square Law. As noise is measured on a Logarithmic scale, this attenuation in distance = 20 Log (ratio of distances), e.g. for a noise level of 60 dB at ten metres, the corresponding level at 160 metres is:

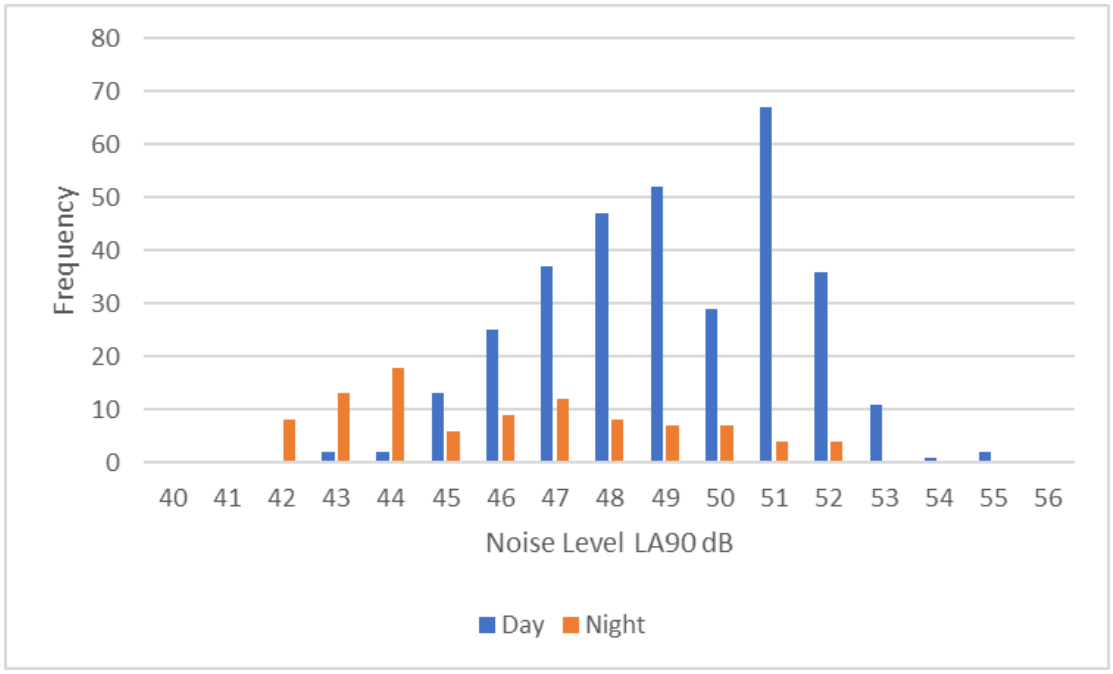
$$60 - 20 \text{ Log } {}^{160}/_{10} = 60 - 24 = 36 \text{ dB}.$$

APPENDIX B

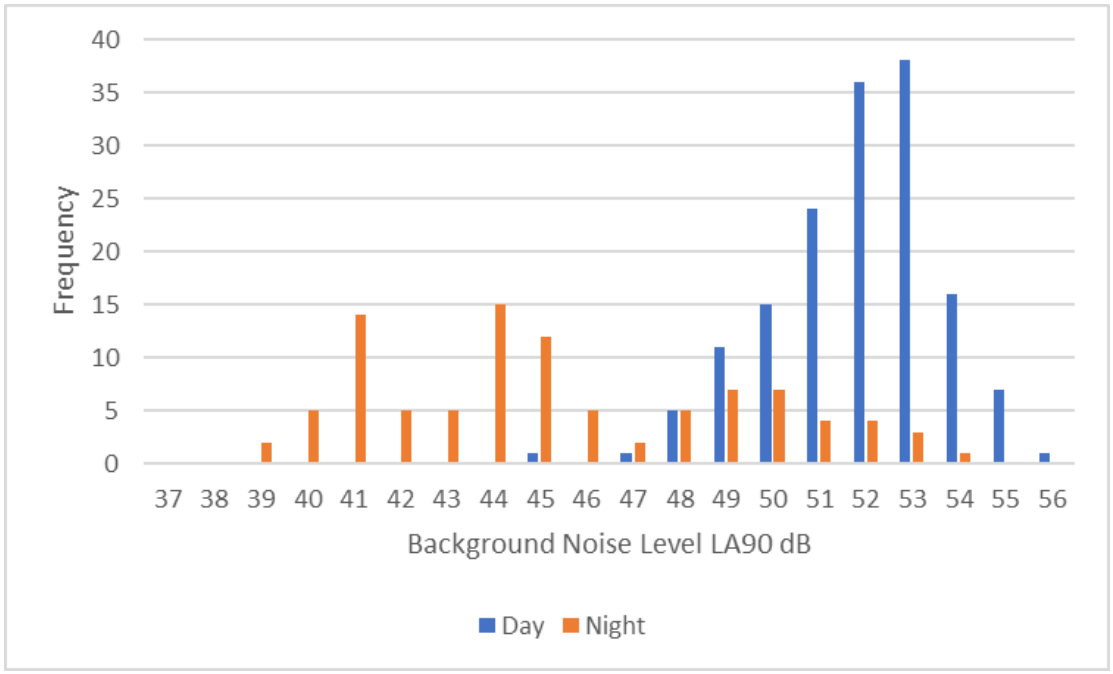
BACKGROUND NOISE LEVELS

Appendix B – Background Sound Levels – Modal Analysis

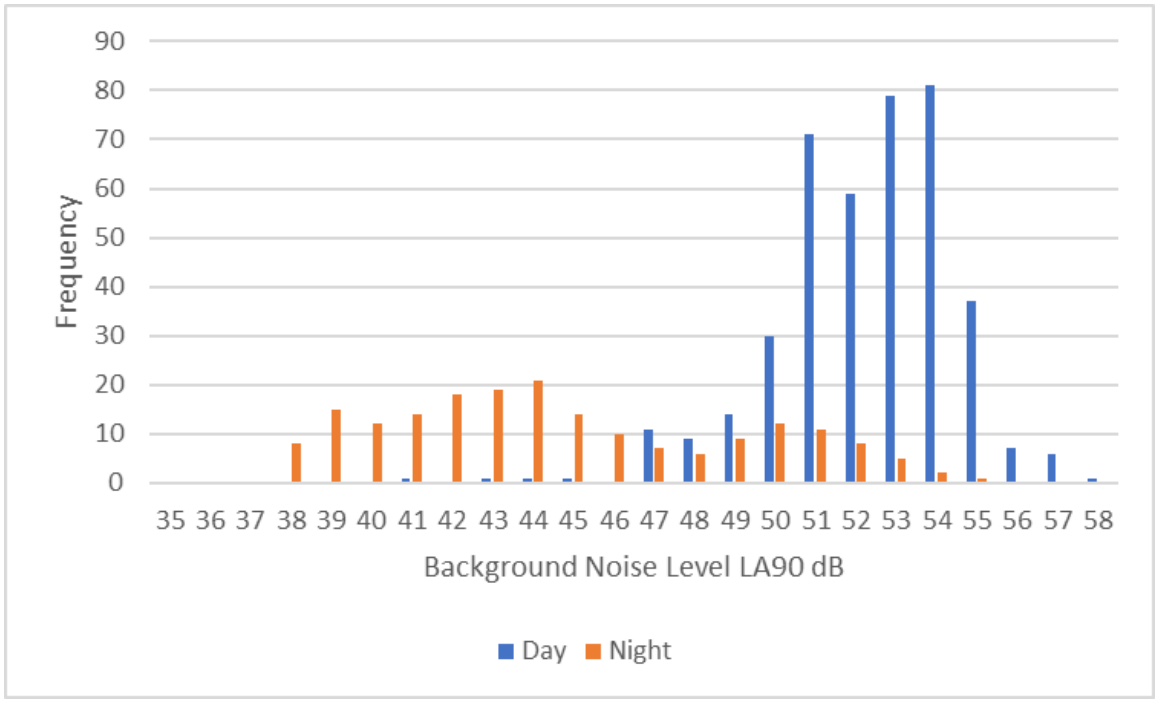
B1: Location 1



B2: Location 2



B3: Location 3



APPENDIX D

NOISE DATA – INPUT ASSUMPTIONS

Appendix C – Plant Input Assumptions

Data Centre

Chillers (No. units 90)

Source	Lw	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)
AIR COOLED CHILLER-CHILLER END	69	49	59	61	62	65	60	56	49
AIR COOLED CHILLER-CHILLER SIDE	75	54	65	67	67	71	66	62	55
AIR COOLED CHILLER-CHILLER END	69	49	59	61	62	65	60	56	49
AIR COOLED CHILLER-CHILLER SIDE	75	54	65	67	67	71	66	62	55
AIR COOLED CHILLER-CHILLER TOP	74	54	64	66	67	70	65	61	54
Total	**80**	**60**	**70**	**72**	**73**	**76**	**71**	**67**	**60**

Generators (No. units 45) – 3 banks of 15

Generator acoustic data:	Hz		63	125	250	500	1000	2000	4000	8000	LwA dB(A)
Radiating surface of motor compartment:	m2										
Lp(A) roof (minus air inlet roof cover)	32		53	68	68	65	55	51	48	59	72
Lp(A) left side wall	58.5		52	68	67	64	55	50	47	59	72
Lp(A) right side wall	58.5		52	68	67	64	55	50	47	59	72
Lp(A) front wall @ air inlet side	15.6		49	63	61	58	48	42	39	51	66
Radiating surface of air inlet ducting:	m2										
Lp(A) inlet attenuator LHS	7.8		52	62	61	58	52	49	43	45	66
Lp(A) inlet attenuator RHS	7.8										
Lp(A) inlet attenuator Top	24										
Lp(A) inlet opening	20.8		68	78	72	66	65	64	66	81	83
Radiating surface of air discharge ducting:	m2										
Lp(A) discharge duct Front	62		57	60	60	58	52	49	43	45	66
Lp(A) discharge duct LHS	38.75		57	60	60	58	52	49	43	45	66
Lp(A) discharge duct RHS	38.75		57	60	60	58	52	49	43	45	66
Lp(A) discharge duct Rear	62		57	60	60	58	52	49	43	45	66
Lp(A) discharge opening vertical	10		71	78	78	70	66	64	64	76	83
Exhaust silencer at 1m	Point	Lp1m	127	136	136	128	130	127	118	118	
		Attenuator	-20	-41	-54	-51	-58	-58	-57	-57	
		dBA	-26	-16	-9	-3	0	1	1	-1	
		LpA at 1m	81	79	73	74	72	70	62	60	84.5
		1m	8	8	8	8	8	8	8	8	
		LwA	**89**	**87**	**81**	**82**	**80**	**78**	**70**	**68**	92.5

Battery Energy Storage Site (BESS)

PowerTitan 2.0 Energy Storage System – (No. units 48)

Sound Pressure Level (1m) – (Extract from Manufacturer's Noise Data)

测点 Test Point	正 Front	右 Right	后 Rear	左 Left
时间平均声压级 $L_{p,T}$/dBA	74.9	67.9	68.9	70.0

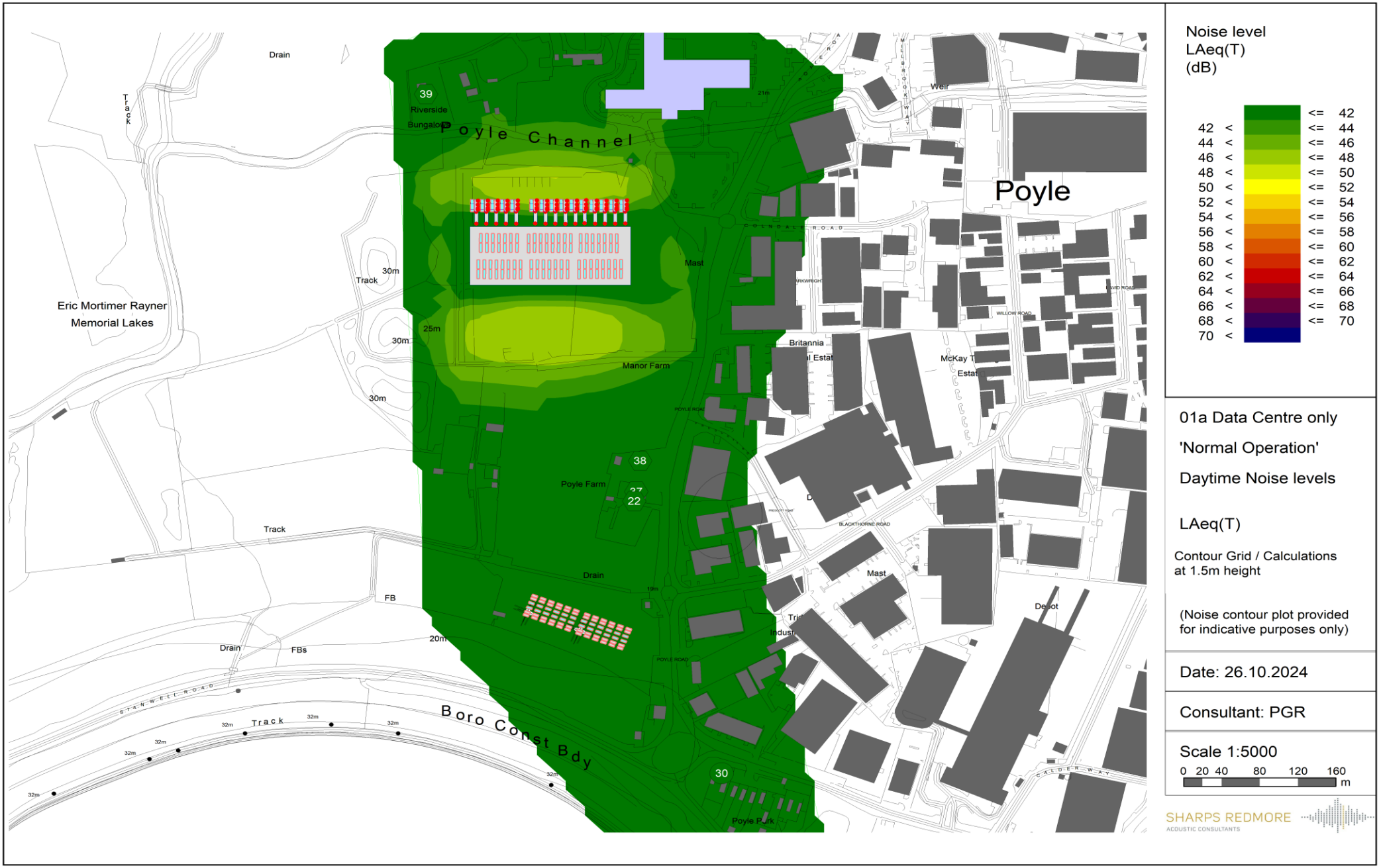
Inverter, LV voltage panel, transformer – (No, units 24)

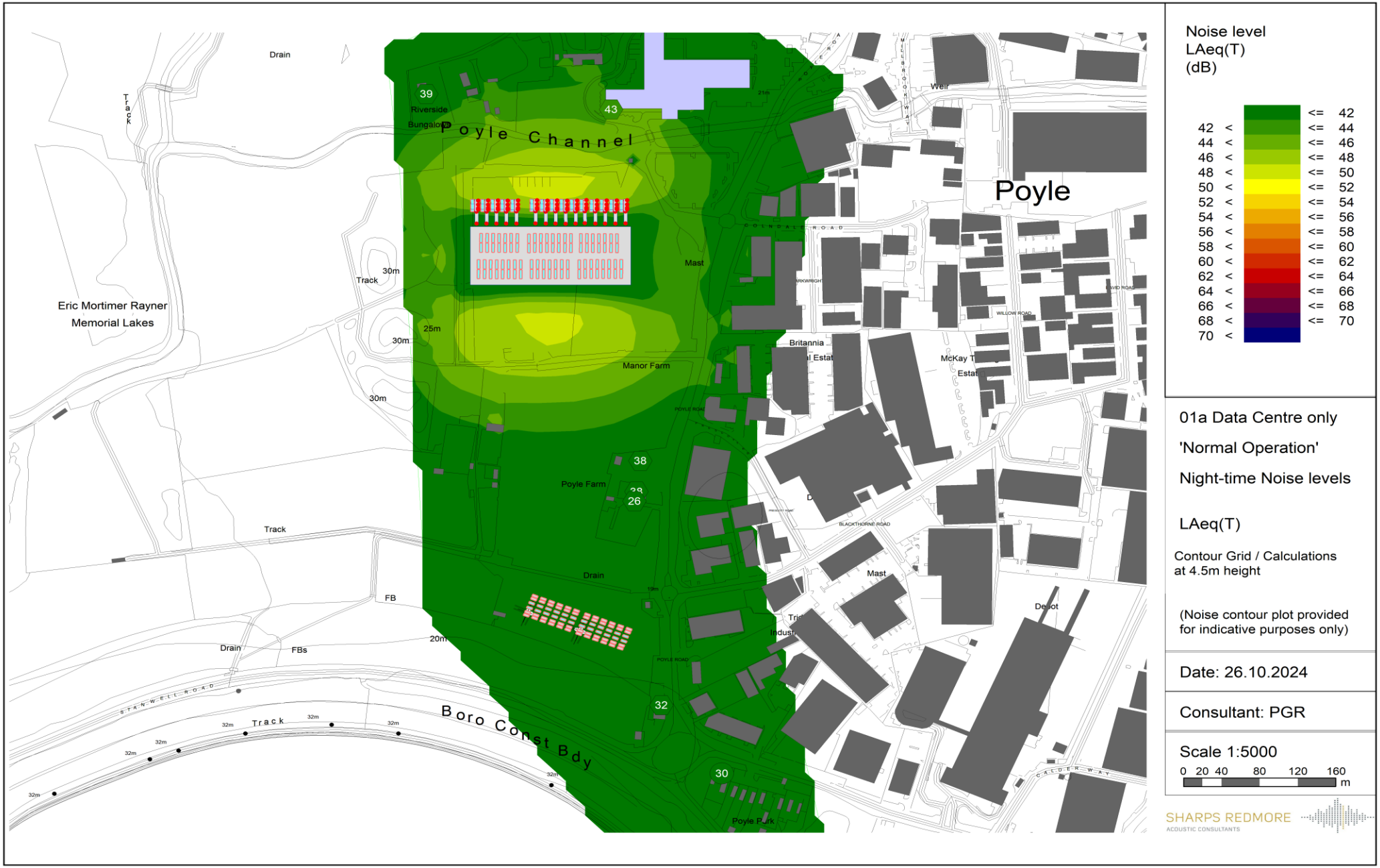
Sound Pressure Level (1m) – (Extract from Manufacturer's Noise Data)

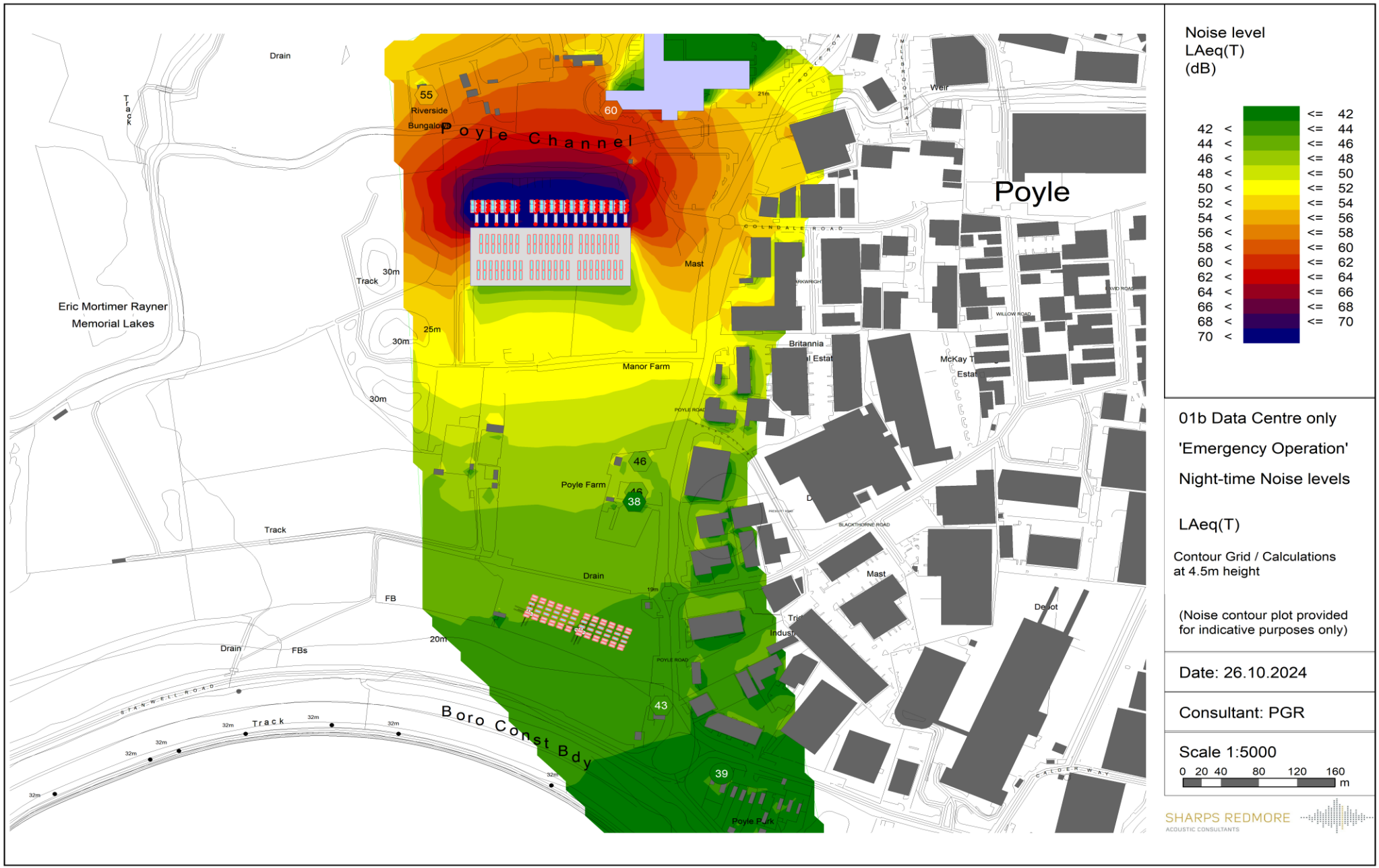
No.	Operating condition	Front/dBA	Right/dBA	Back/dBA	Left/dBA	Top/dBA	Expanded uncertainty/dBA
1	MVS SCC operates at full power	58.8	51.5*	70.9	61.3	62.0	2.5

