Kilmarnock 500 MW Battery Energy Storage System

Non-Technical Summary

Kilmarnock Energy Centre Limited

September 2023

Delivering a better world

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
P01	29.09.2023	Submission	Yes	NW	Project Manager

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1. Introduction

Kilmarnock Energy Centre Limited (hereafter referred to as 'the Applicant') is seeking to obtain s36 energy consent and deemed planning permission to construct, operate and decommission a battery energy storage system (BESS), equating to a maximum output of 500 megawatts (MW), located approximately 250 metres (m) north of Kilmarnock Substation (hereafter referred to as the 'Site'). The project is known as Kilmarnock BESS (hereafter referred to as the 'Proposed Scheme'). The location and boundary of the Proposed Scheme is illustrated in Figure 1.

The Applicant is an independent, United Kingdom (UK) based company providing expertise and management services to innovative energy development projects in the electricity sector. The Applicant's focus is electricity generation, electricity grid stability and energy storage. The Applicant assesses and uses new technologies to facilitate grid balancing and is experienced in the development, construction, and operation of such developments.

BESS technology plays a key part to play in supporting the roll out of a greater amount of renewable energy generation and meeting net zero targets. BESSs are devices that enable energy from renewables, like solar and wind, to be stored and then released when customers need power most.

BESS provides a way to control and maintain a reliable, secure and sustainable supply of energy. The UK government estimates technologies like BESSs, supporting the integration of more low-carbon power, heat and transport technologies could save the UK energy system up to £40 billion by 2050, ultimately reducing people's energy bills

The Energy Consent Unit of the Scottish Government issued their statutory EIA Screening Opinion in June 2022 which stated that the Proposed Scheme does constitute Environmental Impact Assessment (EIA) development. Consequently, an Environmental Impact Assessment Report (EIAR) has been undertaken in accordance with the Electricity Works (EIA) (Scotland) Regulations 2017 (as amended) to accompany the s36 consent application

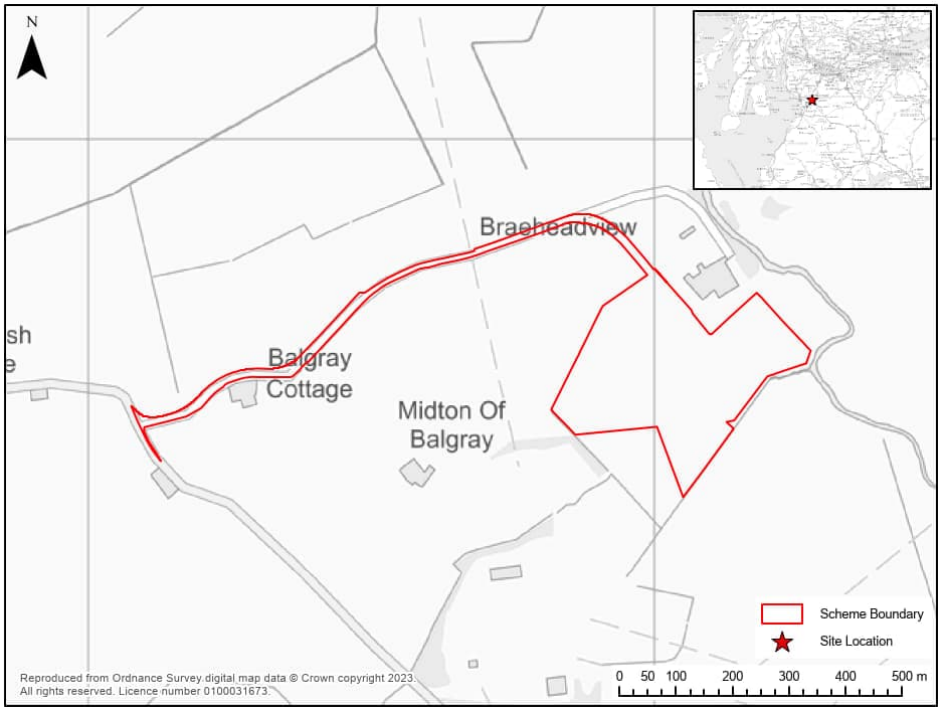
The EIAR comprises the following:

- **Volume 1: Main Text** – which presents the environmental assessment for each of the specialist topics in detail;
- **Volume 2: Appendices** – which comprises topic specific technical reports and other relevant supporting documentation; and
- **Volume 3: Figures** – includes relevant plans and drawings.