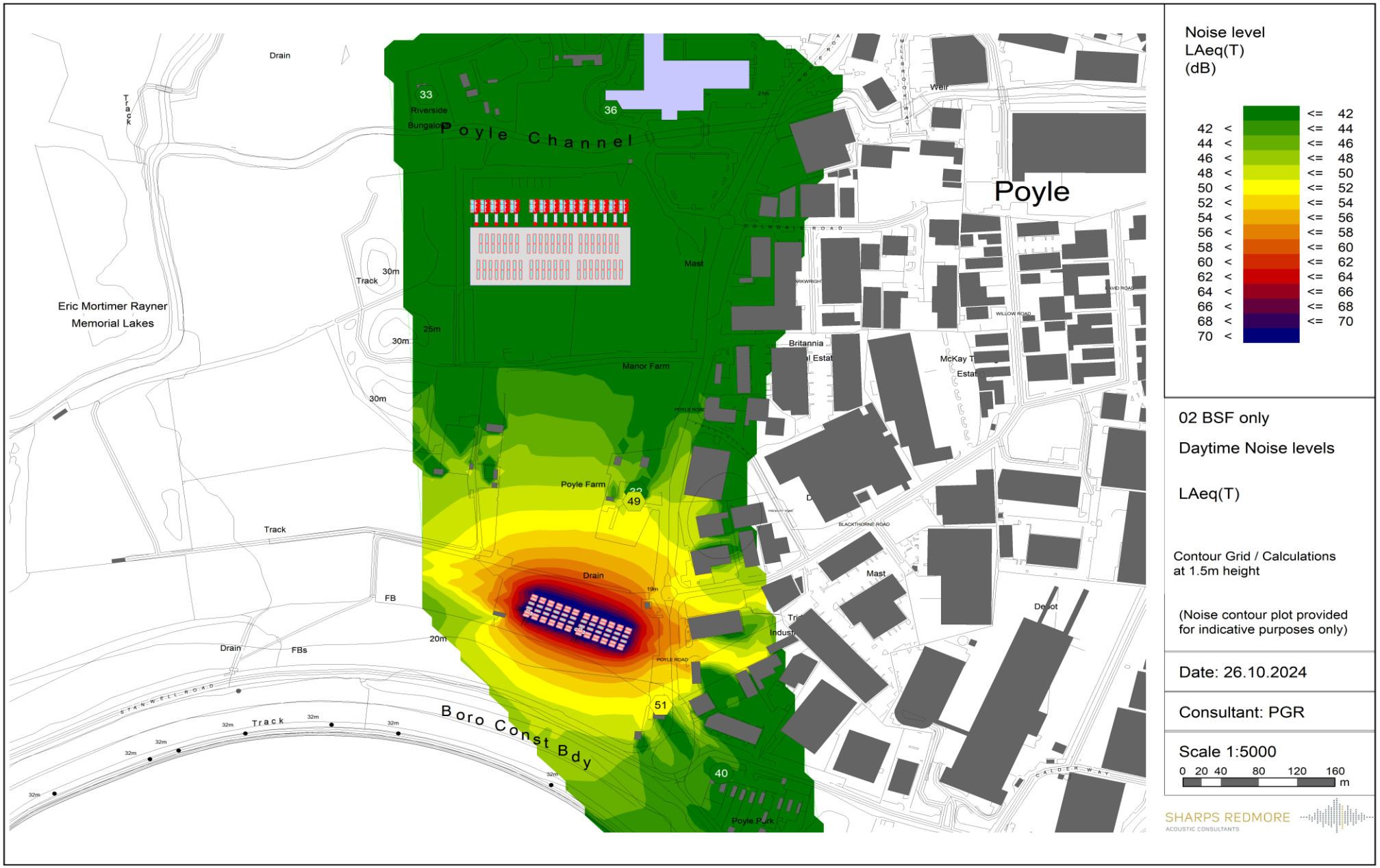
APPENDIX D

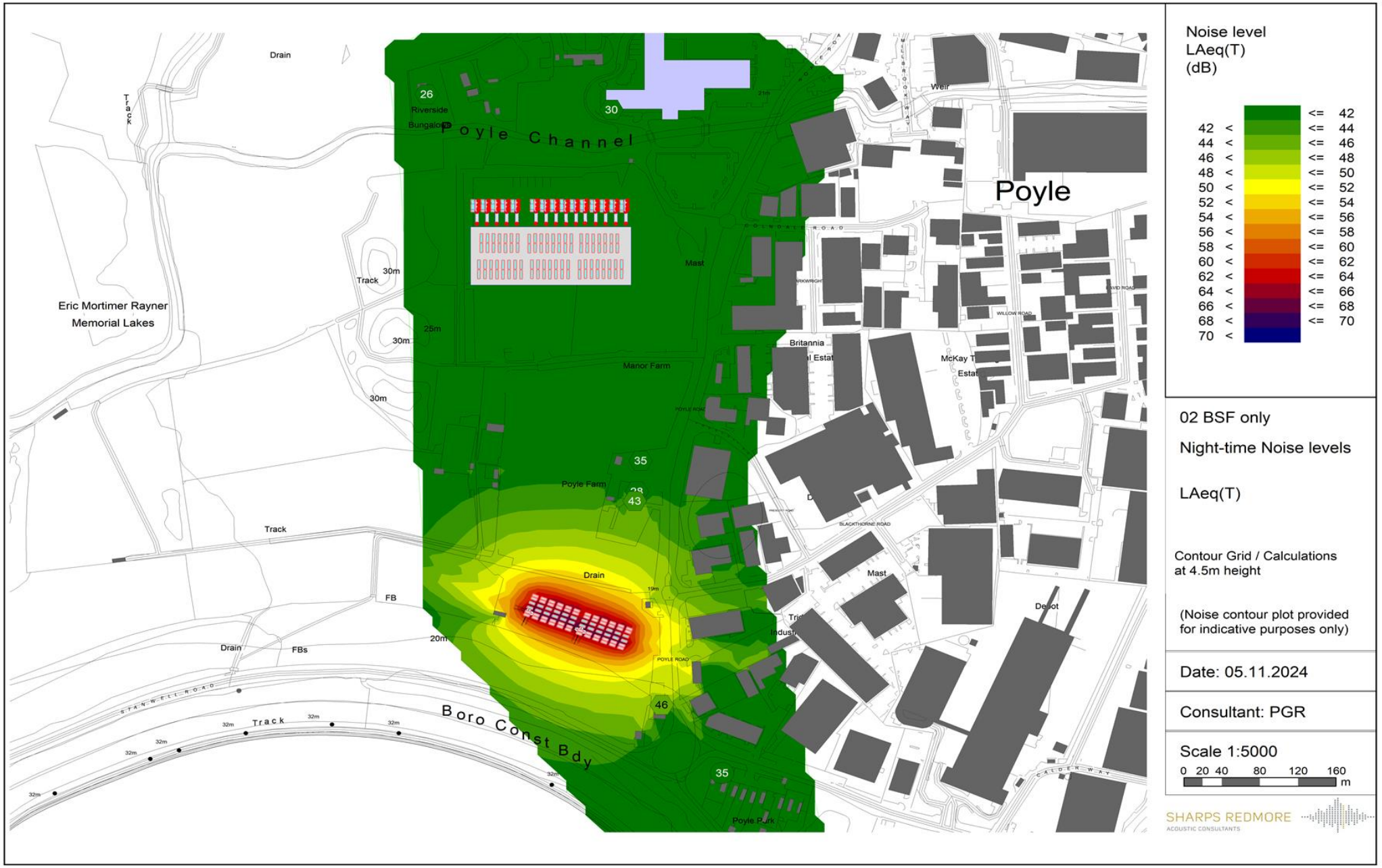
SOUNDPLAN NOISE MODELS

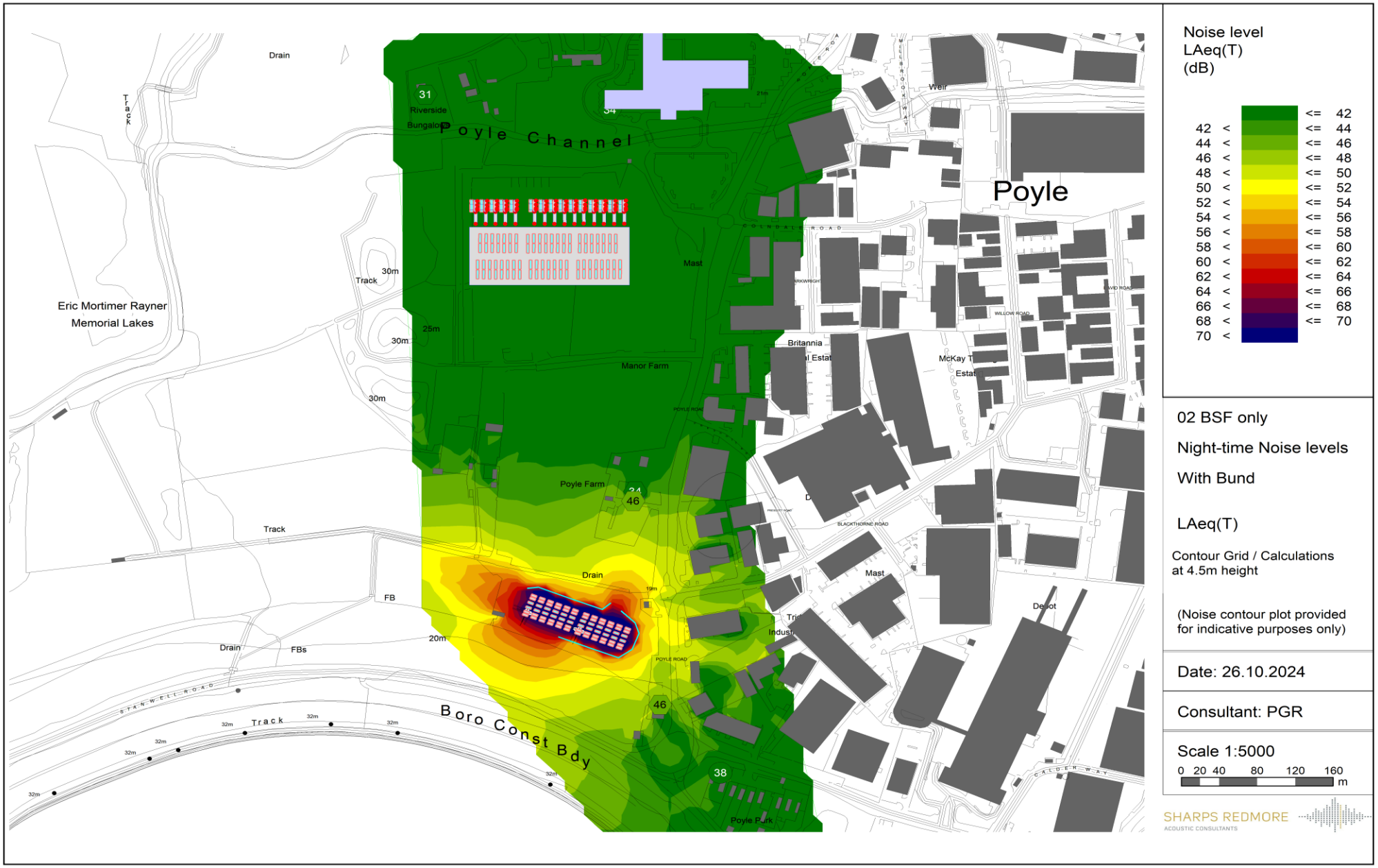


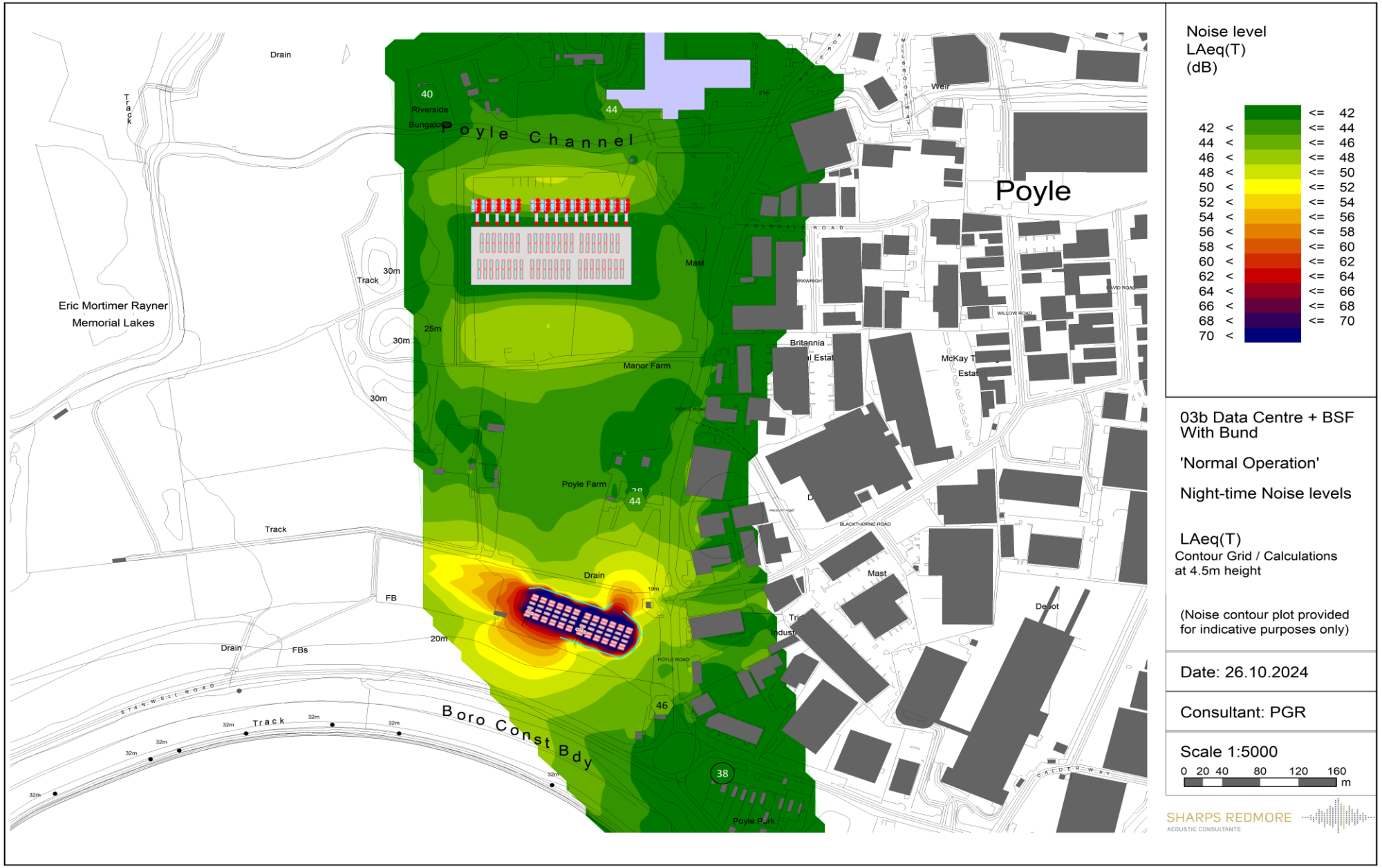


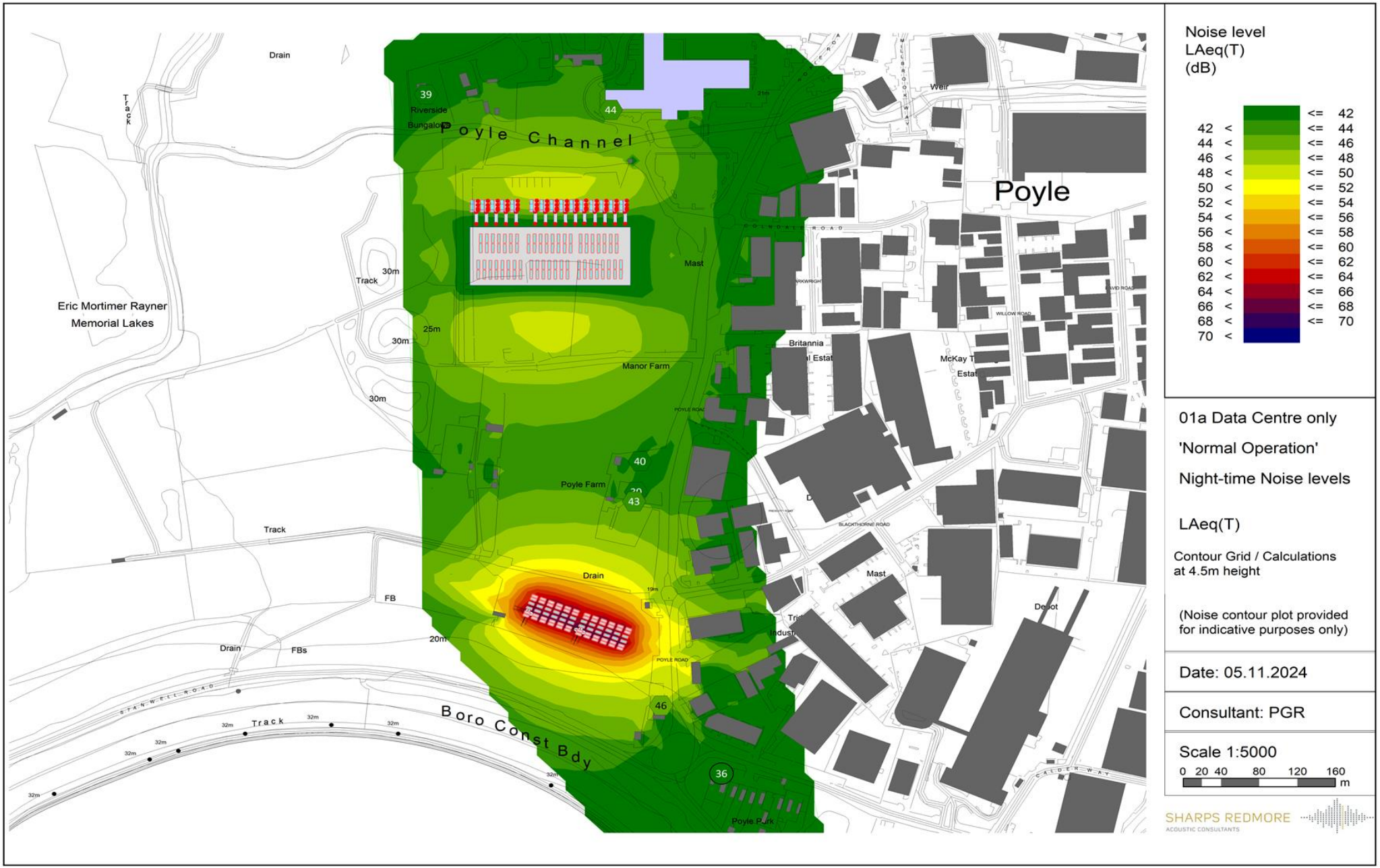












Appendix 4: Transport Assessment (SLR Consulting Limited. November 2024.)

Transport Assessment

Manor Farm, Poyle

Prepared by:
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SLR Project No.: 425.065619.00001

21 November 2024

Revision: V3

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
V1	04.11.2024	J. Hiscocks	E. Wheeler	M. McCullough
V2	20.11.2024	J. Hiscocks	E. Wheeler	M. McCullough
V3	21.11.2024	J. Hiscocks	E. Wheeler	M. McCullough

Basis of Report

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Executive Summary

This Transport Assessment (TA) has been prepared in support of a planning application for proposed industrial and energy development at Manor Farm, Poyle. The planning application comprises a 39,578.34 sqm Gross Internal Area (GIA) 50MW Data Centre, Guard House, internal access routes and associated parking, a Substation and Battery Energy Storage Systems (BESS). Access is provided from Poyle Road via an upgraded site access junction.

The site is well located for the proposed Data Centre and Battery Storage uses. It is in keeping with the surrounding industrial and employment areas. Once operational the site benefits from active travel nodes and infrastructure which can encourage sustainable travel. This supports staff access by sustainable mobility, and is underpinned by a strong Travel Plan, encouraging modal shift from single car occupancy, to walking and cycling, public transport, and car sharing.

The effect of the development on the local highway network is negligible. In fact, the overall effect of the proposed development is less than that of the existing site use, and would result in a positive impact on traffic flows on the local highway network. The site access modelling demonstrates that the left-in left-out junction will operate well within its capacity in all future year scenarios.

Informed by these results and in the context of planning policy, it is concluded that the traffic effect is minimal and not such that it becomes a matter of significant planning weight.

1.0 Introduction

Overview

1.1 SLR Consulting Limited (SLR) is appointed to provide transport and highways advice in relation to a proposed data centre and battery storage at Manor Farm, Poyle. The site is located to the west of Poyle Road, approximately 1km northwest from Junction 14 of the M25 (J14).

1.2 The development comprises a Data Centre and Battery Energy Storage Systems (BESS) with access retained from Poyle Road. The Data Centre is classified under B8 use, and the BESS is classified under the Sui generis land use class.

1.3 The site is located in close proximity to the existing industrial areas to the east of Poyle Road, accessible from J14, and forms an extension to this existing industrial area.

1.4 This Transport Assessment (TA) sets out transport and highway matters associated with the scheme and details the effect of the proposed development on the local highway network. It follows the Scoping Note issued to the Local Highway Authority (LHA) i.e., Slough Borough Council (SBC) on 2nd August 2024.

Planning History

1.5 There is a complex planning history associated with the site with notable applications from 2003-2009 including the following principle uses:

- Residential – Use Class C3 (residential) and C4 (house in multiple occupation)
- General industrial – Use Class B2 buildings and areas of hardstanding and open land
- Storage and distribution – Use Class B8 buildings (including ancillary offices) and areas for the open storage of non-perishable, salvaged and/or reclaimed materials
- Sui generis uses – use of land for the importation, storage and delivery/distribution of primary aggregates; use of land for vehicle parking and storage.

1.6 There are a variety of companies currently operating from the site including airport parking companies, van and lorry hire, building material suppliers and courier services.

1.7 In line with the planning history and consented uses for the site, the site currently comprises multiple uses as of November 2024, including:

- Park Giant Meet & Greet Parking Heathrow (Airport Parking Service);
- Wey Group International Ltd (Courier Service);
- AS Transport (Crane Lorry company);
- Navajo Ltd (Commercial vehicle and airside equipment leasing and maintenance);
- IAG Aggregates (Building Material Suppliers);
- Farnborough Van And Truck Hire (Commercial Truck and Van leasing) and others.

1.8 All of the existing uses, and therefore the trips associated with them, will be replaced by the development proposals and associated trips.

Pre App Engagement

1.9 A Transport and Highways Scoping Report was submitted to SBC on 2nd August 2024 and a pre-application meeting was held on 26th September 2024. The Scoping Report was also shared with National Highways (NH) and Transport for London (TfL).

1.10 National Highways provided some comments which have been reflected in this TA as appropriate. TfL confirmed that they did not have any comments on the assessment carried out.

1.11 The Pre App engagement held with SBC covered site access, trip generation, distribution and parking. The TA reflects these discussions, and the trip rates were agreed.

Report Structure

1.12 The Transport Assessment is structured as follows:

- **Section 2** – **Existing Conditions**: an overview of the site in the context of sustainable transport and the local highway network.
- **Section 3** – **Planning Policy Context**: a review of the site against national and local policy;
- **Section 4** – **Development Proposals**: details of the proposed development including off site highway works;
- **Section 5** – **Trip Generation:** a forecast of the trips expected to be associated with the proposed development;
- **Section 6** – **Distribution**: sets out the distribution of the existing site and the proposed development.
- **Section 7** – **Junction Review**: sets out the impact of the development on local junctions.
- **Section 8** – **Summary and Next Steps**: summarises and concludes.

2.0 Existing Conditions

Overview

2.1 This section sets out the existing accessibility to the site and includes a review of Personal Injury Collision data for the local highway network.