In addition to the EIAR documents (Volumes 1, 2 and 3, and the NTS), the following documents have been prepared on behalf of the Applicant to support the s36 consent application and are cross-referred to in the EIAR as appropriate. These documents form separate standalone documents within the s36 consent application:

- Pre-Application Consultation Report; and
- Planning Statement

The location and boundary of the Proposed Scheme is illustrated in the figure below.



2. The Proposed Scheme

Chapter 2: The Proposed Scheme of the EIAR provides a full description of the Proposed Scheme and covers detailed information on the construction program.

The Proposed Scheme comprises of the following components and is illustrated in Volume 2, Appendix 1-D of the EIAR:

- Containerised battery units approximately 3.1 m in height, in sets of four battery units, with each set of four battery units supported by a PCS (Power Conversion System) and MV Transformer;
- Internal access tracks and vehicular access in the north;
- Electrical substation compounds including two 400 kV transformers - Electrical Busbars (up to 12 m in height) and Associated Switchgear to facilitate connection to the electricity grid;
- Welfare facility and control building;
- Security lighting and infrared closed-circuit television (CCTV) fixed on poles (up to 6m in height);
- Perimeter security fencing;
- Underground surface water drainage infrastructure;
- Vehicular parking area (5 spaces, including one disabled and one EV charging port); and
- Landscaping areas in the south and west of the Site.

The grid connection from the Proposed Scheme to Kilmarnock South Substation would be by an underground cable. The underground cable route would be the most direct route between the BESS and the substation. The underground cable does not form part of this s36 application and would be constructed using permitted development rights.

Each BESS unit consists of four 10-module battery containers with each set of four battery containers supported by a transformer unit and inverter cabinet. The BESS site battery units spread across nine rows from west to east.

A welfare facility and parking are located in the north east of the Site. Five car parking spaces, including one disabled bay and one Electric Vehicle (EV) charging port would be provided within the Site, providing sufficient space for operational staff.

An attenuation pond is to be located in the south west of the Site which will allow for drainage of surface water to be suitably attenuated to greenfield runoff rates before being discharged off-site.

Located in the north east of the Site is associated plant equipment for transferring electricity to the KSS. This plant equipment is enclosed within a perimeter security fence with a security gate for access. This area includes the following:

- High Voltage (HV) Substation compound comprised of 2no 400kV transformers;
- 4no 33 kW Switchgear;
- Control building measuring; and
- Three car parking spaces;

Vehicles would gain access to the Site from Sidehead Terrace / Treeswoodhead Road and along an existing farm access road (unnamed). This farm access road would be upgraded and widened to allow for the movement of construction vehicles.

The Proposed Scheme is currently programmed to be constructed between March 2025 and April 2027 subject to s36 energy consent and relevant s36 conditions and deemed planning permissions conditions being met. The overall construction period is anticipated to last up to 24 months, however the intensity of the construction processes will vary during this period, and it will not comprise a sustained period of intense work for all of those 24 months. There will be peaks during the construction period which coincide with more intensive works for example the laying of foundations.

For BESSs, implementing a fire detection and suppression system that is unique to the Proposed Scheme and its individual uses and requirements is key for ensuring optimum safety. The Proposed Scheme has considered the importance of fire suppression systems and minimising fire risk.

Strategic dense woodland planting along the eastern and southern extent of the Site is proposed to provide mitigation screening and ecological enhancement. The screening belt will consist of a mixture and a combination of shrubs, fast growing trees, and dense long-lived trees. A multi layered structure of mainly native species is proposed.

3. EIA Methodology

Chapter 3: EIA Methodology of the EIAR details the methods used in carrying out a comprehensive EIA of the Proposed Scheme, undertaken in accordance with the EIA (Scotland) Regulations 2017 (as amended) and supplemented with other topic-specific assessment guidance where relevant.

The environmental effects of the Proposed Scheme have been assessed during construction, operation and decommissioning. The effects are described in terms of changes to the existing situation (the baseline). The EIA assesses environmental effects on resources (such as archaeology) and receptors (such as human beings). Environmental effects were assessed by judging the sensitivity (that is, the importance) of a resource or receptor against the magnitude (that is, the scale or extent) of the predicted impact. The duration and geographic scale of the effects were also taken into account. Effects were then deemed significant or not significant in EIA terms.

The EIAR has identified environmental effects and, when necessary, proposed project specific mitigation measures to avoid, reduce or offset adverse environmental effects or maximise environmental benefits. Where significant effects are still likely to occur, additional mitigation measures are proposed to reduce effects where practicable. Any effects that remain, once these measures are taken into account, are reported as ‘residual effects’.

The assessments also assume the application of a Construction Environmental Management Plan (CEMP), which the Applicant will require the Principal Contractor (PC) to prepare, based upon the measures set out in the EIAR before they start any construction work.

As part of the assessment process, a large amount of environmental information was gathered about the Site and a number of organisations were contacted to discuss the proposed approach to the assessment. These organisations include East Ayrshire Council, SEPA and the County Archaeologist. In addition, many other stakeholders and local people were invited to take part in a public consultation and attend exhibitions.

The beneficial effects are also reported in the EIAR to ensure that the benefits arising from the Proposed Scheme are realised and the balance of issues

understood. The remainder of this NTS sets out the findings of the impact assessment on a topic by topic basis.

Following the directions in the ECU's statutory EIA Screening Opinion, the seven environmental topics listed below are considered as the technical scope of the EIAR:

- Chapter 4: Landscape and Visual;
- Chapter 5: Ecology;
- Chapter 6: Cultural Heritage;
- Chapter 7: Noise and Vibration;
- Chapter 8: Water Environment;
- Chapter 9: Traffic and Transport;
- Chapter 10: Combined and Cumulative Effects Assessment;
- Chapter 11: Other Matters; and
- Chapter 12: Summary of Residual Effects.

4. Landscape and Visual

Chapter 4: Landscape and Visual presents the Landscape and Visual Impact Assessment (LVIA) of the Proposed Scheme. It identifies potential effects upon landscape character and visual receptors that may arise as a result of the Proposed Scheme.

4.1 Baseline

Although there are no landscape designations within the Site itself, a Local Wildlife Site (LWS) is located adjacent to the north of the access road. There are also bands of ancient woodland within the environs of Dallars House. A Public Right of Way follows the access road.

Much of the Site is within Landscape Character Type (LCT) 66 (Agricultural Lowlands – Ayrshire) of the National Landscape Character Assessment, with the eastern part falling in LCT 68 (Lowland River Valleys – Ayrshire). Kilmarnock is the principal urban centre in the wider area, located approximately 1.6 km north of the Site. The Proposed Scheme is situated in undulating rural lowland considered to be small to medium in scale and scattered with farmsteads and residential properties such as Low Dallars House. The immediate landscape currently functions as agricultural land associated with Braeheadview Farm. Field boundaries formed of dense native hedgerows provide some screening of the Site from assessed viewpoints, as does vegetation associated with road and riparian corridors. Traditional post and wire fencing is also present between grazed fields, while pockets of native woodland scattered across the area add further screening of the substation.

The proximity of the A76, A719, B7073 and Kilmarnock Bypass limits the landscape's sense of tranquillity, as does the density of pylons and overhead lines which converge at the substation. Visual receptors were identified through desk study, production and analysis of a Zone of Theoretical Visibility (ZTV), fieldwork and consultation, resulting in eight viewpoints being selected for impact assessment.

4.2 Summary of Effects

Construction

During the construction phase, landscape changes would be generated by activities such as the introduction of contractor's compounds, storage areas, security fencing, signage, and the associated construction traffic movements which would be transient in nature. These would result in a temporary disruption to the character and tranquillity of the local landscape. The significance of the effect on landscape of the Proposed Scheme during its construction phase is anticipated to be moderate adverse.

The assessment has concluded that significant adverse effects (moderate or major) are likely on four of the assessed viewpoints during construction, owing to limited or a lack of sufficient intermittent screening.

Operation

The operational phase assessment was undertaken for the 15th year of operation, considering summer and winter, when any screening proposed as part of the Proposed Scheme's embedded mitigation will have reached a good level of maturity and vegetative cover will be at an optimum.

The Proposed Scheme is likely to include a range of impacts on landscape character, through the removal of characteristic elements – i.e. farmland – and the introduction of uncharacteristic elements that are incongruous in the context of the wider landscape character. However, these effects would be limited by the presence of existing electrical infrastructure associated with and including Kilmarnock South Substation.

Additionally, the immediate landscape character is broadly similar to the wider landscape. Therefore, although the loss of open farmland on the Site throughout the operational phase cannot be mitigated against, the wider landscape is capable of absorbing such loss as well as the alteration to its character. Any such effects are considered to be not significant.