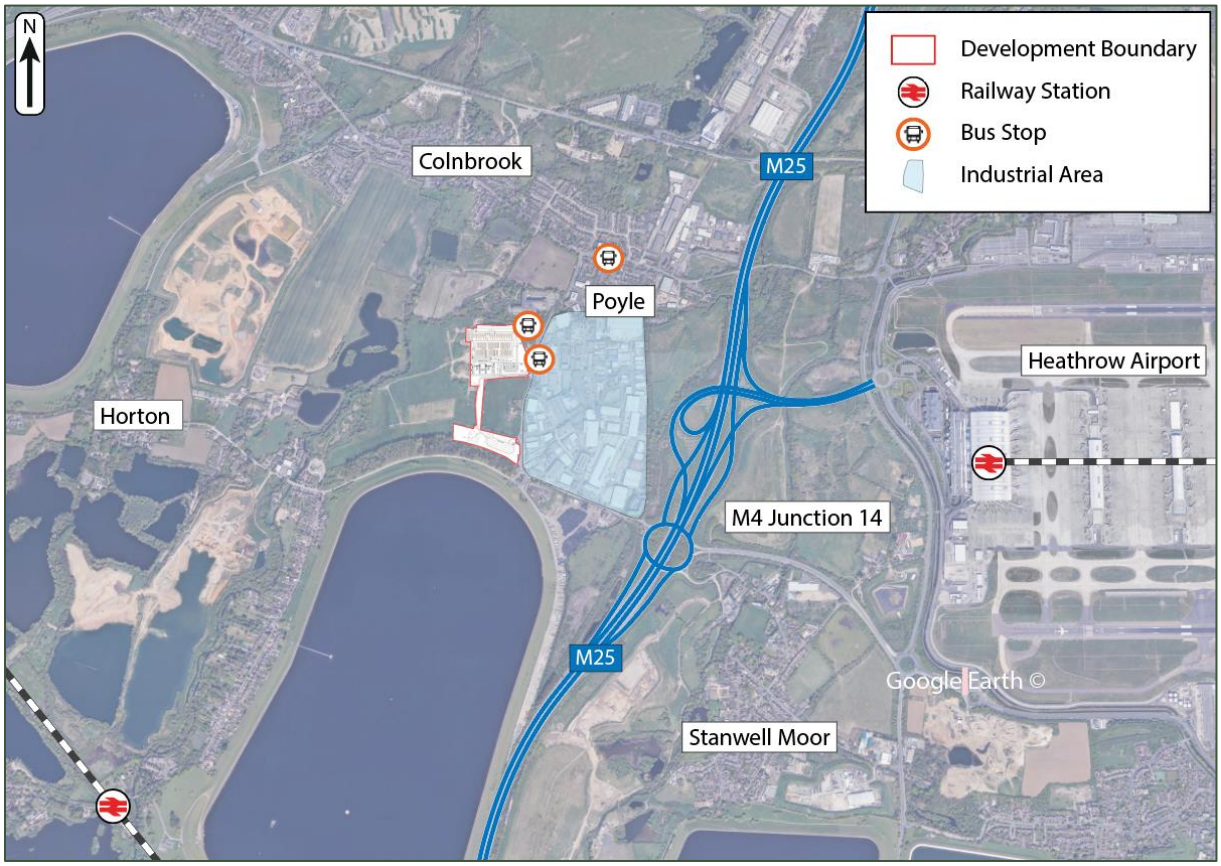
Site Location

2.2 The site is located to the west of Poyle Road, Poyle adjacent to the existing industrial area. Poyle is a largely industrial area in the unitary authority of Slough.

2.3 The settlement of Colnbrook is located approximately 600m to the north and J14 of the M25 is 1km to the southeast. The western extent of Heathrow airport is approximately 2km to the east of the site.

2.4 The site location is illustrated in **Figure 2-1**.

Figure 2-1: Site Location



Site Access

2.5 The site currently has three points of access, two opposite The Hollies and a gated access from the Poyle Road / Blackthorne Road roundabout. The busier and 'main' access is the southern priority junction opposite The Hollies, which serves a number of units and businesses including courier services, van and lorry hire, building material suppliers and

others. The northern 'secondary' access is also a priority junction which is used as a car park by airport users.

Walking

2.6 Poyle Road routes in a north-south direction to the immediate east of the site. There are footways along the eastern side of Poyle Road, though there is currently no existing crossing point from the site access. There are also bus stops 100m north of the site access which benefit from hourly services.

2.7 To the south, the footway continues along Poyle Road for approximately 70m (from the site access) until its junction with Prescott Road. Prescott Road provides access to Poyle Trading Estate and a range of B2/B8 use class buildings. To the south of Prescott Road, the footway continues to the east of a line of trees to the Poyle Road / Blackthorne Road roundabout. To the east, footways continue into Trident Industrial Estate.

2.8 To the north, again from the site access, the footways along Poyle Road continue for approximately 100m until the Poyle Road / Colndale Road / Hilton Way roundabout. This route is mostly set back from the highway, separated by a grass verge. The footway varies between approximately 1m and 3m in width and street lighting is consistently present.

2.9 To the north of the Poyle Road / Colndale Road / Hilton Way roundabout, the footway continues along the eastern side of the road, varying in width. On its approach to the Mathisen Way junction it is again separated from the highway by a grass verge. The footway continues northbound towards Bath Road and Colnbrook residential areas.

2.10 The nature of Poyle Road near the Poyle Road / Colndale Road / Hilton Way roundabout is shown within **Photo 2-1**.

Photo 2-1: Poyle Road near Poyle Road / Colndale Road / Hilton Way roundabout

2.11 To the north along Bath Road there are bus stops ('Poyle Road Junction') which benefit from more regular buses than those adjacent to the site access.

2.12 These surrounding areas are considered suitable for pedestrians, though not for the mobility impaired due to the lack of formal crossing points, dropped kerbs and tactile paving.

2.13 There are no Public Rights of Way (PRoWs) in the vicinity of the site.

Cycling

2.14 The nearest National Cycle Route is approximately 1.3km from the site access. This is a 'link route' associated with National Cycle Network (NCN) Route 61. It provides access to the centre of Slough.

2.15 Several of the nearby railway stations can be accessed by bus, but also by bicycle. This is, however, dependant on the experience level of the cyclist as many of the options for cycling to the railway stations (for example) require sections of cycling on-road with speed limits varying between 30-60mph. These potential routes are:

- **Heathrow Terminal 5** – this station can be accessed from the site by cycling along Poyle Road northbound and then following Bath Road to the east towards Longford Roundabout. This section is on-road. The initial 1.2km is subject to a 30mph speed limit, with the last 800m subject to the national speed limit suggesting that this route is suitable for more experienced cyclists. From Longford Road, cyclists can navigate to Heathrow's 'Western Perimeter Road' which provides a shared cycleway / footway to Heathrow Terminal 5 railway station.

- **Wraysbury Railway Station** – this station can be accessed by following Poyle Road southbound for approximately 550m, before routing westbound on Stanwell Road for approximately 850m. Station Road then routes southbound from Stanwell Road for 1.7km providing access to Wraysbury railway station. This route is entirely on-road. Poyle Road and Station Road are subject to 30mph speed limits, whilst the majority of Stanwell Road is subject to the national speed limit, suggesting it is more suitable for experienced cyclists.

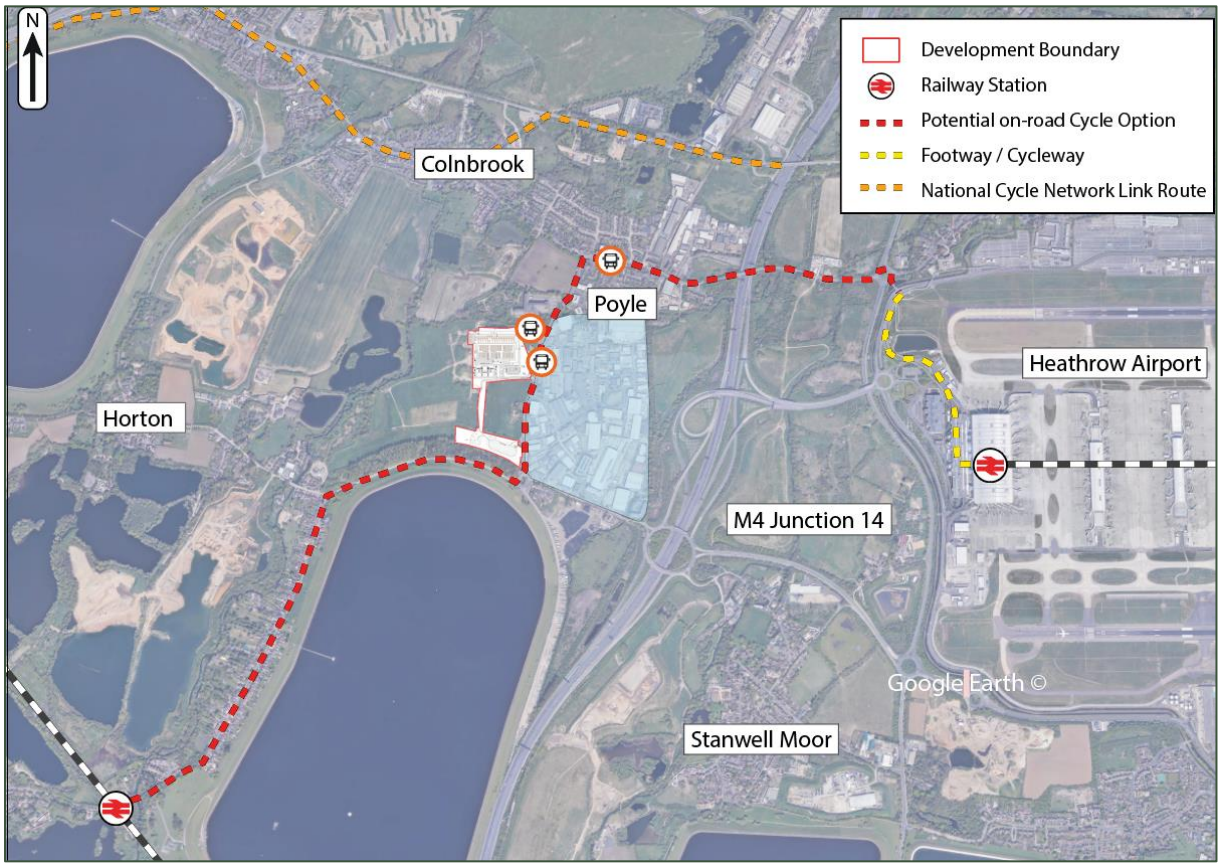
2.16 The Heathrow Express 'Conditions of Carriage' states that:

"*Cyclists are welcome on board the Heathrow Express with their bicycle and do not have to reserve a cycle space. As our services are very busy on weekday mornings and evenings we are unable to carry bicycles on trains leaving Heathrow Central between 0630 and 1000 or trains leaving London Paddington between 1630 and 1900. This restriction does not apply on Saturdays, Sunday or Public Holidays*".

2.17 It should be noted that Heathrow Express single journeys costs between £16.50 and £25 depending on the type of ticket purchased.

2.18 **Figure 2-2** illustrates these routes which could connect the site to local railway stations by bicycle.

Figure 2-2: Local Cycling Routes



2.19 As noted, these are potential routes for experienced cyclists and those comfortable cycling on-road. **Figure 2-2** also illustrates the nearby National Cycle Network (NCN) 'link route', which is extension of NCN Route 61. This route provides access by bike towards Slough.

2.20 A site visit was undertaken on 24th November 2023 and cyclists were observed both on Poyle Road and Bath Road as demonstrated in **Photograph 2-2** and **Photograph 2-3**. The cyclists shown in **Photograph 2-2** are part of an organised ride.

Photo 2-2: Cyclists along Bath Road

Photo 2.3: Cyclist along Poyle Road

Public Transport

Bus

2.21 The nearest bus stops to the site are the northbound and southbound 'Colndale Road' bus stops along Poyle Road. These are located 100m to the north of the site access. There are bus cages indicating the bus stops and flag poles. These bus stops benefit from a typical service pattern of one service per hour in each direction operated by Routes 5 and 305.

2.22 There is a bus stop adjacent to the nearby Hilton which benefits from a half hourly bus service. This is the H5H service or the 'Heathrow Hotel Hopper'. This service is operated by Heathrow Airport and provides a frequent connection to Heathrow Terminal 5 with a journey time of approximately 10 minutes.

2.23 Further to the north along Bath Road, approximately 700m from the site access, are the 'Poyle Road Junction' bus stops. The eastbound stop is also known as 'Colnbrook Holiday Inn T5 forecourt'. These bus stops benefit from bus cages, flagpoles, and timetabling information and benefit from up to five services every hour.

2.24 These bus services provide links to local residential areas as well as to the nearest railway stations, which could form part of a multi-modal trip for future staff of the site. The walking time to the site is approximately 10 minutes.

2.25 **Table 2-1** sets out the current bus services. **Photograph 2-4** shows the eastbound Poyle Road Junction bus stop, demonstrating its infrastructure and facilities.

Table 2-1: Bus Services

No.	Route	First Bus	Last Bus	Ave. Frequency (mins)			Operator
				M-F	S	S	
Colndale Road							
5	Heathrow - Slough - Cippenham	05:02	23:22	60	60	60	Thames Valley Buses
	Cippenham - Slough - Heathrow	03:36	22:47	60	60	60	
Hilton Hotel							
H5H	Heathrow Terminal 5 (loop)	04:30	00:00	30	30	30	Diamond Bus South East
Poyle Road Junction							
81	Slough - Hounslow	05:09	00:32	12	12	15	Metroline Travel
	Hounslow - Slough	05:00	00:16	12	12	15	
703	Bracknell - Windsor, Slough - T5	03:46	23:18	30	30	30	Reading Buses
	T5 - Windsor, Slough - Bracknell	04:05	23:40	30	30	30	

2.26 **Photo 2-4** shows the eastbound Poyle Road Junction bus stop.

Photo 2-4: Poyle Road Junction Eastbound Bus Stop

2.27 **Figure 2-3** illustrates the local bus routes in the context of the site, noting the closest bus stops and the various routes. **Figure 2-4** shows bus route 5 in its entirety, as shown on the Thames Valley Buses website.

Figure 2-3: Bus Routes

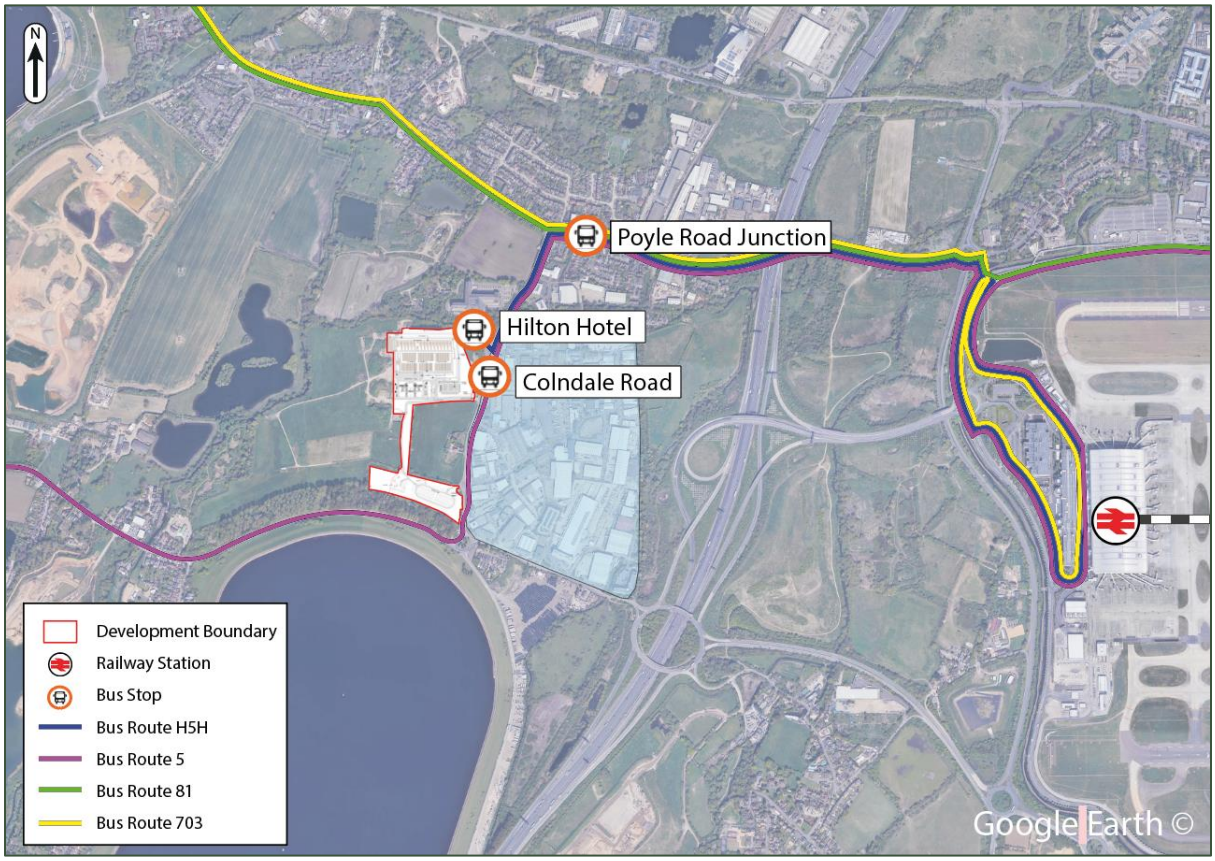
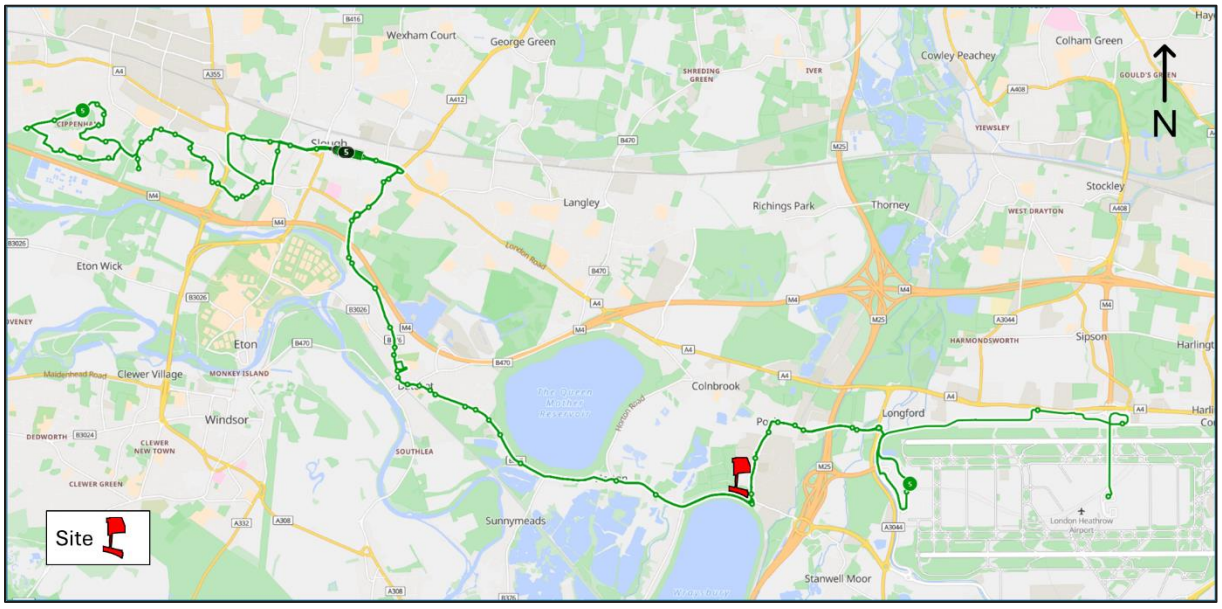


Figure 2-4: Bus Route Service 5



(source: https://www.thamesvalleybuses.com/services/CTNY/5)

Rail

2.28 There are two railway stations within an accessible distance of the site; Heathrow Terminal 5 is 3km / 14 minutes by bike (including a 'walk your bike' section) and Wraysbury is 3km / 10 minutes by bike.

2.29 The best routes to access these stations have been set out previously in this section.

2.30 Heathrow Terminal 5 is a shared railway and London Underground station serving Heathrow Terminal 5. It serves as a terminus for Heathrow Express services to London Paddington, and for Elizabeth line and London Underground Piccadilly line services to central London.

2.31 Heathrow Terminal 5 benefits from up to six departures and six arrivals per hour. There is a quarter-hourly service to London Paddington and a half-hourly service to Shenfield.

2.32 Wraysbury railway station serves the village of Wraysbury in Berkshire. The station is on the line between Windsor and Eton Riverside and Waterloo. The typical off-peak service Monday to Saturday is two trains per hour to London Waterloo, and two per hour to Windsor & Eton Riverside. There is one train per hour in each direction on Sundays.

Local Highway Network

Poyle Road

2.33 Poyle Road runs in a north-south direction to the immediate east of the site. The industrial areas of Poyle and Trident Industrial Estate are to the east of Poyle Road which is subject to a 30mph speed limit and is a single-lane two-way carriageway, approximately 1km in length. There is street lighting present and a footway along the eastern side of the road. There are bus stops along Poyle Road and several junctions providing access to the industrial area to the east.

2.34 A bus gate is being delivered on Poyle Road to the immediate north of its junction with Mathisen Way. The proposals allow for cars to pass through and have a separate lane for buses. Entry will be restricted for HGVs.

Bath Road

2.35 To the north, Poyle Road routes to the east and as it does so it becomes Bath Road. Bath Road leads towards the Longford Road roundabout (a four arm roundabout comprising Bath Road / Stanwell Moor Road). The first western 550m of Bath Road is subject to a 30mph speed limit, whilst the eastern 800m is subject to the national speed limit.

Park Street

2.36 Park Street routes westbound from the Poyle Road / Bath Road junction. Access to Park Street is restricted to access and buses only to prevent wider routing through the Brands Hill and the Colnbrook by-pass.