Of the four viewpoints (VPs 1, 2, 7 and 8) considered to receive significant visual impacts during the Proposed Scheme's construction phase, only two (VPs 1 and 8) are anticipated to receive significant effects (moderate or major) during the Scheme's operation.

Decommissioning

Decommissioning would take place under a decommissioning environmental management plan (produced at the time of decommissioning). As such, a further ecological assessment will occur at this point, and decommissioning effects are considered to be similar to the above construction effects.

4.3 Mitigation

Principles of landscape-based measures incorporated into the design include:

- retaining and enhancing existing vegetation within the Site;
- complementing and reinforcing the special characteristics of the surrounding landscape in the study area;
- screening views of the Proposed Scheme from sensitive visual receptors and limiting and managing views from the wider landscape;
- restoring and strengthening existing landscape elements, including the reconnection of fragmented landscape elements; and
- diversifying the range of landscape elements within the Site.

Embedded mitigation measures have been developed within the following design elements of the Proposed Scheme:

- Screening – installing multiple staggered rows of mixed trees, shrubs and smaller plants;
- Security fencing – maintain security while allowing for an open atmosphere and a sense of unity and cohesion;

- Planting – using native planting to maintain locally distinctive types of vegetation, soften the created land form and lighting, and act as a deterrent to would-be intruders;
- Hedge mix – deploying an RSPB Approved Ultimate Bird Friendly bundle; and
- Swale Design – following good practice guidance.

Measures to mitigate landscape and visual effects during the construction phase would be implemented through a Construction Environmental Management Plan (CEMP), including but not limited to:

- ensuring that soil structures are protected where land would be used temporarily, such as in compounds, so that when it is returned to the current land use, it is in a suitable condition;
- Handling soils in accordance with the construction code of practice for the sustainable use of soils on constructions sites;
- ensuring that existing vegetation and other landscape features are protected and retained wherever possible;
- perimeter fencing, maintaining a tidy site;
- keeping all adjacent trees adequately protected by strong fencing, maintained throughout the length of the construction period;
- clearing vegetation outside the bird nesting season between March and August, and/or under guidance from an ecologist; and
- managing invasive species through vigilance, seeking the advice of a suitably qualified ecologist should an invasive species be discovered during construction.

5. Ecology

Chapter 5: Ecology reports the assessment of ecological effects associated with the Proposed Scheme. The assessment is based on desk-based studies and field surveys undertaken between June 2019 and July 2022.

5.1 Baseline

There is one local wildlife site (LWS) located within 1 km of the Site, Riccarton Moss (Crossbush). The southern boundary of the LWS is on the edge of the Site with a small area overlapping it which would be lost to road-widening for the access route. The LWS is described as being a small remnant of raised bog habitat that has been drained but is of some botanical value, and of ornithological interest when flooded.

Field surveys were carried out on 28-29 September 2021 and 14 June 2022 under dry and warm weather conditions. A Phase 1 habitat survey was carried out of the Site plus a 50 m buffer (the 'survey area') where safe access was possible.

The Site is dominated by agriculturally-improved fields separated by species-poor hedgerows. It also includes a stretch of the existing access track and the thin strips of vegetation, and hedgerows adjacent to it. An area of mixed plantation exists south-west of the main part of Site. There is one block of ancient semi-natural woodland in the search area, located, at its closest point, 910 m from the Site. Cessnock Water runs through the eastern portion of the survey area, outside of the Site boundary. A broadleaved semi-natural woodland immediately surrounding the Cessnock Water, directly adjacent to the area of private buildings in the north of the Study Area.

Due to the presence of watercourses and ditches along the periphery of part of the Site or beyond it, a detailed survey for otter and water vole was carried out in suitable habitat within 200 m of the Site, as far as access was possible. A single holt was identified within 200 m of the Site, approximately 55 m north of the proposed substation parking area, downslope and heavily screened by woodland.

Based on the desk study and field surveys, the following features have been included for further assessment:

- Riccarton Moss (Crossbush) LWS is of Low (County) importance.
- Hedgerows are of Negligible (Local) importance.
- Badgers are of Negligible (Local) importance.
- Bats are of Negligible (Local) importance.
- Otters are of Low (County) importance.
- Invasive non-native species

5.2 Summary of Effects

Construction

The southern edge of Riccarton Moss (Crossbush) LWS follows the existing access track, which will be expanded northwards, and is therefore very slightly within the Site. Habitats within this strip that will be directly impacted by the Proposed Scheme are species-poor intact hedgerow. The impact upon the other habitat of the LWS is considered to be of little ecological concern and the assessment of effects on this LWS has been determined as Neutral effect, considered Not Significant.