Horton Road

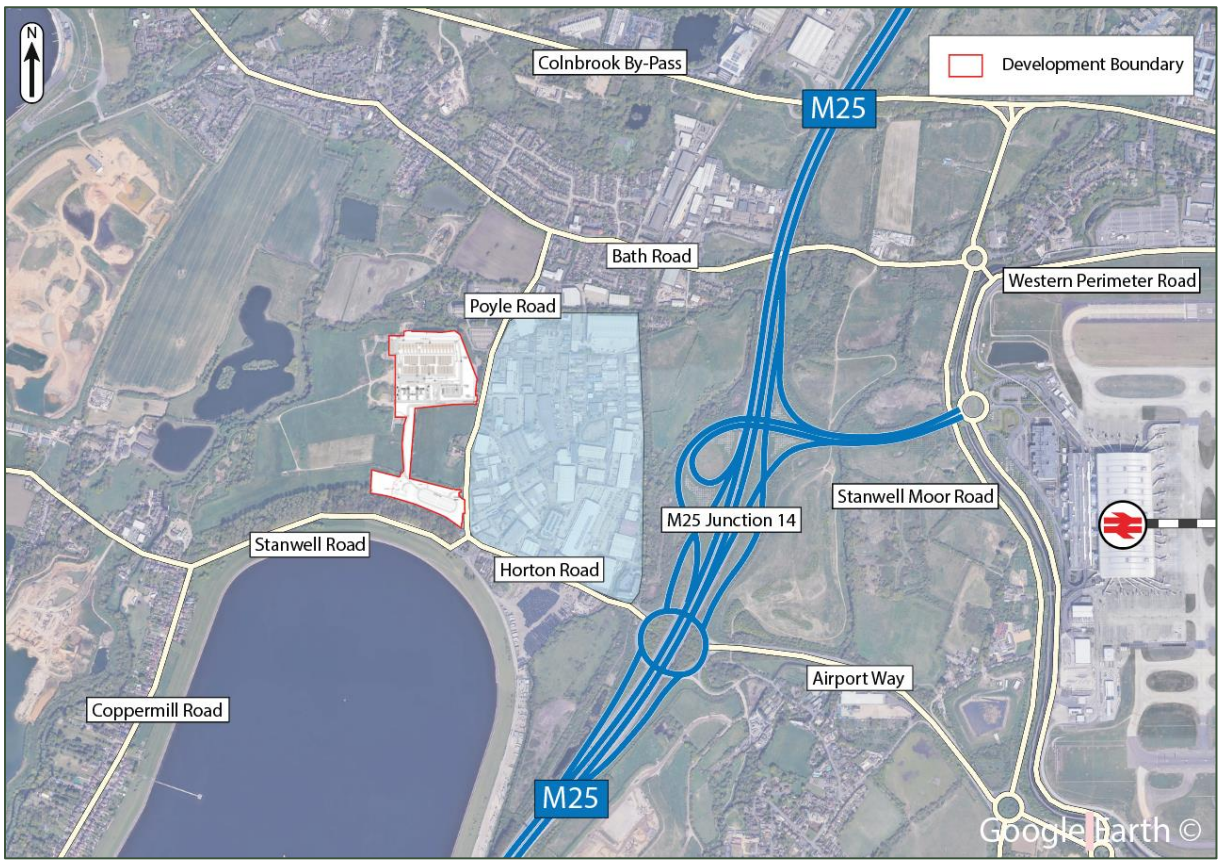
2.37 Horton Road is a west-east road which connects to the southernmost extent of Poyle Road. It connects to Horton to the west, and to the east it connects to M25 Junction 14 Poyle Interchange (a five-arm roundabout comprising Horton Road / M25 / Airport Way). Horton Road is subject to a 30mph speed limit.

Strategic Highway Network

M25 Junction 14

2.38 Junction 14 of the M25 (J14) is a key junction on the Strategic Road Network (SRN). It provides a route across the M25 for the industrial estate to access Heathrow Airport and also provides access to Heathrow Airport Terminal 5 for travellers on the M25.

Figure 2-5: Local Highway Network



Collision Analysis

2.39 A review has been undertaken of Personal Injury Collision (PIC) data for the local highway network using data sourced from CrashMap, an online database of PIC records. The records relate to PICs on public roads that are reported to the police and subsequently recorded, using the STATS19 collision reporting form. The most recently available five-year period has been analysed between 2018-2022. All collision data is included at **Appendix A**.

2.40 Collisions have been categorised into three levels of severity: slight, serious, and fatal. The definitions of these are set out below:

- **Slight Injury**: Injuries of a minor nature, such as sprains, bruises, or cuts not judged to be severe, or slight shock requiring only roadside attention (medical treatment is not a prerequisite for an injury to be defined as Slight);
- **Serious Injury**: Injuries for which a person is detained in hospital, as an in-patient, or any of the following injuries, whether or not a person is detained in hospital; fractures, concussion, internal injuries, severe cuts and lacerations, severe general shock requiring medical treatment and injuries which result in death 30 days after the collision. The Serious category, therefore, covers a very broad range of injuries; and
- **Fatal Injury**: Injuries which cause death either immediately or any time up to 30 days after the collision.

2.41 The locations of the PIC are illustrated in **Figure 2-6**. There are three collisions identified near the site access and one additional collision towards the Poyle Road / Bath Road junction.

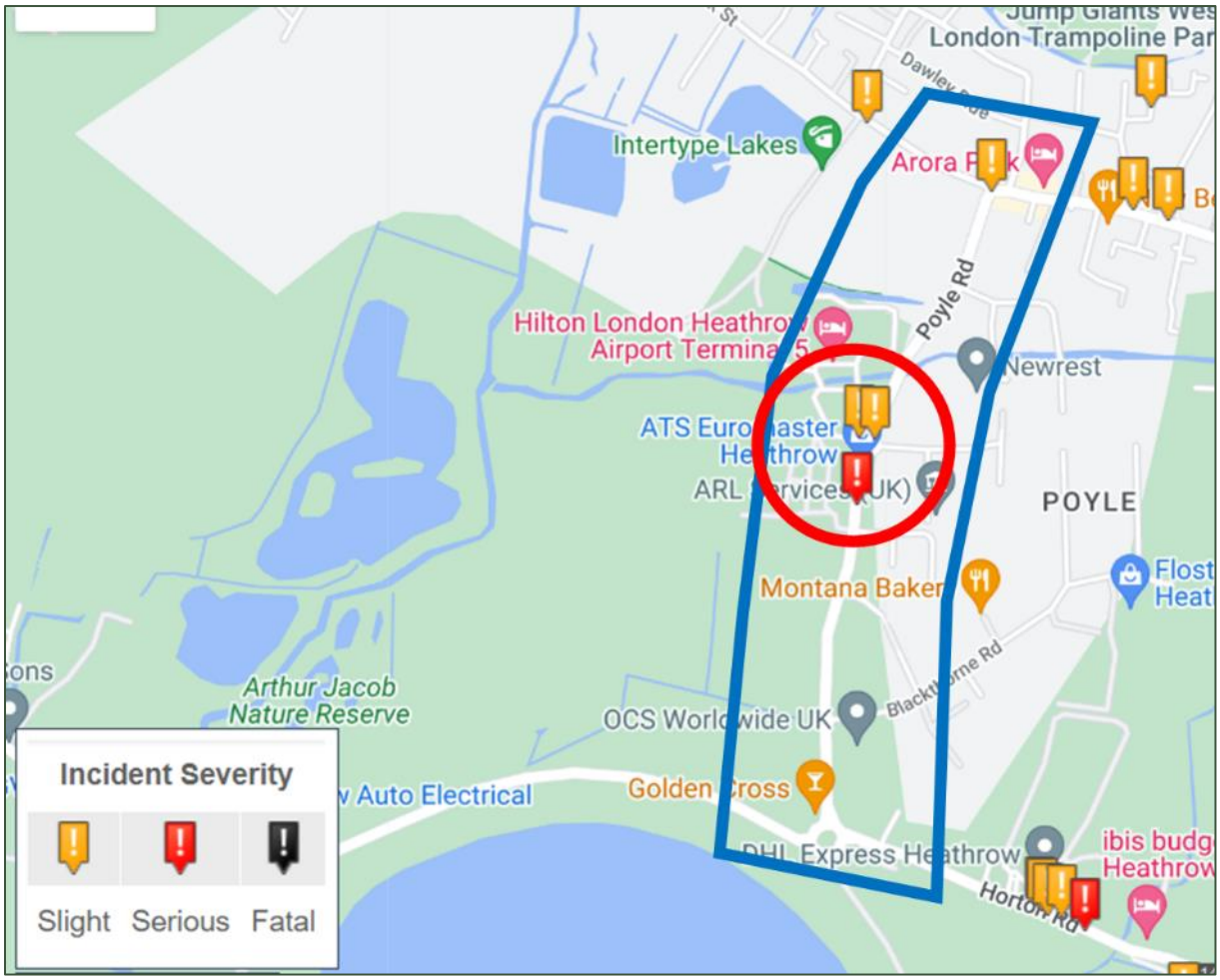
2.42 A summary of collisions by year and severity is provided in **Table 2-2**.

Table 2-2: PIC Collision Summary

Year	Slight	Serious	Fatal	Total
2018	1	0	0	1
2019	0	0	0	0
2020	0	1	0	1
2021	0	0	0	0
2022	1	0	0	1
Total	2	1	0	**3**

2.43 It should be noted that PIC rates are likely to have been impacted by the Covid-19 Pandemic and the subsequent lockdowns during 2020 and 2021.

Figure 2-6: Collision Locations



2.44 The two slight collisions occurred at the Poyle Road / Hilton Way / Colndale Road roundabout and took place in 2018 and 2022.

2.45 The 2018 collision involved one vehicle and two pedestrians. The vehicle hit an object on the central island of the roundabout and collided with two pedestrians.

2.46 The 2022 collision involved one vehicle, a van and one pedestrian. The front of the van impacted the pedestrian who sustained a ‘slight’ severity injury.

2.47 The serious 2020 collision involved two goods vehicles and one pedal cycle. This occurred near the Colndale Road bus stops. The three vehicles collided, and the casualty was the cyclist.

2.48 In summary, during the most recent five-year period there have been just three collisions near the site access, which involved four vulnerable road users. Due to the low level of collisions taking place here, equating to less than one every 18 months, it is considered that there are no inherent safety issues on the local highway network. This stance was agreed upon by the council as a part of the recent planning application ref. P/19954/000.

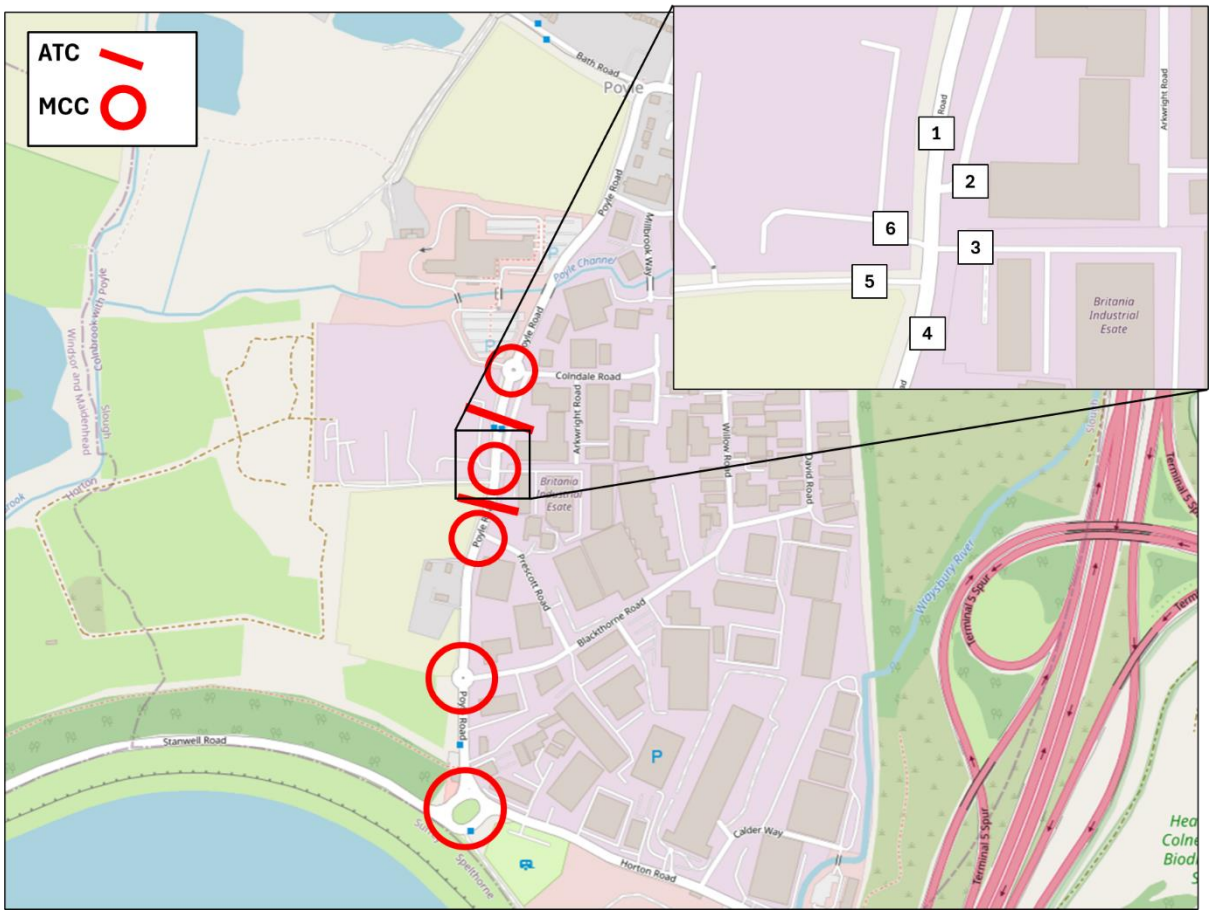
Existing Traffic Flows

2.49 A suite of traffic surveys were undertaken to capture existing traffic flows in June 2024 comprising:

- 5 no. Manual Classified Counts (MCCs) on 26.06.2024;
- 2 no. Automatic Traffic Counts (ATCs) along Poyle Road from 23.06.2024 – 29.06.2024.

2.50 The locations of the surveys are set out in **Figure 2.7**.

Figure 2-7: Traffic Survey Locations



2.51 The ATCs were undertaken to the north and south of the site access. They provide an overview of traffic flows along Poyle Road for a 24 hour period across seven days. The typical daily profile for a weekday, as recorded by the ATC to the south of the site access, is set out in **Figure 2-8**, with the ATC to the north of the site access set out in **Figure 2-9**.

Figure 2-8: Daily Profile of vehicles along Poyle Road (Southern ATC)

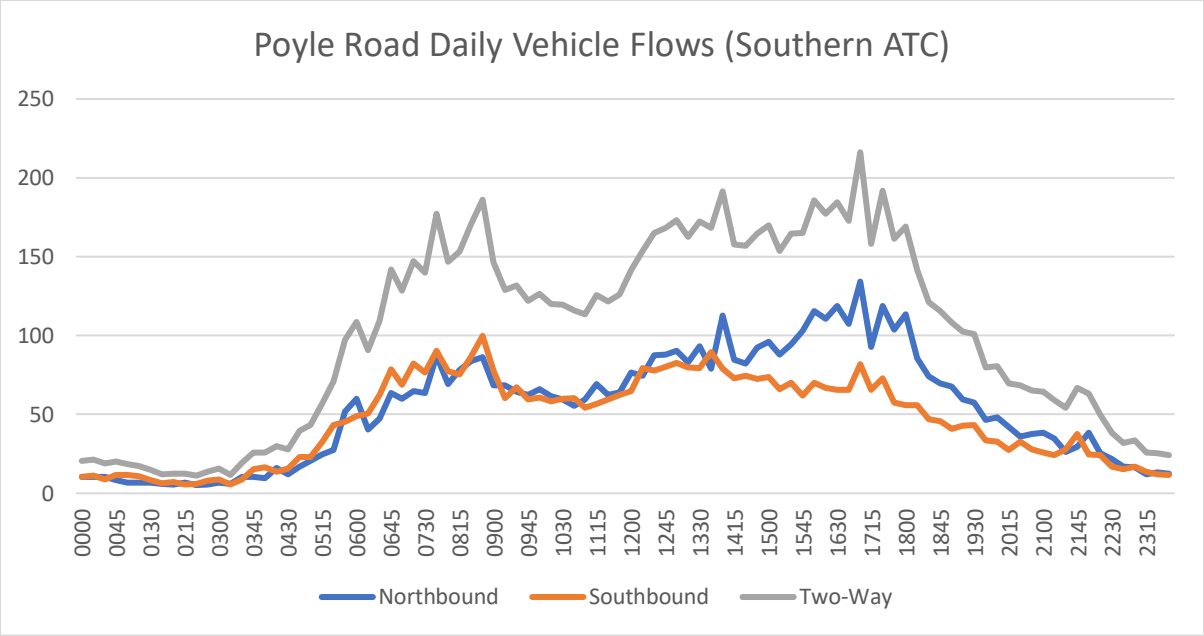
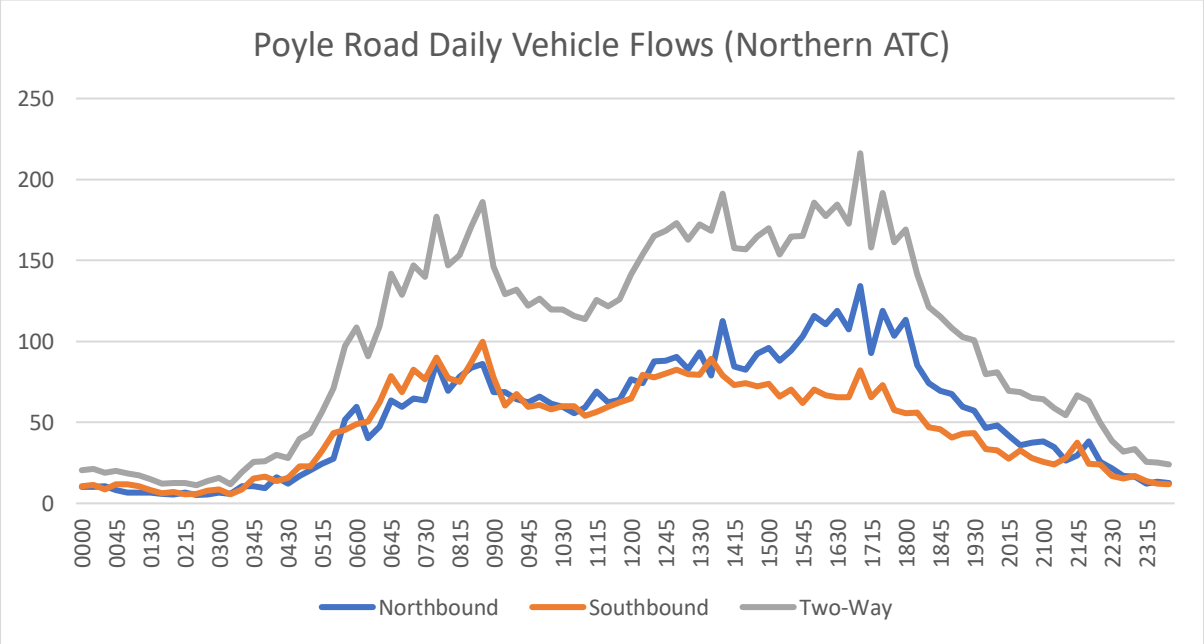


Figure 2-9: Daily Profile of vehicles along Poyle Road (Northern ATC)



2.52 The observed vehicle flows from the ATCs installed to the north and south of the site access have near-identical profiles. Whilst two-way flows remain relatively consistent throughout the day, there are noticeable peaks in the AM from 07:30-09:00 and in the PM at 17:00. Noticeably, whilst northbound and southbound flows are broadly similar in the AM, from 14:00 onwards there are more northbound trips than southbound.

Site Visit

2.53 A site visit was undertaken on 24.11.2023 from approximately 10:00-13:00. The following observations were made:

- Pedestrians use the footways to travel along Poyle Road;
- A good number of cyclists were observed traveling along Poyle Road and Bath Road;
- The Poyle Road Junction bus stops along Bath Road are well used and buses are regular;
- The Colndale Road bus stops along Poyle Road are less regular but also observed to be used;
- A large proportion of the vehicles along Poyle Road are HGVs which reflects the industrial nature of the surrounding area;
- Whilst not yet visible on any online mapping or imagery (as of August 2024), an access is being constructed on the west of Poyle Road opposite Mathisen Way. This is as a part of the approved application ref. P/10012/008 (Poyle Quarry).

2.54 In summary, the site visit supports the findings of the desktop study and has provided evidence of pedestrian and cyclist activity and well-used bus services. Poyle Road was observed to operate as expected with a number of HGV movements.

Accessibility Summary

2.55 The site is located to the west of Poyle Road, Poyle. The built up area surrounding the site would be considered suitable for pedestrians, though not for the mobility impaired due to the lack of formal crossing points, dropped kerbs and tactile paving. Cycling is also possible but favours more experienced cyclists.

2.56 It is noted that the nature of the development proposals, the site will generate a number of trips by private vehicle and a limited number of HGV movements. However, those traveling by foot would be staff from the local area, or staff who have travelled by bus and then who walk to the site.

2.57 There are bus stops near the site which benefit from up to five buses an hour, allowing staff to travel sustainably to the site. There are also railway stations accessible via bus, bike or vehicle.

2.58 It is considered that there are no inherent safety issues on the local highway network.

3.0 Planning Policy Context

National Policy

National Planning Policy Framework (NPPF) December 2023

3.1 As of 1st August 2024, proposed reforms to the National Planning Policy Framework are out for formal consultation until the 24th September 2024.

3.2 The National Planning Policy Framework (NPPF, December 2023) provides a structure for development within the UK, with a 'presumption in favour of sustainable development'.

3.3 The NPPF refers to the promotion of sustainable transport, with section 9 stating that 'opportunities to promote walking, cycling and public transport use are identified and pursued', giving people a real choice about how they travel. Paragraph 110 states that:

3.4 'In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
- Safe and suitable access to the site can be achieved for all users;
- The design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and
- Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.'

3.5 Paragraph 109 states that:

- '*The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making*.'

3.6 Paragraph 115 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*.'

3.7 Paragraph 116 states that '*Within this context, applications for development should:*

- *'Give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- *Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- *Create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- *Allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- *Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations*.'

Local Policy

Slough Borough Council Core Strategy Development Plan Document (2008)

3.8 The Core Strategy sets out how key issues across the borough will be addressed. The document not only takes account of the current situation but also what may happen in the future and what the major drivers of change will be.

3.9 The document outlines the strategic objectives for Slough, of which two of them are in relation to transport:

"To focus development in the most accessible locations such as the town centre, district and neighbourhood centres and public transport hubs and make the best use of existing buildings, previously developed land and existing and proposed infrastructure." and

"To reduce the need to travel and create a transport system that encourages sustainable modes of travel such as walking, cycling and public transport."

3.10 In regard to the transport section of the document, it states the main objective of the policy is "*to enhance the transport system in Slough by reducing the need to travel and encouraging more sustainable modes of transport*".

3.11 Core Policy 7 (Transport) states '*all new development should reinforce the principles of the transport strategy as set out in the council's Local Transport Plan and Spatial Strategy, which seek to ensure that new development is sustainable and is located in the most accessible locations, thereby reducing the need to travel*.

3.12 Development proposals will, either individually or collectively, have to make appropriate provisions for:

- *Reducing the need to travel;*
- *Widening travel choices and making travel by sustainable means of transport more attractive than the private car;*

- *Improving road safety; and*
- *Improving air quality and reducing the impact of travel upon the environment, in particular climate change.*

3.13 Development proposals will also make contributions to, or provision for:

- *The development of Slough town centre as a Regional Transport Hub;*
- *The improvement of key transport corridors such as the links to Heathrow Airport;*
- *Improvements to Slough, Burnham and Langley railway stations; and*
- *The creation of a transport hub within Slough Trading Estate.*

3.14 *There will be no overall increase in the number of parking spaces permitted within commercial redevelopment schemes unless this is required for local road safety or operational reasons*'.

3.15 This policy will be implemented by ensuring that '*all major trip generating developments will be required to submit a Transport Assessment which will identify proposed mitigation measures*'.

3.16 It is also pertinent to note that section 2.27 recognises that the Poyle Trading Estate is likely to see airport-related development.

Slough Borough Council Emerging Local Plan, 2016 to 2036

3.17 The Council's new Local Plan will set out how to guide development in Slough through to 2036. The plan will contain policies to guide business and residential development to meet the needs of Slough's expanding population.

3.18 The new Local Plan will update the existing Core Strategy, Site Allocations, and Local Plan Saved Policies.

3.19 The emerging Local Plan aims to address some of the key challenges facing Slough. In particular:

- meeting the need for new homes;
- continuing to provide for locally and nationally important businesses;
- how to make the most of the Heathrow Expansion;
- how to tackle congestion on Slough's roads.

Slough Borough Council's Third Local Transport Plan

3.20 The Third Local Transport Plan (LTP3) outlines Slough's long-time strategy for transport and how the transport network and services will be maintained and improved of the period 2011 to 2026.

3.21 Objectives have been set that outline what the borough wants to achieve in terms of transport (only objectives relevant to the development site have been listed):

- "To make sustainable transport options accessible to all;

- To enhance social inclusion and regeneration of deprived areas;
- To protect and improve personal health;
- To minimise the noise generated by the transport network, and its impacts;
- To achieve better links between neighbourhoods and access to the natural environment;
- To improve the journey experience of transport users across Slough's transport networks;
- To reduce the number of traffic accidents involving death or injury;
- To minimise the opportunity for crime, anti-social behaviour and terrorism and maximise personal safety on the transport network;
- To reduce transport's CO2 emissions and make the transport network resilient to the effects of climate change;
- To mitigate the effects of travel and the transport system on the natural environment, heritage and landscape;
- Ensure that the transport system helps Slough sustain its economic competitiveness and retain its position as an economic hub of the Southeast; and
- To facilitate the development of new housing in accordance with the LDF".

Slough Borough Council Transport and Highways Guidance (2008)

3.22 This document provides guidance for developers proposing to submit planning applications in Slough.

3.23 The guidance notes the importance of a coordinated approach in design to:

- '*Help encourage walking, cycling and public transport;*
- *Regulate vehicle speeds (which may be influenced by how drivers regard their surroundings);*
- *[…] Make sure that the design of buildings and where entrances are placed does not encourage people to park in inappropriate on-street locations;*
- *Provide parking areas that are safe, secure and enjoy good natural observation but that do not dominate the appearance of a development;*
- *Deliver high-quality developments that reflect local character and distinctiveness (planning authorities are unlikely to favour developments that lack quality layout and design); and*
- *Take account of external factors, such as pedestrian and cycle routes, public transport routes and bus-stop locations, or any proposed road improvements that may influence a development's layout and its access to the road network*.'

3.24 The guidance also states a Transport Assessment is required '*where a proposed development is likely to have significant transport impacts' including 'a description of the study area, the site location, the local transport network and relevant transport features*'.

3.25 It notes that '*a transport assessment should address the following issues:*

- *The form and design of site access.*
- *Reducing the need to travel, especially by car – ensure, at the outset, that thought is given to reducing the need to travel' consider the types of uses (or mix of uses) and the scale of development in order to promote multipurpose or linked trips.*
- *Sustainable accessibility – promote accessibility by all modes of travel, in particular public transport, cycling and walking; assess the likely travel behaviour of travel pattern to and from the proposed site; and develop appropriate measures to influence travel behaviour.*
- *Dealing with residual trips – provide accurate quantitative and qualitative analyses of the predicted impacts of residual trips from the proposed development and ensure that suitable measures are proposed to manage these impacts.*
- *Mitigation measures – ensure as much as possible that the proposed mitigation measures avoid unnecessary physical improvements to highways and promote innovative and sustainable transport solutions'*.

Transport and Highway Guidance: Developer's Guide Part 3: Interim Document" (November 2008).

3.26 SBC's parking guidance is set out in "Transport and Highway Guidance Developer's Guide Part 3 Interim Document" (November 2008).

3.27 No specific standards have been set for a Data Centre. Within the Transport and Highways Scoping Report, SLR proposed to set parking standards based on a parking accumulation assessment and refined to reflect site specific characteristics and travel planning measures.

Summary

3.28 The focus of transport and land use planning policy is on the development of sustainable travel measures, and the encouragement of development proposals which widen the accessibility to sustainable travel for site users.

3.29 The site is well placed to align with policy in that it benefits from active travel infrastructure along Poyle Road, and public transport links both near the site access and along Bath Road. These public transport connections provide access to a range of local settlements including Horton, Datchet, Slough and Cippenham.

3.30 The site aligns with the NPPF. It will promote sustainable transport modes, i.e., through the provision of a Travel Plan and active travel access, with cycle parking provided also. Safe and suitable access to the site can be achieved for all users, both through the main vehicular site access and through the provision of a separate active travel access.

4.0 Development Proposals

Overview

4.1 The proposed development comprises a Data Centre and a BESS. It is located to the west of Poyle Road with access retained from Poyle Road. The Data Centre is classified under B8 use, and the BESS is classified under the Sui generis land use class.

Proposed Development

4.2 The development proposals comprise:

- 39,578.34 sqm Gross Internal Area (GIA) 50MW Data Centre;
- Guard House, internal access routes and associated parking;
- Substation;
- Battery Storage;
- Associated Access.

4.3 The illustrative site layout is included at **Figure 4-1, Figure 4-2** and **Figure 4-3**. It is also included at **Appendix B**.

Figure 4-1: Site Layout

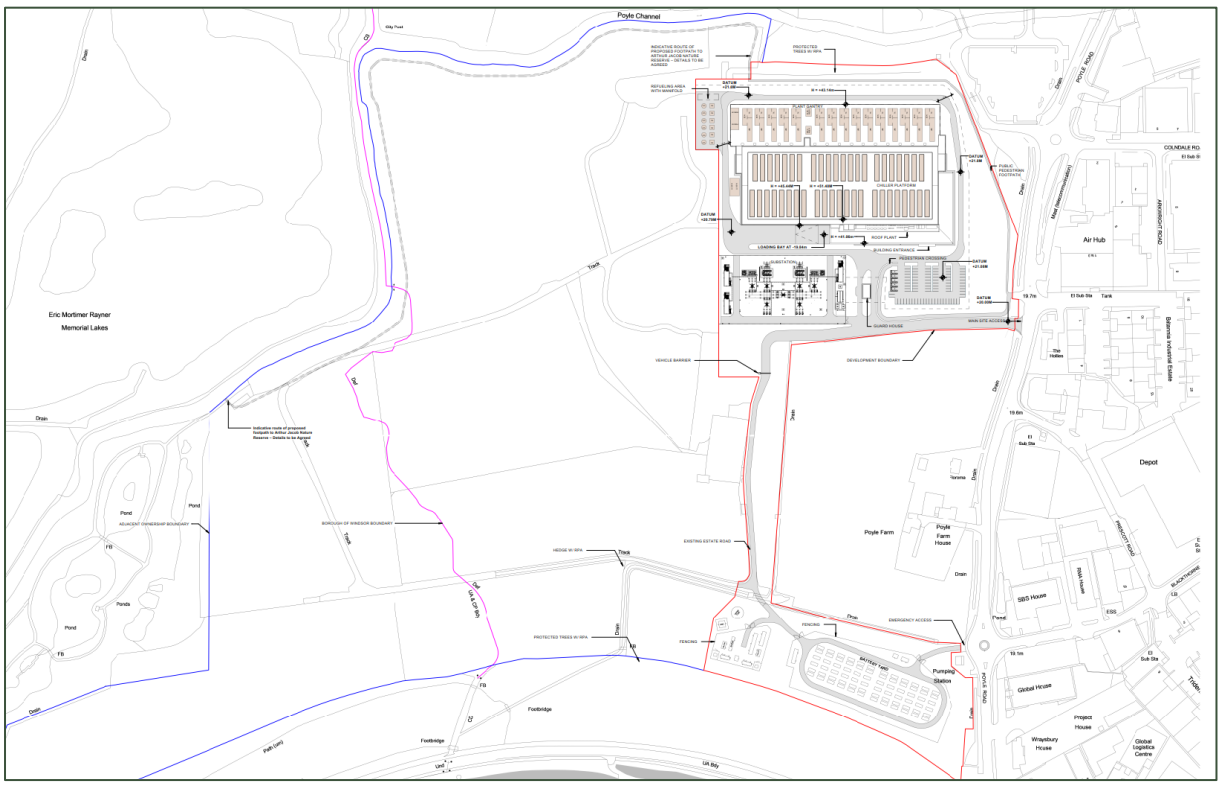


Figure 4-2: Data Centre

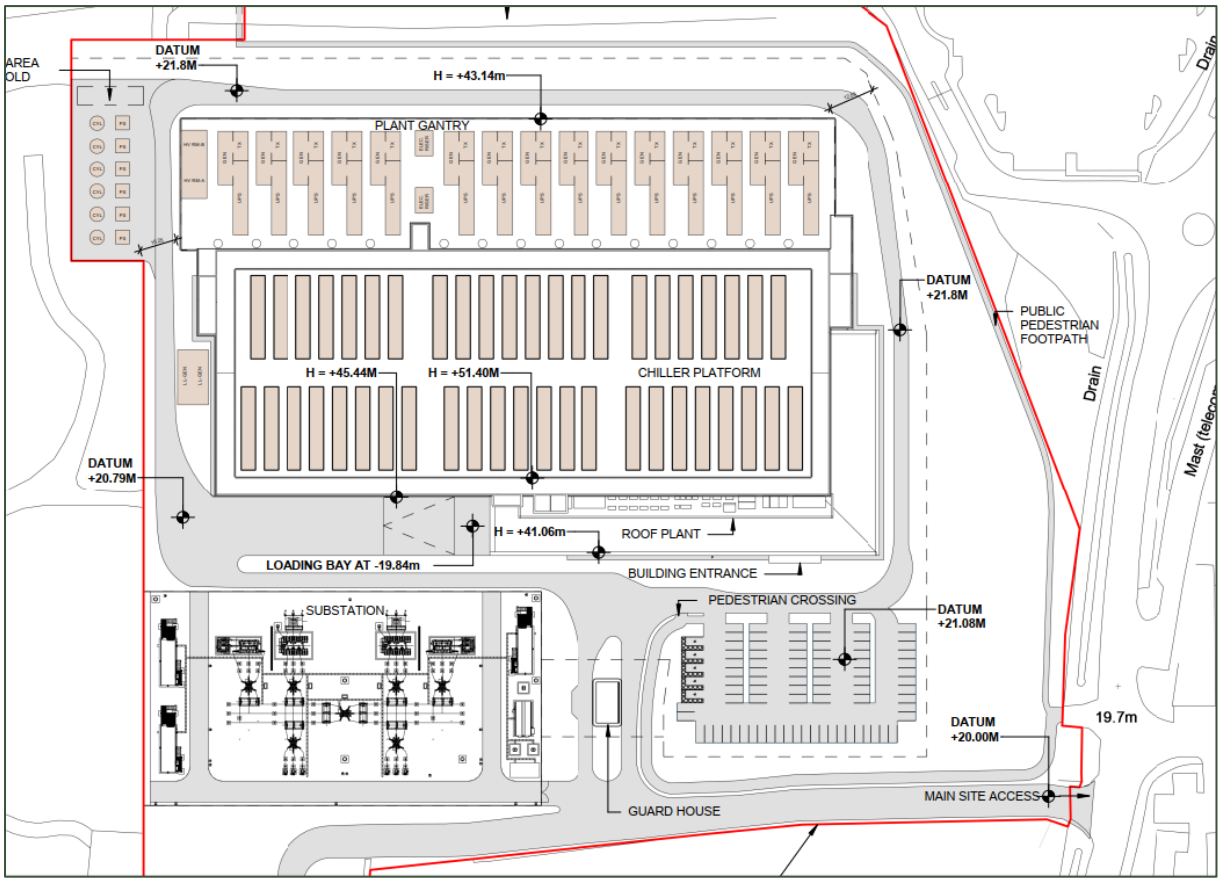
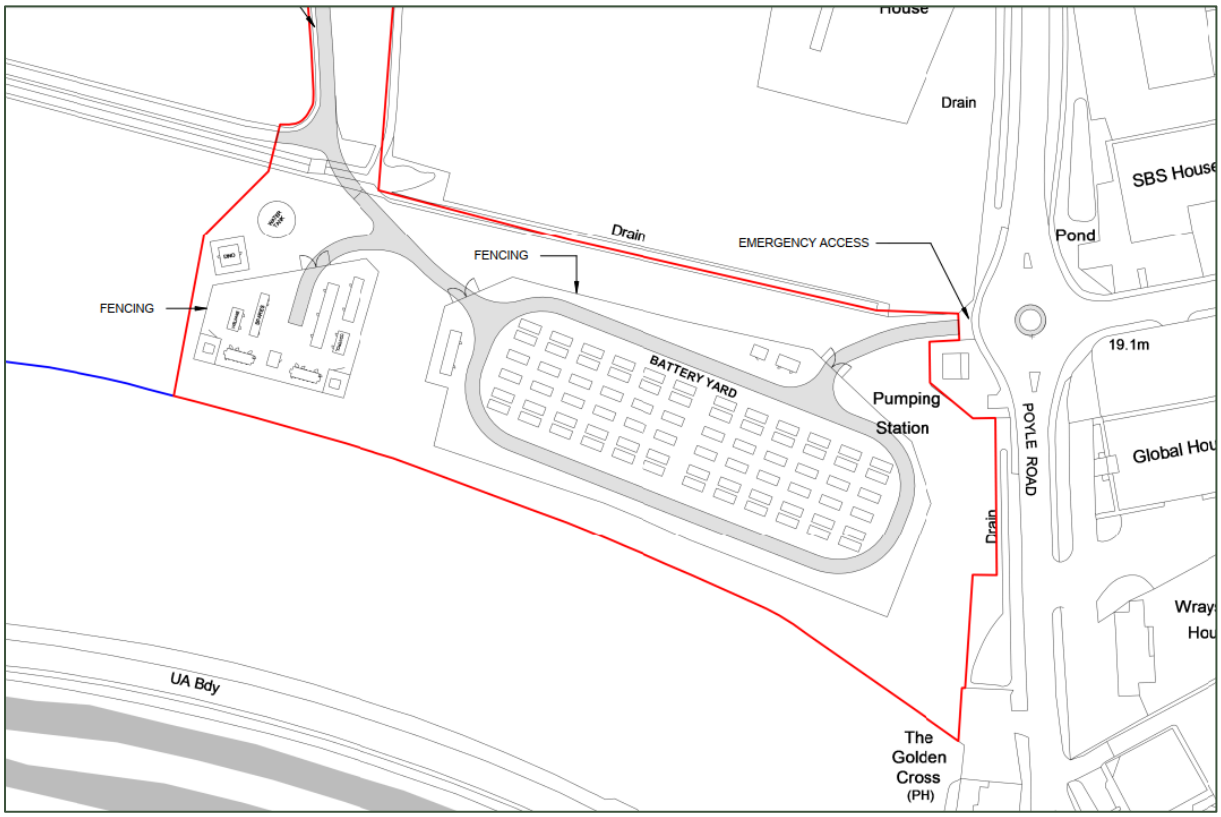


Figure 4-3: Battery Storage Facility



Site Access

4.4 The site will continue to be accessed via the currently unnamed road ('the Access Road').

4.5 Whilst the Access Road is currently used to serve the existing operations at this site, it is proposed to improve this junction as part of the proposed development. The junction improvement proposals are set out in **Figure 4-4** and comprise:

- A Left-in/Left-Out arrangement which will reduce the number of conflicting turning movement compared to the existing arrangement;
- An island to separate inbound and outbound vehicles, which also prevents outbound vehicles turning right;
- Proposed signage indicating no-right turn for vehicles arriving from the north. Vehicles will travel 285m to the roundabout to the south, before returning northbound along Poyle Road to enter the site;
- Left and righthand visibility shown at 2.4m x 43m as per Manual for Streets (MfS) for a 30mph speed road;
- The downgrading of the existing secondary northern access to a pedestrian / cycle route;
- A 2m footway along the western side of Poyle Road, providing a connection northward towards the Colndale Road bus stops;
- A new pedestrian crossing of Poyle Road located to the immediate south of the site access;
- The junction includes adequate width for the safe manoeuvre of HGVs.

4.6 All site access works will fall within the red line boundary or within the extent of the adopted highway. The routing for the site access junction is set out in **Figure 4-4**.

Figure 4-4: Site Access Vehicle Routing

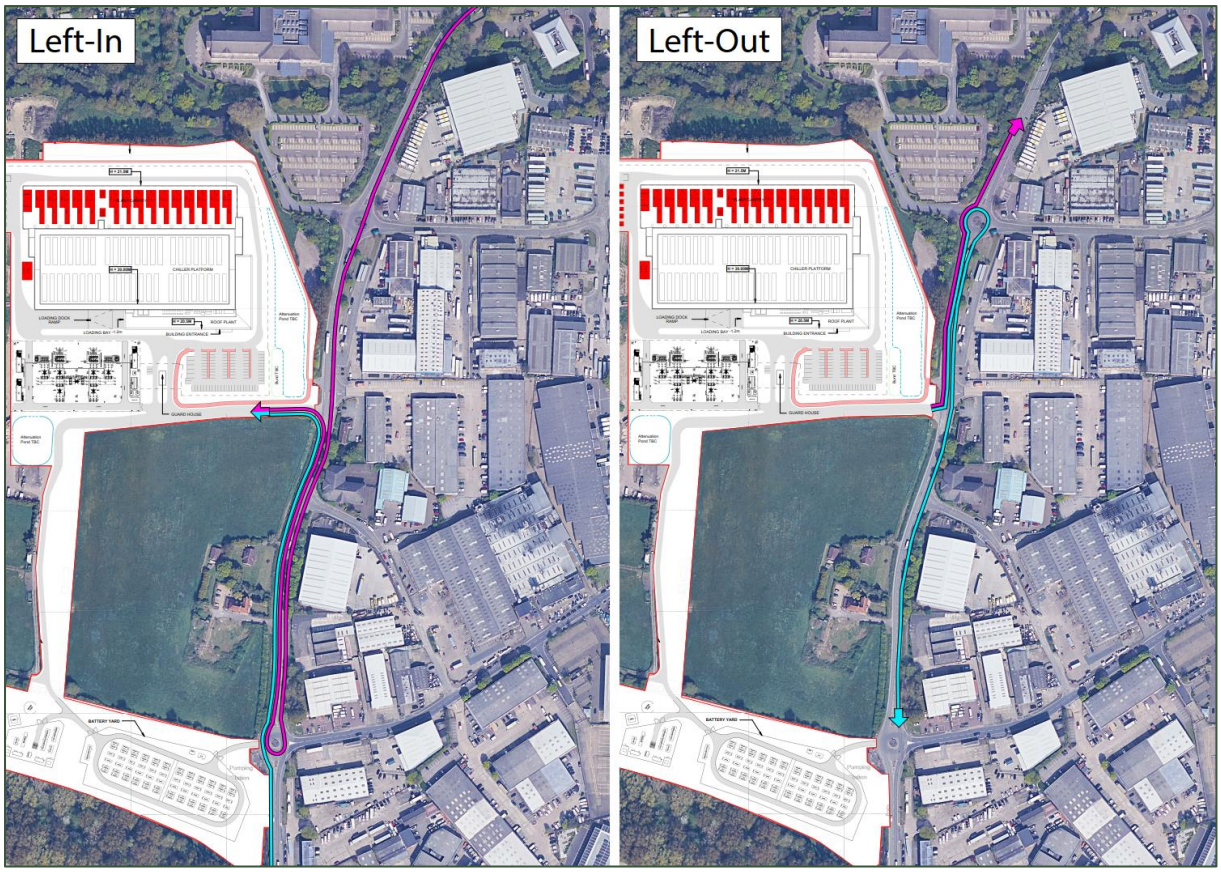
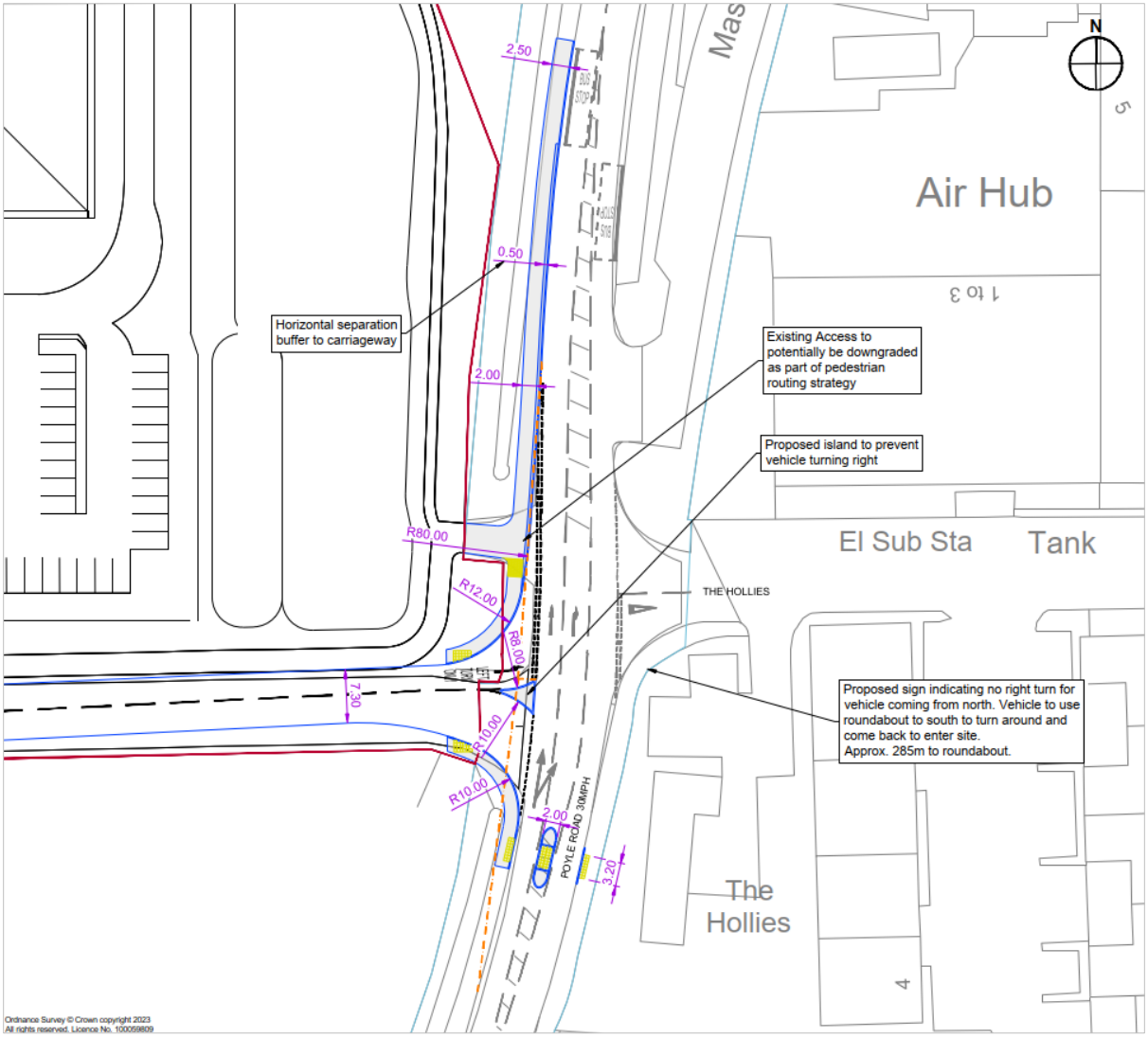


Figure 4-5: Main Site Access



4.7 The proposed site access improvements drawing is included at **Appendix C**.

Footway Improvements and Crossing

4.8 The site access proposals include a footway and crossing improvements. The footway leads northbound from the proposed pedestrian / cycle access and is 2m in width. Where possible it is separated from Poyle Road by a 0.5m verge.