Losses to hedgerows along the proposed access track will be directly compensated by planting of more ecologically-valuable species-rich native hedgerow. Planting of native scrub and woodland around the BESS compound will both compensate for the loss of species-poor hedgerow within the BESS compound area and constitute a habitat enhancement. Due to the initial loss, there is considered to be a Negligible adverse effect, considered Not Significant.

There will be both permanent and temporary loss of hedgerow habitat that may be used by badger for commuting. There is the possibility of disturbance of foraging/commuting badgers if works take place around dusk or beyond (most likely in winter). However, most works will be in the day and there is no shortage of connected surrounding fields to forage in or commute through.

There are currently no known badger setts in or near the Site. The creation of the attenuation pond and sowing of grassland around it, with other parts of the Site periphery planted with trees or otherwise no longer under agricultural management, will likely counteract loss of pasture with foraging potential. Effects on badgers are considered to be Neutral, considered Not Significant.

There will be no direct impacts upon trees or buildings and so there can be no loss of potential roost sites for bats. Agricultural land does not constitute good bat foraging habitat, therefore loss of agriculturally-improved grassland land is insignificant for bats. The landscape proposed would constitute as much better bat foraging habitat than agriculturally-improved grassland. Effects on bats are considered to be Neutral, considered Not Significant.

The ditch and ditch banks just beyond the Site will be retained and no other possible otter habitat (such as other ditches/watercourses or standing waters) will be affected. Effects on otters are considered to be Neutral, considered Not Significant.

Japanese Knotweed is located approximately 30 m south of the west end of the proposed access track and will require removal during vegetation clearance works required as part of visibility splay works. This species is of particular concern as it can spread prolifically and is listed on Schedule 9 of the Wildlife and Countryside Act 1981. The accidental spread in particular of Japanese knotweed in the wild, if it occurred, would be of local concern and would represent a Minor adverse impact (Not Significant).

Operation

The Proposed Scheme will not produce airborne or waterborne operational emissions. Operational noise effects are not likely to effect ecological features due an insignificant degree of noise emissions released during operation.

Operation of the Proposed Scheme will involve standard maintenance activities within the secure perimeter. No permanent lighting is proposed except for motion-activated security lighting (that will be directed on to the BESS compound only and will almost always be unlit given that attendance to the BESS compound at night will be very rare) and will therefore have Negligible to

a Neutral effect (Not Significant) on nocturnal protected species including badger, bats and otter.

No operational impacts are likely and operational impacts have been excluded from further consideration.

Decommissioning

Decommissioning would take place under a Decommissioning Environmental Management Plan (produced at the time of decommissioning). As such a further ecological assessment will occur at this point, and decommissioning effects are considered to be similar to the above construction effects.

5.3 Mitigation

The Proposed Scheme has been located such that it primarily impacts agriculturally-improved pasture of low ecological value. The design of the site has avoided works close to Cessnock Water or the plantation woodland and ditch along the southern edge of the Site.

The Landscape and Visual Assessment outlines measures such as compensatory hedgerow planting and creation of other habitat on existing species-poor low value pasture, including native scrub and woodland planting. Hedgerow planting will comprise species-rich hedgerows and will thus result in an improvement over the existing species-poor hedgerows they replace.

An Ecological or Environmental Clerk of Works (ECoW) will be employed for the duration of the construction of the Proposed Scheme. The ECoW will advise on ecological and other environmental matters set out in the CEMP and visit the Site as necessary, to monitor implementation of ecological mitigation and compliance with nature conservation legislation.

In line with NatureScot guidance, pre-commencement surveys for protected species will be carried out by the ECoW or other qualified ecologist no more than three months before works commence (including facilitating works such as vegetation clearance), to check for any changes to the baseline conditions described in this EIAR.

A Construction Environment Management Plan (CEMP) will be prepared and submitted for approval by East Ayrshire Council, in consultation with NatureScot and the Scottish Environment Protection Agency (SEPA), where necessary, prior to commencement of construction. The CEMP will set out all environmental management measures and the roles and responsibilities of construction personnel.

A Biosecurity Management Plan (BMP), which will be prepared and implemented to avoid the spread of all invasive non-native species (INNS) in or near the Site.