4.9 The footway continues northbound for some 60m before terminating at the northbound Colndale Road bus stop.

4.10 It is not feasible to provide a crossing at this point to access the southbound bus stop due to road safety implications. As such, pedestrians are able to take an alternative route to access the southbound bus stop which also forms a part of the site access proposals.

4.11 The main site access to the south will benefit from dropped kerbs and tactile paving, set approximately 6m back from the give way line. South of the site access, further dropped kerbs and tactile paving is proposed, with a pedestrian refuge island set within the central

reservation. From here, pedestrians can access the eastern footway of Poyle Road and route northbound or southbound to their destination.

Battery Storage

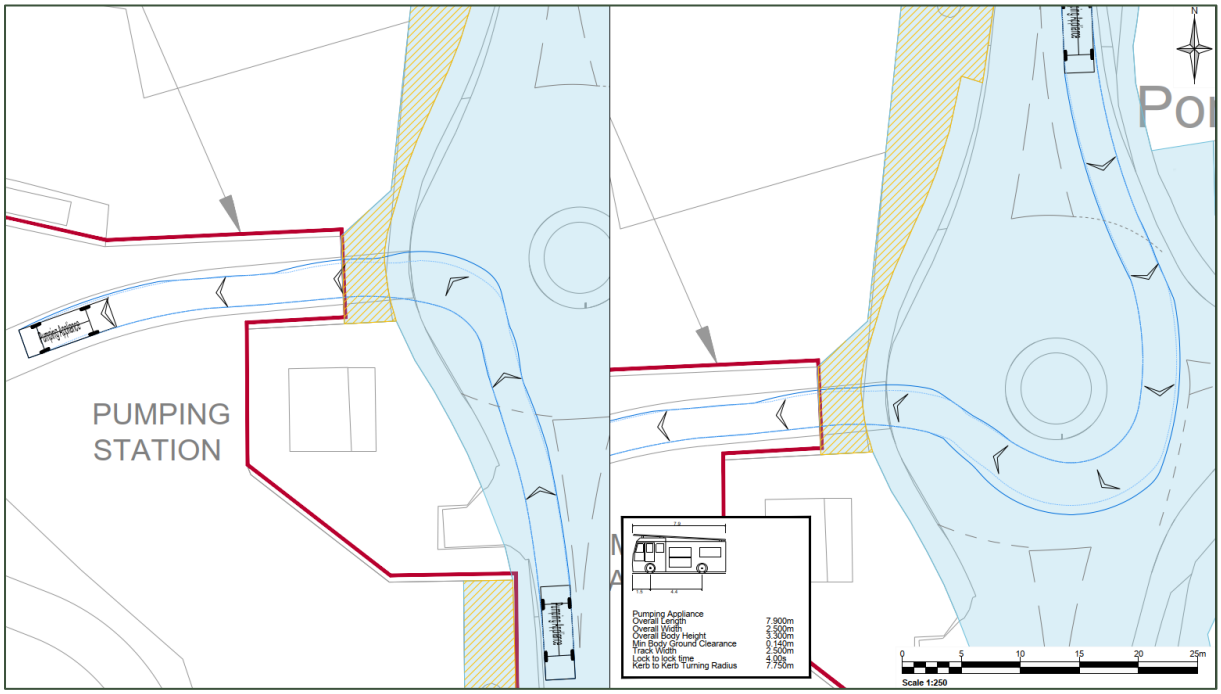
Main Access

4.12 Access to the Battery Storage will be provided internally, via the main site access with Poyle Road. An internal route will then provide access to the Battery Storage Facility to the south. This includes access for the construction phase.

Emergency Access

4.13 An emergency access is provided onto Poyle Road via an existing vehicle crossover which forms part of the Poyle Road / Blackthorne Road roundabout. This access is gated and is suitable for a fire tender. An extract of the emergency access drawing is set out in **Figure 4-6**, and the full drawings is available in **Appendix C**.

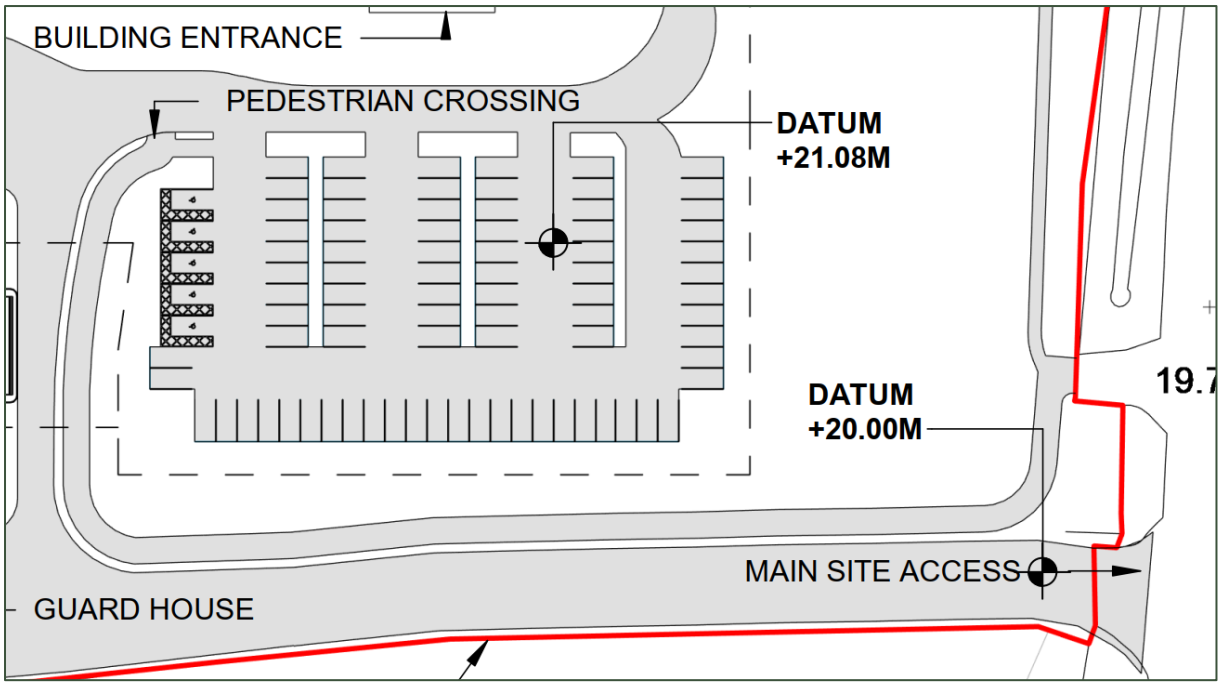
Figure 4-6: Battery Storage Emergency Access



Pedestrian and Cycle Access

4.14 There is a proposed shared use path internal to the site, leading from the existing secondary access, which will be downgraded to a pedestrian / cycle access, to the main Data Centre building. It is 3m in width. This is set out in red in **Figure 4-7**.

Figure 4-7: Pedestrian / Cycle Route



Car Parking

Overview

4.15 SBC's parking guidance is set out in **Table 4-1**. This is based on "Transport and Highway Guidance Developer's Guide Part 3 Interim Document" (November 2008).

4.16 No specific standards have been set for a Data Centre. It was agreed during the pre-app that parking provision would be based on a parking accumulation assessment, and then adjusted to reflect staff levels and travel planning measure. Therefore, the Data Centre sites within TRICS have been assessed to provide an overview of the parking provided. This is set out in **Table 4-1** and includes the following sites:

- Site 1 - SO 02 I 01 – Liverpool Road, Slough - 26/04/2023
- Site 2 - SO 02 I 03 – Liverpool Road, Slough - 24/05/2023
- Site 3 - SO 02 I 03 – Liverpool Road, Slough - 24/05/2023
- Site 4 - SO 02 I 04 – Ajax Avenue, Slough - 22/05/2023

4.17 Contact via email was made with TRICS Consortium Limited in order to confirm that these sites were appropriate for use. A query was also raised in regard to site reference SO-02-I-01 being the only site which provides employee numbers. TRICS confirmed that employee number information was either not available or confidential for these sites.

4.18 The appropriateness of the sites was also discussed with SBC, who agreed that the sites comprise a robust assessment, these sites are therefore applicable sites on which to base the forecast trip generation.

Table 4-1: TRICS Data Centre Parking Overview

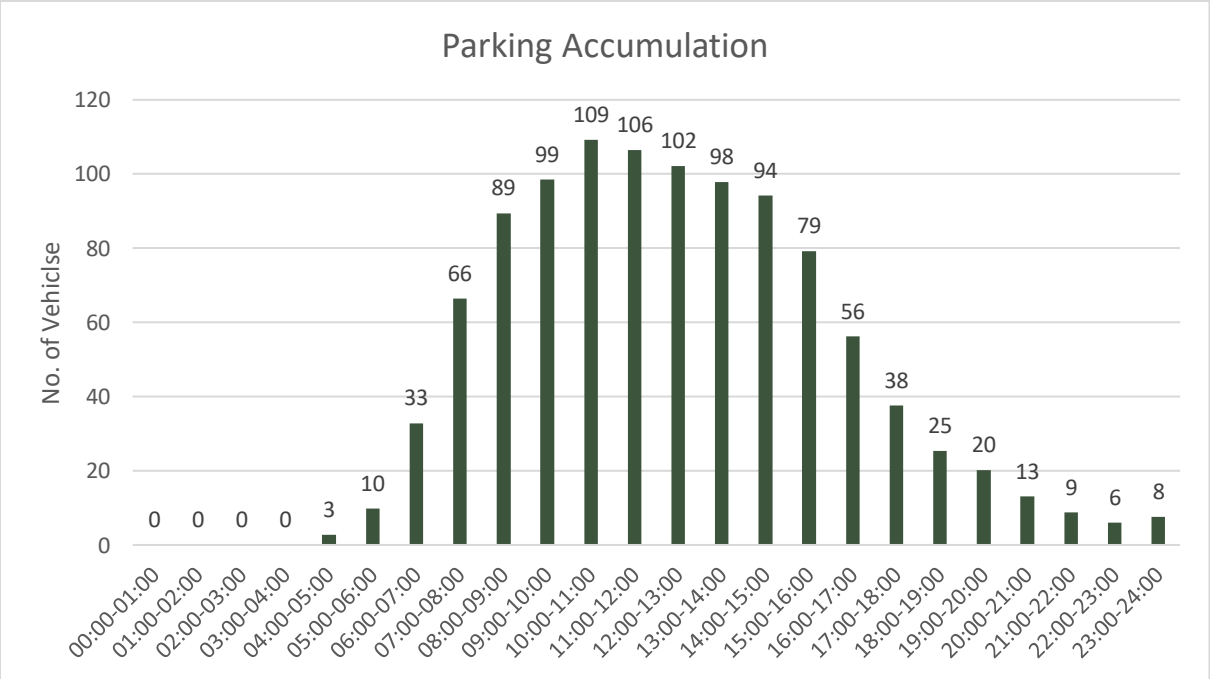
Site	GFA (sqm)	Parking Spaces	Sqm per Parking Space	Max Parked on Survey Day	% of car park occupied	Cycle Parking Spaces	Cycle spaces per SQM
Site 1	16,000	78	205	39	50%	10	1,600
Site 2	5,677	34	167	15	44%	12	473
Site 3	11,700	96	122	90	94%	8	1,463
Site 4	11,402	162	70	35	22%	16	713
Average	**11,195**	**93**	**141**	**45**	**52%**	**12**	**1062**

4.19 As set out in **Table 4-1**, the parking provision varies greatly between the surveyed Data Centres. There is little consistency, and as such it was agreed during the pre-app that the level of parking provision provided within the site is based on a parking accumulation, adjusted for the proposed staffing levels of the Data Centre.

Parking Accumulation to inform Parking Provision

4.20 A parking accumulation assessment has been undertaken based on the forecast car trip generation. This forecasts that the busiest hour for parked cars is 10:00-11:00, with up to 109 vehicles parked. The forecast parking accumulation is set out in **Figure 4-8**.

Figure 4-8: Forecast Parking Accumulation



4.21 The quantum of parking provided should be reflective of the accessibility of a site. It should be recognised that vehicle demand is also influenced by and reflected of the amount of car parking provision.

4.22 The parking accumulation assessment is based on TRICS data, which is set out in greater detail in **Section 5**. However, the applicant has provided details of the expected range in employee numbers which will be in the region of 60 - 100 employees. The number of proposed employees is therefore fewer than the maximum number of parked vehicles forecast by the TRICS parking accumulation assessment.

4.23 Given this, 86 car parking spaces are proposed for the site. This is reflective of the size and scale of the site when compared with most other Data Centres and is also based on staffing numbers. In addition, there will be additional travel planning measures set in place in order to promote more sustainable journeys including car sharing and travel information packs, highlighting to employees how they can travel sustainably to the site.

Car Park Layout

4.24 Cars will enter via the main access and pass the guard house, before turning right towards the car park. The site car park is located to the south of the Data Centre building. There is a limited section of two-way working on the internal loop road to support access and egress to the car park. Pedestrian routes are provided within the car park to provide access from individual aisles to the Data Centre main entrance.

Disabled Parking

4.25 The car park includes a total of five disabled parking spaces. This equates to 6% of spaces.

Electric Vehicle Charging

4.26 SBC do not have any standards for Electric Vehicle Charging Points (EVCP). At this stage it is proposed that:

- 20% of spaces to receive active charging infrastructure (charge points)
- 100% of spaces to receive passive charging infrastructure (pathway for future charge points)

Cycle Parking

4.27 As with the car parking assessment, cycle parking will also be provided reflective of established Data Centre operations locally within Slough.

4.28 The level of cycle parking provision has been reviewed for the four existing data centres that the trip generation is based on. On average, these sites provide one cycle space per 1,062 sqm of floor space.

4.29 It is proposed, therefore, that this ratio is applied to the site which would equate to 37 cycle parking spaces. This is set out in **Table 4-1**. This could be provided on 19 Sheffield stands or 19 two-tiered stands (or a combination of both).

Table 4-2: TRICS Data Centre Cycle Parking Overview

GFA (sqm)	Location	Cycle Parking	Space per SQM
16,000	Liverpool Road, Slough	10	1,600
5,677	Liverpool Road, Slough	12	473
11,700	Liverpool Road, Slough	8	1,463
11,402	Ajax Avenue, Slough	16	713
Average		**12**	**1,062**

Delivery & Servicing

4.30 Delivery and servicing will take place to the southwest of the main Data Centre building. Vehicles will enter the site via main access and route via the guard house via the internal loop road which provides access to the loading bay area located on the southwestern corner of the building. The guard house restricts all vehicle access to approved vehicles only.

4.31 There is a one-way loop around the main Data Centre building for HGVs, cranes and refuse / delivery vehicles. This is to prevent conflict between inbound and outbound vehicles. This manoeuvre is set out in the SPA contained in **Appendix C**.

Masterplan Functionality

4.32 The functionality of the masterplan has been tested through swept path analysis for the range of vehicles which are routinely considered to access the site. This includes a 16.5m articulated HGV, a Large Mobile Crane and a Standard Design Vehicle (SDV).

4.33 Copies of the Swept Path Analysis is provided in **Appendix C**.

5.0 Trip Generation

Overview

5.1 In order to establish the effect of the proposed development on the local highway network, a trip generation exercise has been undertaken.

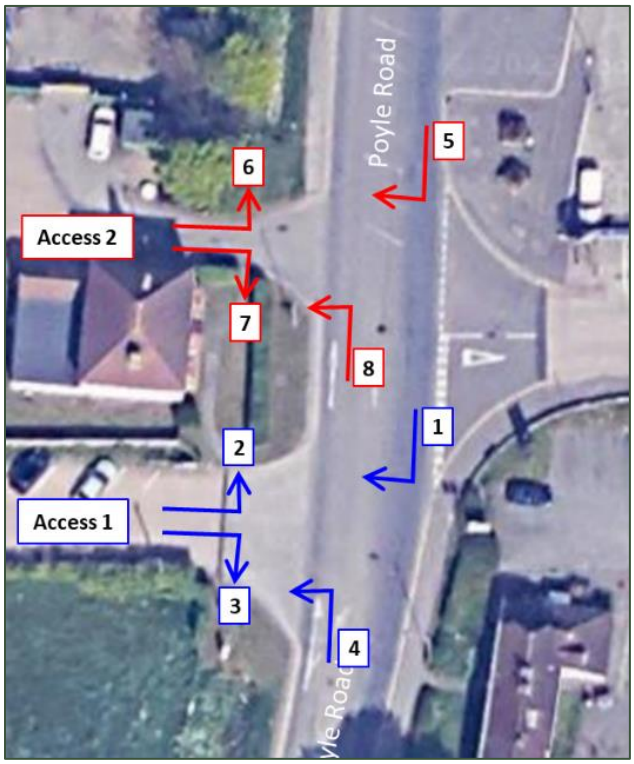
5.2 This chapter covers the following:

- Existing Site Use;
- Proposed Data Centre;
- Proposed Battery Storage;
- Total Development Trips;
- Net Impact

Existing Site

5.3 The site has a consented existing use. In order to assess the current number of vehicle trips associated with these uses, junction turning count surveys were undertaken on Wednesday November 1st at the two site accesses. Accesses '1' and '2' are as illustrated in **Figure 5-1**, as per the image issued by the K&M Traffic Surveys,

Figure 5.1: Junction Survey Location



5.4 The results of the survey are as set out in **Table 5-1**. They are also included at **Appendix D**.

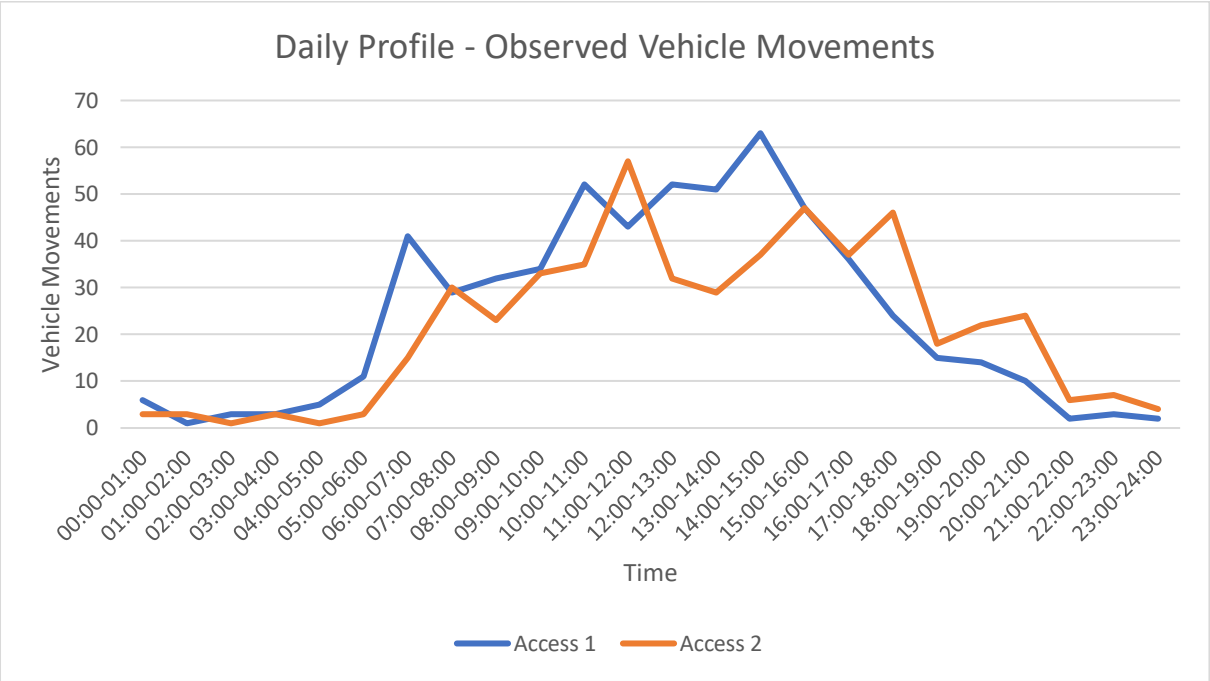
Table 5-1: Existing Site Accesses Vehicle Movements

Time	Arrivals	Departures	Two-Way
00:00-01:00	6	3	9
01:00-02:00	1	3	4
02:00-03:00	3	1	4
03:00-04:00	3	3	6
04:00-05:00	5	1	6
05:00-06:00	11	3	14
06:00-07:00	41	15	56
07:00-08:00	29	30	59
08:00-09:00	32	23	55
09:00-10:00	34	33	67
10:00-11:00	52	35	87
11:00-12:00	43	57	100
12:00-13:00	52	32	84
13:00-14:00	51	29	80
14:00-15:00	63	37	100
15:00-16:00	47	47	94
16:00-17:00	36	37	73
17:00-18:00	24	46	70
18:00-19:00	15	18	33
19:00-20:00	14	22	36
20:00-21:00	10	24	34
21:00-22:00	2	6	8
22:00-23:00	3	7	10
23:00-24:00	2	4	6
Total	579	516	1,095

5.5 This survey establishes that currently there are 1,095 two-way movements across a 24 hour period associated with the current land uses. The typical AM and PM peaks of 08:00-09:00 and 17:00-18:00 generate a total of 55 and 70 two-way vehicle movements respectively.

5.6 The daily profile for the vehicle movements is set out in **Graph 1**.

Graph 1 – Daily Profile (existing trips) By Access



5.7 Further surveys were undertaken on 25.06.2024 as a part of a wider scope of surveys including additional junctions along Poyle Road. These surveys were primarily MCCs and include a breakdown of vehicle movements at the site access junction between 07:00-10:00 and 16:00-19:00. These are set out in **Table 5-2**.

Table 5-2: Existing Site Access(es) Vehicle Movements (From 2024 MCC Survey)

Time	Arrivals	Departures	Two-Way
07:00-08:00	32	43	75
08:00-09:00	27	31	58
09:00-10:00	20	24	44
16:00-17:00	40	31	71
17:00-18:00	35	19	54
18:00-19:00	17	7	24

5.8 **Table 5-3** demonstrates the differences between the 2023 and 2024 Survey data for the AM and PM peak hour periods.

Table 5-3: 2023 to 2024 Site Accesses observed movements comparison

Time	Arrivals			Departures		
	2023 Survey	2024 Survey	Net Change to 2024	2023 Survey	2024 Survey	Net Change to 2024
07:00-08:00	29	43	+14	30	32	+2
08:00-09:00	32	27	-5	23	31	+8
09:00-10:00	34	20	-14	33	24	-9
16:00-17:00	36	40	+4	37	31	-6
17:00-18:00	24	35	+11	46	19	-27
18:00-19:00	15	17	+2	18	7	-11

5.9 It is evident from **Table 5.3** that there is no material difference between the observed flows.

Proposed Data Centre

5.10 The proposed development is for a Datacentre and Battery Storage.

5.11 The TRICS database has been reviewed for Data Centres. TRICS has recently created a new category for data centres. Previously these were contained in the office category.

5.12 The data centre category was created as part of the December 2023 update of TRICS version 7.10.12.

5.13 The TRICS site reference codes where these sites are located are as set out in **Table 5-4**.

Table 5-4: Data Centre Surveys within TRICS

Old TRICS Code	New TRICS Code	GFA (sqm)	Location	Survey Date
S0 02 A 03	S0 02 I 01	16,000	Liverpool Road, Slough	26/04/2023
S0 02 A 04	S0 02 I 02	5,677	Liverpool Road, Slough	24/05/2023
S0 02 A 05	S0 02 I 03	11,700	Liverpool Road, Slough	24/05/2023
S0 02 A 06	S0 02 I 04	11,402	Ajax Avenue, Slough	22/05/2023

5.14 All of the survey locations are in Slough and are therefore likely to share similar characteristics to the proposed site. The Data Centre trip rates are included at **Appendix E**.

5.15 The vehicle trip rates from these sites are set out in **Table 5-5**.

Table 5-5: Data Centre Vehicle Trip Rates (per 100sqm)

Time	Arrivals	Departures	Two-Way
00:00-01:00	0	0	0
01:00-02:00	0	0	0
02:00-03:00	0	0	0
03:00-04:00	0	0	0
04:00-05:00	0.007	0	0.007
05:00-06:00	0.024	0.007	0.031

Time	Arrivals	Departures	Two-Way
06:00-07:00	0.1	0.042	0.142
07:00-08:00	0.13	0.022	0.152
08:00-09:00	0.1	0.029	0.129
09:00-10:00	0.067	0.04	0.107
10:00-11:00	0.054	0.025	0.079
11:00-12:00	0.031	0.047	0.078
12:00-13:00	0.029	0.04	0.069
13:00-14:00	0.04	0.045	0.085
14:00-15:00	0.042	0.047	0.089
15:00-16:00	0.013	0.089	0.102
16:00-17:00	0.011	0.08	0.091
17:00-18:00	0.016	0.063	0.079
18:00-19:00	0.029	0.06	0.089
19:00-20:00	0.009	0.025	0.034
20:00-21:00	0.003	0.021	0.024
21:00-22:00	0.003	0.014	0.017
22:00-23:00	0.01	0.017	0.027
23:00-24:00	0.007	0.003	0.01
Total	**0.725**	**0.716**	**1.441**

5.16 At this stage the total GFA of the Data Centre (39,578.34 sqm) has been applied to the trip rate set out in **Table 5-5**. The subsequent forecast vehicle trips are displayed in **Table 5-6**.

Table 5-6: Proposed Data Centre Vehicle Trip Generation (39,578 sqm)

Time	Arrivals	Departures	Two-Way
00:00-01:00	0	0	0
01:00-02:00	0	0	0
02:00-03:00	0	0	0
03:00-04:00	0	0	0
04:00-05:00	3	0	3
05:00-06:00	9	3	12
06:00-07:00	40	17	56
07:00-08:00	51	9	60
08:00-09:00	40	11	51
09:00-10:00	27	16	42
10:00-11:00	21	10	31
11:00-12:00	12	19	31
12:00-13:00	11	16	27
13:00-14:00	16	18	34
14:00-15:00	17	19	35
15:00-16:00	5	35	40
16:00-17:00	4	32	36
17:00-18:00	6	25	31

Time	Arrivals	Departures	Two-Way
18:00-19:00	11	24	35
19:00-20:00	4	10	13
20:00-21:00	1	8	9
21:00-22:00	1	6	7
22:00-23:00	4	7	11
23:00-24:00	3	1	4
Total	**287**	**283**	**570**

5.17 As set out in **Table 5-6**, the proposed development is forecast to produce up to 51 two-way trips during the typical AM peak of 08:00-09:00 and up to 31 two-way trips during the typical PM peak or 17:00-18:00. The development peak hour is 07:00-08:00 with a forecast 60 two-way vehicle trips.

5.18 It is noted that the GFAs of the four Data Centre sites in TRICS are 16,000 sqm, 5,677 sqm, 11,700 sqm and 11,402 sqm. This is an average of 11,195 sqm. The GFA of the proposed site is 39,578.34 sqm.

5.19 It is considered that the level of staff required to operate a larger Data Centre do not increase proportionately with floor area. As such the trip generation is considered to be robust.

Multi-Modal Trips

5.20 The surveys obtained from the TRICS database included multi-modal surveys, and this data has been used to forecast the multi-modal trips associated with the site. This is in line with the recent Active Travel England (ATE) guidance which recommends assessing the trip generation of a site by all modes. These forecast multi-modal trips for the Data Centre are set out in **Table 5-7**. The typical peak hours of 08:00-09:00 and 17:00-18:00 have been assessed.

Table 5-7: Data Centre Multi-Modal Trips

Mode	08:00-09:00		17:00-18:00	
	Arrivals	Departure	Arrivals	Departures
Walking	5	2	2	4
Cycling	1	0	0	4
Public Transport	11	7	0	19
Car	27	4	4	22
LGV	11	6	1	1
Other	2	2	0	1
Total	**45**	**17**	**5**	**40**

5.21 As demonstrated, the Data Centre is forecast to generate trips primarily by public transport and by car. The two-way trips amount to 14 trips by public transport and 24 trips by car in the AM peak hour, and 15 trips by public transport and 20 trips by car in the PM peak hour.

Proposed Battery Storage

Overview

5.22 Battery Energy Storage Systems (BESS) provide a means of allowing electricity from the grid to be imported and stored at times of low demand/high generation, which can then be exported back into the grid at times of higher demand / system stress.

5.23 It is recognised that whilst there are vehicle trips associated with the construction of a Battery Storage Facility, once the facility is operational there will be a negligible number of trips by vehicles or other modes associated with it. This would typically amount to only one vehicle per month for routine maintenance.

Operational Trip Generation

5.24 Research has been undertaken into a number of Battery Storage Facilities which have been granted consent UK wide. These are listed below with the local authority and planning number, with the main findings in regard to operational vehicle trip generation noted also.

- **Hull City Council - 17/00491/FULL**
  "During operation of the BESS facility, both the operator and the DNO will require occasional access to the compound. These visits by an engineer are unlikely to exceed one visit per month and require only small commercial vehicles, such as vans or cars to visit the site."

- **Hull City Council - 23/02771/FULL**
  "In terms of highways, the proposed scheme was confirmed to not be a traffic generator therefore, a Traffic Assessment was confirmed as not required."

- **East Riding of Yorkshire - 19/01449/STPLF**
  "The construction phase of the development is the only phase in the life cycle of the proposed development where potential effects from traffic may be anticipated. Once the proposed energy storage facility is operational it will be operated remotely, limiting site traffic to routine monthly or quarterly visits by engineers by car or van".

- **Wiltshire Council - PL/2021/04151**
  "Once operational, the Proposed Development would effectively be fully automated and it would only be necessary for an engineer to undertake a site visit on a monthly basis. Accordingly, the operation of the facility would have negligible impact on traffic generation."

- **North Lincolnshire - PA/2021/1291**
  Transport / Highways not mentioned.

- **South Hampshire - 3360/17/FUL**
  "As batteries do not require the delivery of fuel to the site it will generally be unmanned. For the most part maintenance will be carried out remotely requiring only onsite presence for scheduled maintenance or where faults cannot be rectified remotely. As such the facility will generate very limited traffic movement from its operation."

5.25 It is concluded therefore that, once operational, the battery storage facility will not generate regular vehicle trips which will impact on the daily trip generation of the wider development.

Construction Summary

5.26 Once operational, the trips associated with Battery Storage facilities are minimal i.e., occasional servicing visits. The majority of trips are generated during the construction phase. This is set out in further detail below, based on an approved 114mw battery storage scheme. It is noted that these are reasonable assumptions based on similar operations and are not fixed.

5.27 A typical Battery Storage construction programme would be anticipated to last for approximately 14 months, with the peak period anticipated to be focused during the first few months during the site set up.

5.28 **Table 5-8** provides a summary of the range and number of vehicles typically to access the Site during construction. This is based on a 114MW Battery Storage site.

Table 5-8: Estimated Battery Storage Construction Trips

Description	Estimated Deliveries	Vehicle Type
Containers of Batteries	88	16.5m articulated HGV
ACC/DCC cabinets	22	16.5m articulated HGV
Spare parts container and spares	2	16.5m articulated HGV
Substation GRP buildings	15	16.5m articulated HGV
Inverter Deliveries	48	16.5m articulated HGV
Transformers	22	16.5m articulated HGV
Ready mix concrete/pre-cast concrete	15	16.5m articulated HGV / concrete mixer
Consumables for Site	3	16.5m articulated HGV
Temporary Welfare Facilities	10	7.5 tonne rigid HGV
Generators	2	16.5m articulated HGV
Cranes for Installation of Battery Containers	2	16.5m articulated HGV
Site Road and Compound Construction Material	50	20 tonne tipper
Removal of excess soil	30	20 tonne tipper
Miscellaneous Plant	10	16.5m articulated HGV
Cables	5	16.5m articulated HGV
Other materials for Site.	5	7.5 tonne rigid HGV
Total	**329**	-

5.29 Assuming a total of 21 working days per month, an average daily traffic generation figure over the 14 months can be calculated as approximately one HGV trip per day. However, this ‘average’ figure is not considered to be a realistic calculation of the likely peak traffic generation.

5.30 The maximum hourly traffic generation could be three to four HGV deliveries per hour during the busiest two weeks of the construction programme, or six to eight HGV two-way movements per hour. With a ten hour working day (07:00-17:00), this could see a peak daily traffic generation of 30-40 HGV deliveries or 60-80 two-way HGV movements.

5.31 It is again noted that these are reasonable assumptions based on similar operations and are not fixed.

Light Vehicle Trips

5.32 There would be a maximum or approximately 35 staff members on-site during the construction period, and if assuming all staff members arrive to site via private car, there will be a total of 35 trips or 70 two-way light vehicle movements made per day during the construction period. All staff trips would arrive before the working day begins at 07:00, therefore all arrival trips will be made during the hour of 06:00-07:00, while staff would be expected to leave between the hours of 17:00-18:00.

Total Development Trips

5.33 The total number of vehicle trips forecast from the development proposals will therefore be as set out in **Table 5-6**, i.e., the Data Centre trips.

5.34 As set out in **Table 5-6**, the proposed development is forecast to produce up to 51 two-way vehicle trips during the AM peak and up to 31 two-way vehicle trips during the PM peak.

Net Change

5.35 A comparison has been undertaken between the observed trips associated with the site and the forecast trips of the proposed development. The net change is set out in **Table 5-9**.

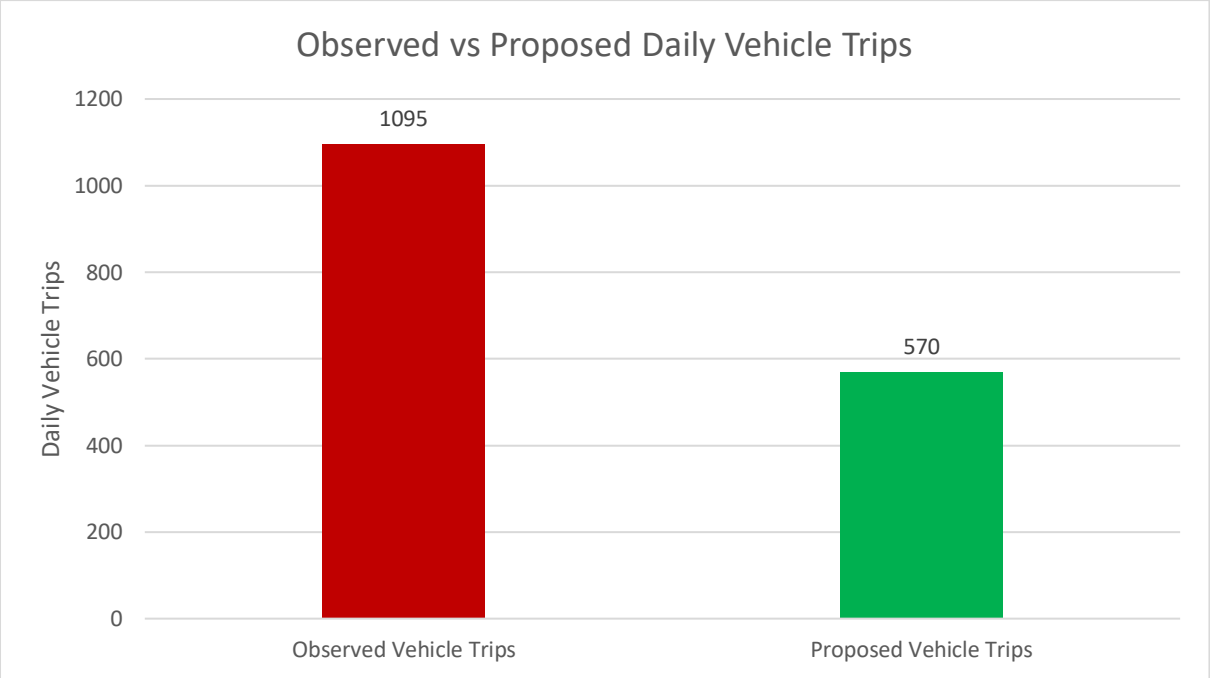
Table 5-9: Net Change (Existing vs Proposed Use)

Time	Observed	Forecast	Net Change
00:00-01:00	9	0	-9
01:00-02:00	4	0	-4
02:00-03:00	4	0	-4
03:00-04:00	6	0	-6
04:00-05:00	6	3	-3
05:00-06:00	14	12	-2
06:00-07:00	56	56	0
07:00-08:00	59	60	1
08:00-09:00	55	51	-4
09:00-10:00	67	42	-25
10:00-11:00	87	31	-56
11:00-12:00	100	31	-69
12:00-13:00	84	27	-57
13:00-14:00	80	34	-46
14:00-15:00	100	35	-65
15:00-16:00	94	40	-54
16:00-17:00	73	36	-37
17:00-18:00	70	31	-39
18:00-19:00	33	35	2
19:00-20:00	36	13	-23

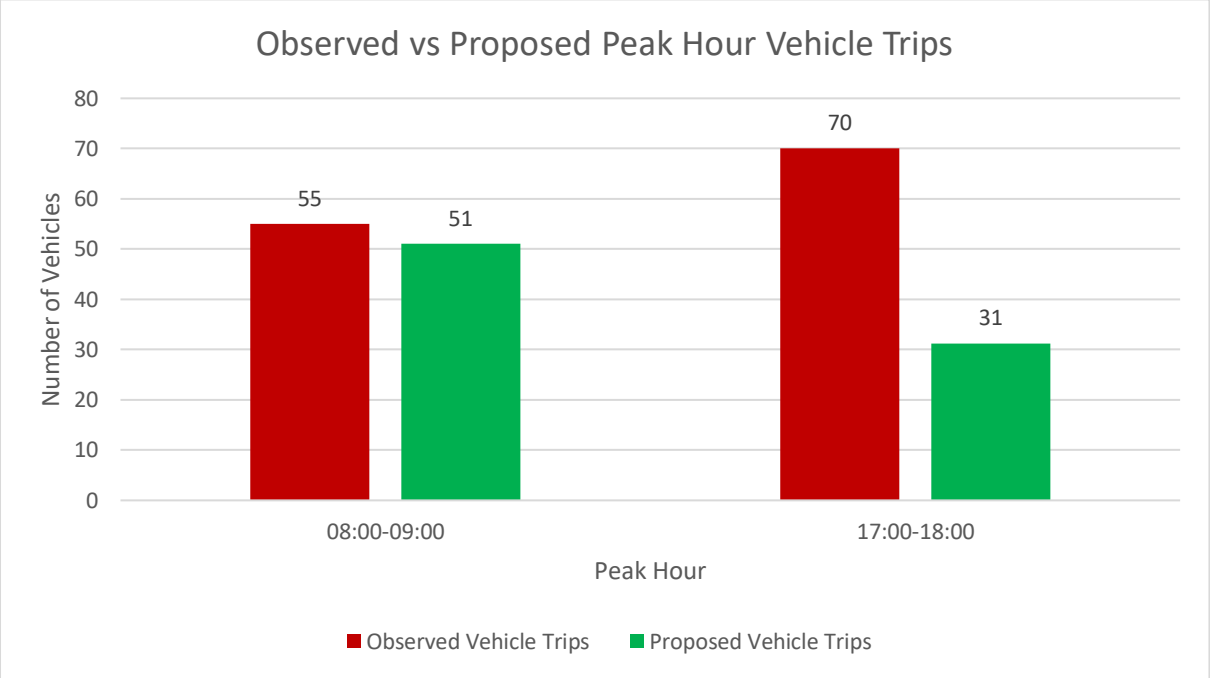
Time	Observed	Forecast	Net Change
20:00-21:00	34	9	-25
21:00-22:00	8	7	-1
22:00-23:00	10	11	1
23:00-24:00	6	4	-2
Total	1,095	570	-525

5.36 The net change comprises the addition of the proposed vehicle trips, and the removal of all existing trips. This change in vehicle generation can also be reflected visually as set out in **Graph 2**.

Graph 2 – Net change (Existing vs Proposed Daily Trip Generation)



Graph 2 – Net change (Existing vs Proposed Peak Hour Trip Generation)



5.37 It is demonstrated that the proposed development will reduce vehicle trips by up to 525 two-way movements across the day.

5.38 During the typical AM and PM peaks of 08:00-09:00 and 17:00-18:00, the decrease in vehicle trips is -4 and -39 respectively.

Conclusion

5.39 The proposed development will have a beneficial effect on the operation of the local highway network in that it will reduce the number of vehicle trips associated with the site at all hours across the day.

6.0 Distribution

Census Distribution

6.1 The forecast development trips have been distributed through the local highway network to and from the site access using data from the 2011 Census. This is considered most representative of commuter habits due to uncertainties over the validity of the 2021 data due to the Covid-19 pandemic.

6.2 The location used is "WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)". The distribution is as set out in **Table 6-1**.

Table 6-1: Distribution based on 2011 Census

Route	MSOA Sample	Percentage
Poyle Road S - Stanwell Road	488	5%
Poyle Road S - Horton Road	6,515	73%
Poyle Road N	1,938	22%
Total	**8,941**	**100%**

6.3 In total, 78% of trips are distributed south and 22% of trips are distributed north. The 78% distributed south is then split between Horton Road (73%) and Stanwell Road (5%).

Traffic Survey Distribution

6.4 Existing distribution of traffic has been identified from the 2024 MCC surveys undertaken at the site access. This broadly matches the distribution of trips based on the Census data and is set out in **Table 6.2**.

Table 6-2: AM Peak Distribution based on 2024 observed site access movements

Time Period	Route	Vehicle Movements	Percentage
08:00-09:00	Poyle Road South	43	74%
	Poyle Road North	15	26%
	Total	58	100%
17:00-18:00	Poyle Road South	28	52%
	Poyle Road North	26	48%
	Total	54	100%

6.5 The PM observed flows demonstrate slightly different distribution of 52% southbound and 48% northbound, though during both peaks there is a high percentage of HGV trips rather than staff trips which will affect distribution.

6.6 It is considered that the distribution based on the 2011 Census data should be used, as it is representative of staff trips which would typically be associated with a data centre. The

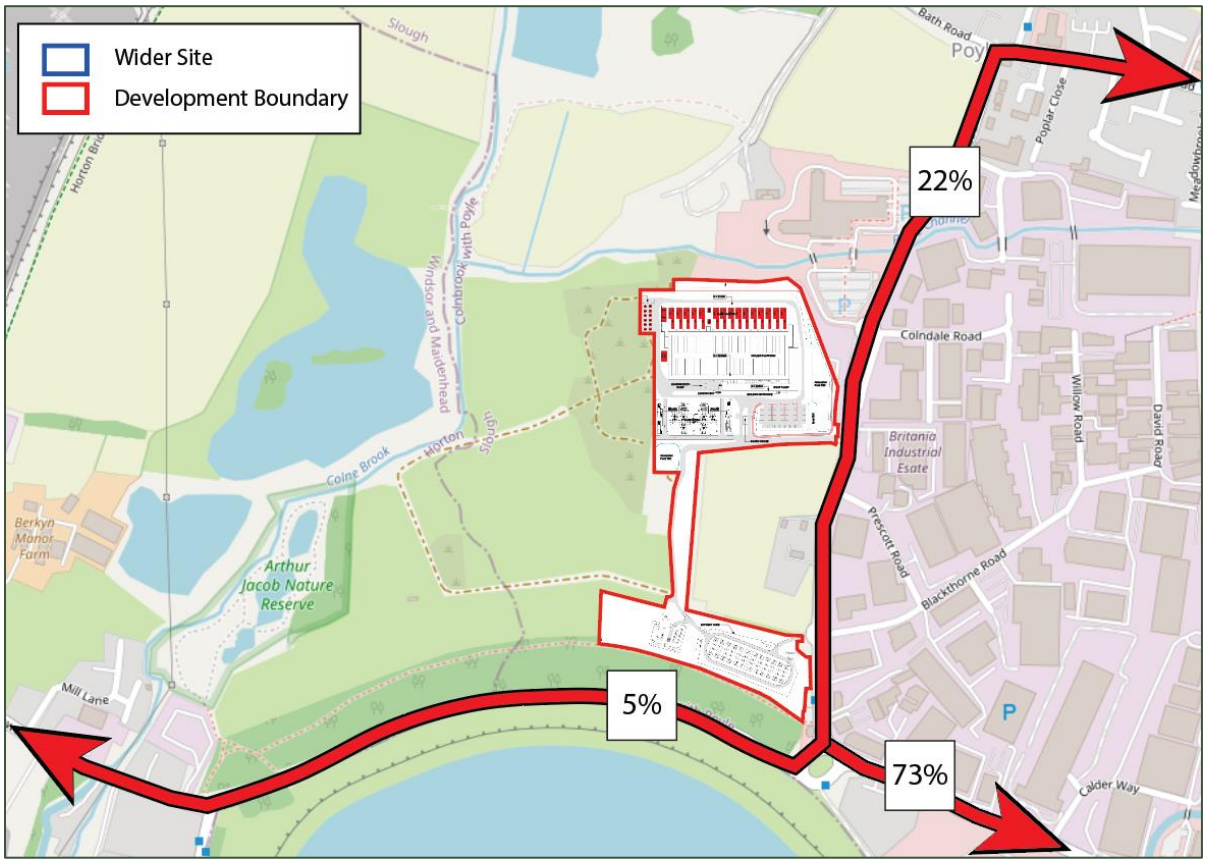
distribution from the traffic surveys is reflective of the existing site uses, with a high proportion of van and HGV trips.

6.7 Local routing associated with the proposed development accounts for the proposed left-in, left-out site access junction.

6.8 The distribution of traffic has been undertaken on the basis of left turning traffic routing up to the roundabout adjacent to the junction 1 (Colndale Road / Poyle Road) roundabout. Southbound traffic will then route back past the site on Poyle Road in a southbound direction.

6.9 Equally traffic from the north will travel down Poyle Road to the Blackthorne Road roundabout before travelling back up Poyle Road and into the site.

Figure 6-1: Forecast Trip Distribution



6.10 The bus gate proposed along Poyle Road to the immediate north of its junction with Mathisen Way does not impact on trip distribution. All HGV traffic associated with the site will route to/from the south.

Growth Factors

6.11 Within the assessment, TEMPro growth has been applied to provide the future development scenarios. The following scenarios are considered:

- Base Year (2023 / 2024 traffic surveys);

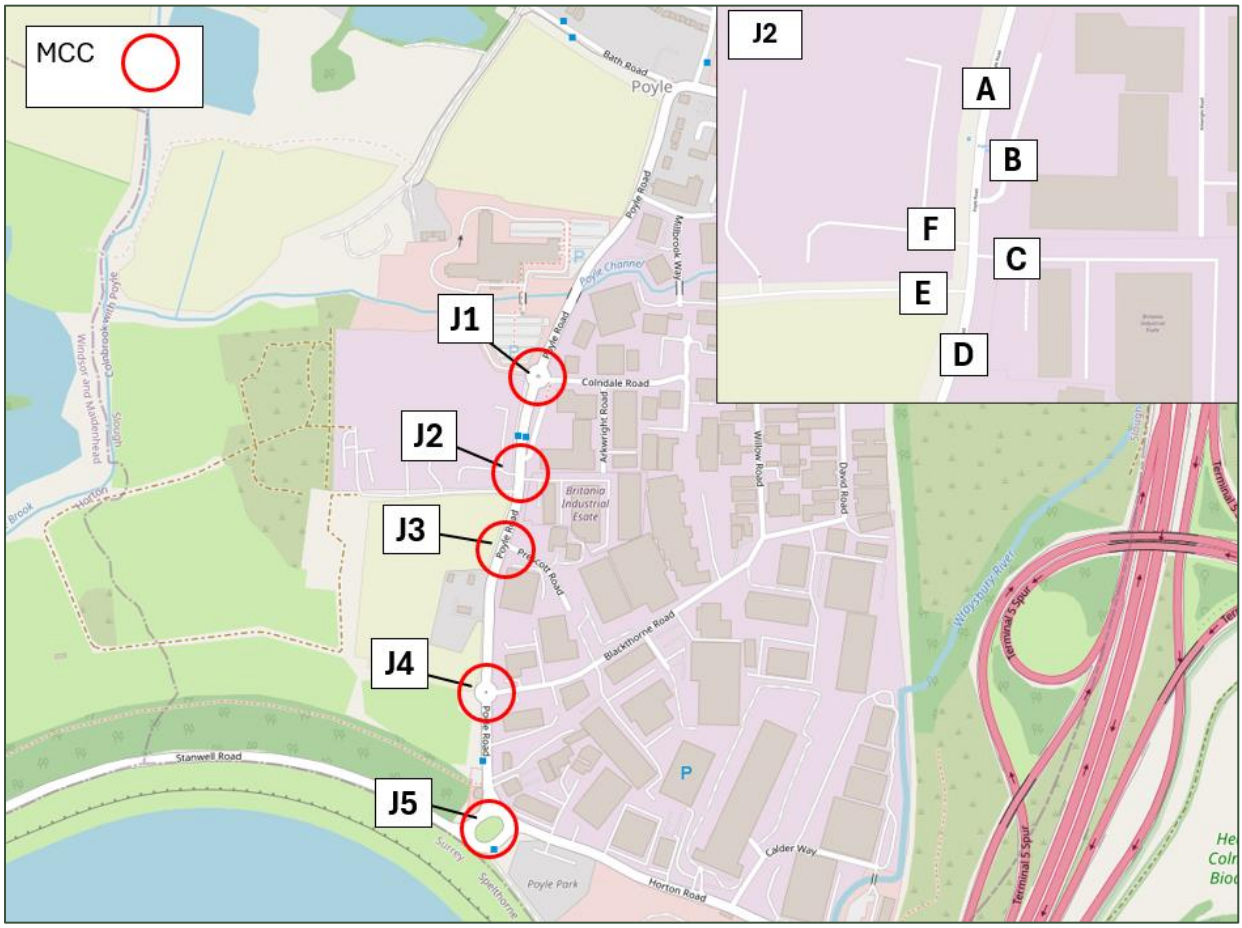
- Opening Year (2027);
- Future Year (2036 (End of SBC Local Plan)).

7.0 Junction Review

Overview

7.1 Based on the forecast trip generation and distribution and using the observed flows from the junctions surveyed along Poyle Road, a review of local junctions has been undertaken.

Figure 7-1: Junction Locations for Percentage Impact



7.2 **Table 7-1** sets out the forecast junction impact.

Table 7-1: Forecast Junction Impact

	AM Trips					PM Trips			
Junction	Observed	Existing Site	Proposed Site	Impact		Observed	Existing Site	Proposed Site	Impact
1	782	19	20	0.1%		925	26	26	0.0%
2B	694	19	26	1.1%		810	26	40	1.8%
2F	681	14	29	2.2%		805	33	46	1.6%
2C	721	21	29	1.1%		862	26	46	2.3%
2E	717	45	60	3.3%		844	47	51	0.6%
3	747	32	40	3.4%		847	28	24	-0.1%
4	1134	32	40	1.5%		1100	28	24	-0.2%
5	1374	32	40	0.6%		1265	28	24	-0.3%

7.3 As illustrated in **Table 7-1**, the largest impact on any one junction is on Junction 3 (3.4%) with a forecast total impact of 3.4% during the AM peak.

7.4 Whilst the development is forecast to generate a lower level of traffic compared to the existing use of the site, the localised rerouting associated with the proposed left-in, left-out junction result in marginally higher traffic volumes routing through the adjacent junctions (1 and 3).

7.5 The left in, left out arrangement is considered to provide a wider benefit which offsets the additional routing locally on Poyle Road.

7.6 The change in vehicle movements is not considered to provide a discernible impact on the local highway network. The proposed development will include the closure / stopping up of one of the existing site accesses which will reduce the number of junctions in this area of Poyle Road and provide an associated benefit.

Proposed Site Access Junction Model

7.7 The proposed site access junction has been modelled using Junctions 10 PICADY software. The years modelled are as follows:

- 2027 Opening Year + Development
- 2036 Future Year + Development

7.8 The baseline flows for both scenarios were subjected to growth factors from the 2024 survey data using TEMPro. The TEMPro factors are included at **Table 7-2.**

Table 7-2: TEMPro Growth Factors

Year	Growth Factor	
	AM	PM
2024 - 2027	1.0164	1.0159
2024 - 2036	1.0721	1.0707

7.9 The PICADY results are set out in **Table 7-3**. The full outputs are included at **Appendix F**.

Table 7-3: Site Access PICADY Results

	AM				PM		
	Queue (Veh)	Delay (s)	RFC		Queue (Veh)	Delay (s)	RFC
	2027 Opening Year + Dev						
Site Access to Poyle Road North (B-C)	0	6.36	0.02		1	**6.96**	0.05
Site Access to Poyle Road South (B-A)	0	0.00	0.00		0	**0.00**	0.00
Poyle Road North to Site Access (C-B)	0	0.00	0.00		0	**0.00**	0.00
	2036 Future Year + Dev						
Site Access to Poyle Road North (B-C)	0	6.45	0.02		1	**7.11**	0.05
Site Access to Poyle Road South (B-A)	0	0.00	0.00		0	**0.00**	0.00
Poyle Road North to Site Access (C-B)	0	0.00	0.00		0	**0.00**	0.00

7.10 As demonstrated, the site access junction will operate well within capacity in all scenarios, with a maximum Ratio of Flow to Capacity (RFC) of 0.05 in the 2036 PM scenario. This scenario also forecasts a maximum queue of one vehicle, with 7.11 seconds of delay.

7.11 Streams B-A and C-B show values of zero for the following reasons:

- There are no movements from stream B to A as this would involve a right-turn out of the site access;
- There are no movements from stream C to B as this would involve a right turn into the site access;
- Additionally, Junctions 10 does not include results for the A to B movement as this is for left turners, who do not give way to any other movements and therefore are not impacted by queueing or delay, and do not delay the vehicles behind then.

7.12 The modelling therefore demonstrates that the site access is suitable for this scale of development and also has the potential to accommodate additional movements in any future year.

Summary

7.13 The proposed development is forecast to result in a reduction of trips across the day as well as both the AM and PM peak hours. A comparison of traffic distribution has identified that 78% of all vehicle trips associated with the development will route to/from the south, and that 22% will route to/from the north.

7.14 The largest impact on any one junction is on Junction 3 with a forecast total impact of a .4% increase in vehicle movements during the AM peak hour. This equates to 15 additional vehicle movements across the hour. In this case, the movements are north and south on Poyle Road which are the priority movements.

7.15 The site access junction will operate well within capacity in all modelled future scenarios. This review has not identified any material traffic impact which would be discernible on the local highway network.

8.0 Summary and Conclusion

Overview

8.1 SLR Consulting Limited (SLR) is appointed to provide transport and highways advice in relation to the proposed industrial and energy development at Manor Farm, Poyle. The site is located to the west of Poyle Road, approximately 1km from Junction 14 of the M25 (J14). The proposed development comprises a Data Centre and Battery Energy Storage System (BESS).

Existing Situation

8.2 The site is in close proximity to the existing industrial areas to the east of Poyle Road, accessible from J14, and forms a natural extension to these land uses in the area. The existing built up area surrounding the site would be considered suitable for pedestrians and there are existing regular bus services which route past the site.

8.3 Those traveling to the site by foot will be staff from the local area as well as staff who have travelled by bus and then walk to the site. There are bus stops near the site which benefit from up to five buses an hour, allowing staff to travel sustainably to the site. There are also railway stations accessible via bus, bike or vehicle.

8.4 During the most recent five-year period there have been three collisions near the site access, which involved four vulnerable road users. Due to the low level of collisions taking place here, equating to less than one every 18 months, it is considered that there are no inherent safety issues on the local highway network.

Planning Policy

8.5 The Proposed Development aligns with national and local planning policy, including the NPPF. It will promote sustainable transport modes, i.e., through the provision of a Travel Plan and active travel access, with cycle parking provided also. Safe and suitable access to the site can be achieved for all users, both through the main vehicular site access and through the provision of a separate active travel access. A new footway link is provided to the bus stops to the north of the site access on Poyle Road. In terms of an effect on the local highway network, there is no significant impact.

Development Proposals

8.6 The Proposed Development will be accessed via the currently unnamed road (‘the Access Road’). Junction improvement proposals have been set out and comprise upgrading of the existing access to provide a left-in, left out junction. The current secondary access to the north is proposed to be downgraded to an active travel access. This will reduce the number of junctions in this area of Poyle Road.

8.7 Access to the Battery Storage will be provided internally, via the main site access with Poyle Road. An internal route will then provide access to the Battery Storage Facility to the south. This includes access for the construction phase.

8.8 The Proposed is to be supported by 86 car parking spaces and 37 cycle parking spaces. This is reflective of the size and scale of the development and accounts for parking accumulation and precedent from local Data Centres within Slough.

8.9 The functionality of the masterplan has been tested through swept path analysis for the range of vehicles which are routinely considered to access the site. This includes a 16.5m articulated HGV, a Large Mobile Crane and a Standard Design Vehicle (SDV).

Highway Network

8.10 There are currently 1,095 two-way vehicle movements across the day associated with the current land uses on the site. Prior to redevelopment, all these existing activities will cease.

8.11 The typical AM and PM peaks of 08:00-09:00 and 17:00-18:00 generate a total of 55 and 70 two-way trips respectively. The proposed development is forecast to produce up to 51 two-way vehicle trips during the AM peak and up to 31 two-way vehicle trips during the PM peak.

8.12 The proposed development will reduce vehicle trips by up to 525 two-way movements across the day. During the typical AM and PM peaks of 08:00-09:00 and 17:00-18:00, the decrease in vehicle trips is -4 and -39 respectively.

8.13 Traffic distribution has been undertaken through the local highway network accounting for the proposed left-in, left-out junction for the site. This demonstrates a limited increase in traffic movements through some local junctions on Poyle Road only.

8.14 A junction impact assessment has been undertaken. This review has not identified any material traffic impact which would be discernible on the local highway network. The site access junction will operate well within capacity in all modelled future scenarios.

Conclusion

8.15 The site aligns with local and national policy. It results in an overall decrease of trips on the highway network. Active travel infrastructure is included as a part of the development proposals.

Appendix A Personal Injury Collision Data

Transport Assessment

SLR Project No.: 425.065619.00001

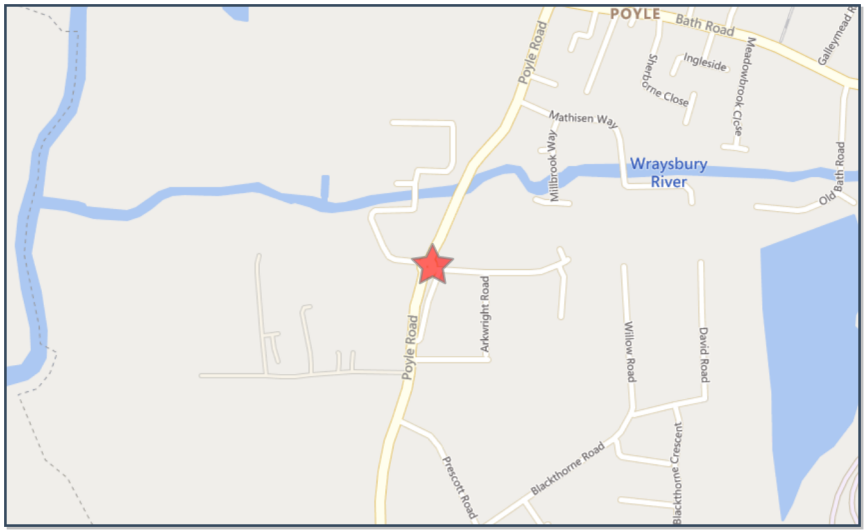
21 November 2024

crashmap.co.uk

Validated Data

Crash Date:	Sunday, September 30, 2018	**Time of Crash:**	9:50:00 PM	**Crash Reference:**	**2018430302763**

Highest Injury Severity:	Slight	**Road Number:**	U0	**Number of Casualties:**	2
Highway Authority:	Slough			**Number of Vehicles:**	1
Local Authority:	Slough Borough			**OS Grid Reference:**	503114 176307
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Darkness: street lights present and lit				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/Faq*
To subscribe to unlimited reports using CrashMap Pro visit *www.crashmap.co.uk/Home/Premium_Services*

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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	14	Female	16 - 20	Vehicle proceeding normally along the carriageway, not on a bend	Front	Unknown	Central island of roundabout	None

Casualties

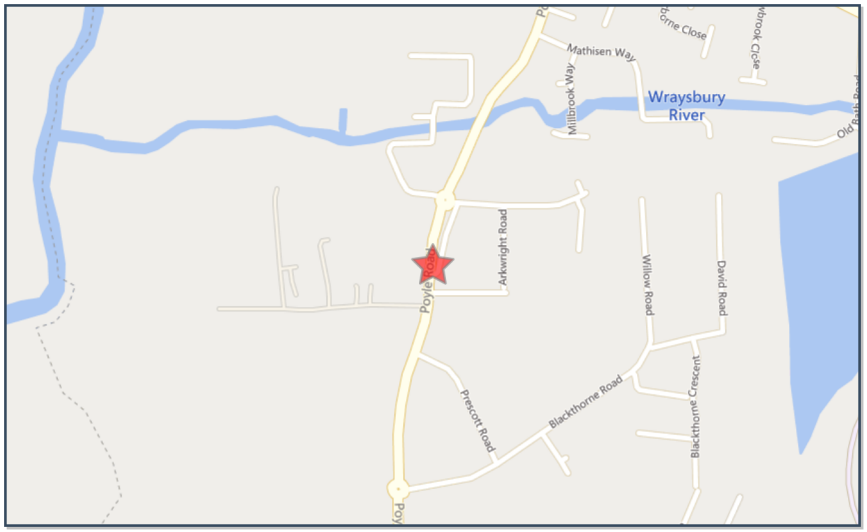
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Pedestrian	Male	26 - 35	On footway or verge	Unknown or other
1	2	Slight	Pedestrian	Male	21 - 25	On footway or verge	Unknown or other

crashmap.co.uk

Validated Data

Crash Date:	Friday, February 07, 2020	**Time of Crash:**	11:57:00 PM	**Crash Reference:**	**2020430045010**

Highest Injury Severity:	Serious	**Road Number:**	U0	**Number of Casualties:**	1
Highway Authority:	Slough			**Number of Vehicles:**	3
Local Authority:	Slough Borough			**OS Grid Reference:**	503089 176204
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Darkness: street lights present and lit				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				



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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Pedal cycle	-1	Male	36 - 45	Vehicle is passing another moving vehicle on its offside	Nearside	Unknown	None	None
2	Goods vehicle 7.5 tonnes mgw and over	4	Male	46 - 55	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Journey as part of work	None	None
3	Goods vehicle 7.5 tonnes mgw and over	-1	Unknown	Unknown	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Journey as part of work	None	None

Casualties

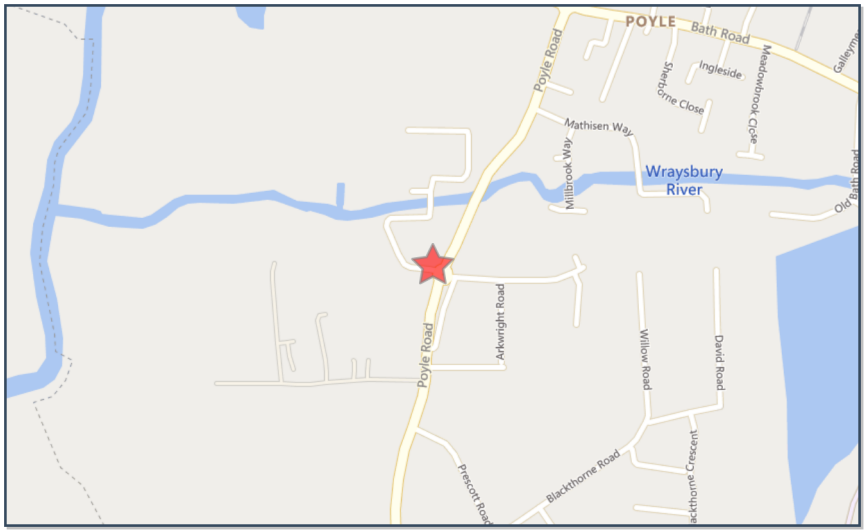
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Serious	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

crashmap.co.uk

Validated Data

Crash Date:	Saturday, July 23, 2022	**Time of Crash:**	11:38:00 PM	**Crash Reference:**	**2022430326928**

Highest Injury Severity:	Slight	**Road Number:**	U0	**Number of Casualties:**	1
Highway Authority:	Slough			**Number of Vehicles:**	1
Local Authority:	Slough Borough			**OS Grid Reference:**	503093 176308
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/Faq*
To subscribe to unlimited reports using CrashMap Pro visit *www.crashmap.co.uk/Home/Premium_Services*

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Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Van or goods vehicle 3.5 tonnes mgw and under	-1	Male	Unknown	Vehicle proceeding normally along the carriageway, not on a bend	Front	Unknown	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Pedestrian	Male	46 - 55	In carriageway, crossing elsewhere	Crossing from driver's offside

Appendix B Site Layout

Transport Assessment

Manor Farm, Poyle

SLR Project No.: 425.065619.00001

21 November 2024

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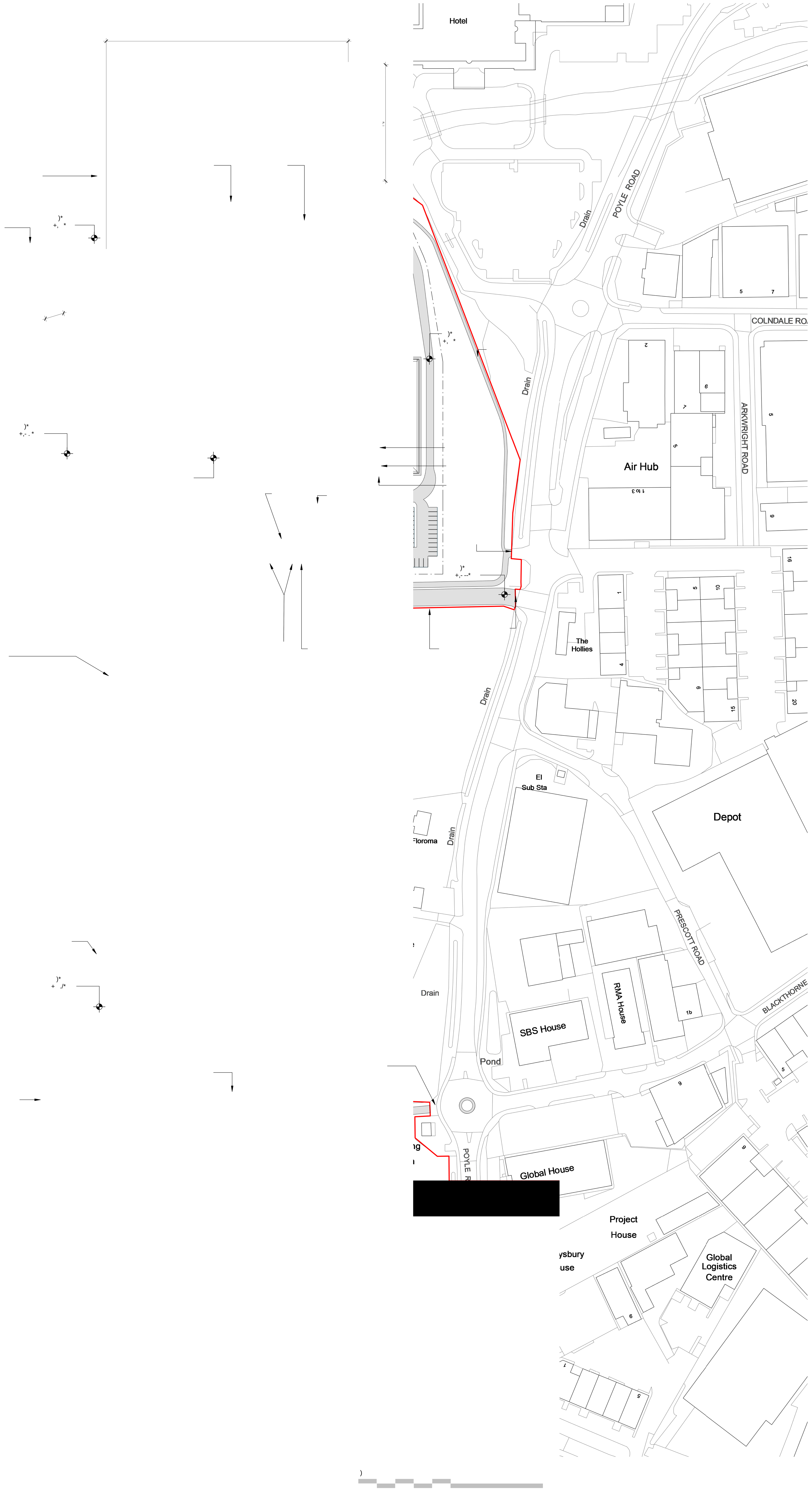

Hotel
POYLE ROAD
Drain
COLNDALE ROAD
ARKWRIGHT ROAD
Air Hub
The Hollies
El Sub Sta
Depot
PRESCOTT ROAD
BLACKTHORNE
RMA House
SBS House
Pond
Global House
[redacted]
Project House
Global Logistics Centre