6. Cultural Heritage

Chapter 6: Cultural Heritage reports the anticipated effects of the Proposed Scheme on cultural heritage assets. The assessment is based on desk-based studies and a site visit undertaken in March 2022.

Baseline

Designated Assets

The Category C listed Haining Mains is the only designated cultural heritage asset within the 1 km study area, approximately 700 m east of the Site. A further five listed buildings exist within the 2 km study area. The nearest scheduled monuments are Craigie Fort (SM4920) and Camp Castle (SM2177), both of which are approximately 3km to the south-west, while Carnell is the closest Garden and Designed Landscape some 2.2km to the south.

Non-Designated Assets

A total of nine non-designated heritage assets have been recorded with the study area, all of which date to the post-medieval period, with most linked to agriculture and the farmsteads that supported it. A further six assets were also recorded through a review of historic mapping and a review of LiDAR data. These are Braehead Farmstead (AECOM001), Boghouse Farmstead (AECOM002), three areas of ridge and furrow (AECOM003-AECOM005), and Low Dallars Farm (AECOM006).

Archaeological and Historical Background

Prehistoric (up to AD 77): There are no prehistoric assets recorded within the 1 km study area, with limited evidence for prehistoric activity in the wider area. The Ayrshire landscape shows some evidence of activity from the Mesolithic period onwards.

Roman (AD 77-400): There is a lack of recorded Roman period assets in the study area, with Roman military activity limited to the Ayrshire coastline west of the Site.

Medieval (AD 400-1500): Similarly, there are no recorded assets derived from the Medieval period within the study area. Kilmarnock was reportedly established in the 7th century, forming an important centre of settlement. The Site is located within the town's countryside, likely used for agriculture or left unimproved. The ruined farmstead of Haining Place east of the Site is suggested to have Medieval origins.

Post-Medieval (AD 1500-1900): 15 assets of this period have been recorded in the study area, mostly associated with agricultural land use as well as larger houses including Haining Mains and Dallars House. Kilmarnock remained economically important in this period, becoming more so with the introduction of the railways in the 19th century. There is little change between field and settlement patterns of this period and those of today, although efforts to better manage the watercourses of the area are evident in the intervening period.

Modern (AD 1901-present): There are no assets specifically associated with the Modern period within the study area, although some recorded post-medieval assets continued in use in the Modern period. The most notable change in the study area within the last half century has been the construction of Kilmarnock South substation and its associated electrical infrastructure west of the Site, expanded in the late 2010s.

Summary of Effects

Construction

There is the potential that unknown archaeological deposits within the Site could be uncovered during construction. Archaeological evaluation trenching will be required to provide more information on the archaeological potential of the Site, and this will be used to inform the development of a mitigation strategy that might include, but not be limited to, archaeological excavation and recording. The potential effect on previously unrecorded remains assumed to

be of low value is considered to be no more than Minor adverse (Not Significant).

Operation

During operation of the Proposed Scheme, there will be no additional physical impacts to below ground archaeological remains that could result in effects beyond those that have been assessed for construction impacts.

The following three designated and non-designated assets are those where it is considered that there is the potential for impact, and these are discussed further below. Some assets have shared settings and have been grouped for assessment.

- Dallars House Estate Category B listed buildings (LB18522) and Ayrshire Designed Landscape (53463);
- Low Dallars House (AECOM006); and
- Braehead Farmhouse (AECOM001).

The Dallars House Estate complex consists of four Category B listed buildings located within a locally listed Ayrshire Designed Landscape, situated approximately 1.6 km to the southeast of the Proposed Scheme. Views of the Proposed Scheme from Dallars House are predicted to be limited, while views of the Proposed Scheme from the woodland fringes of Ayrshire Designated Landscape surrounding the house will be very limited. The distance between the house and the Proposed Scheme means that the arable agricultural land that forms the wider setting of the property will be retained. As a result, the level of impact on both Dallars House Estate and Ayrshire Designated Landscape is considered Minor adverse (Not Significant).

Low Dallars House (AECOM006) is a non-designated farmhouse, located approximately 700m southeast of the Proposed Development. While there will be some views of the Proposed Scheme from the farmstead, the agricultural fields that surround the farmstead will remain unaltered, and therefore the setting of the farmstead within the agricultural landscape will remain. The level of impact is therefore considered Negligible (Not Significant).

Braehead Farmhouse (AECOM001) is located immediately adjacent to the northeast corner of the Proposed Development and is a non-designated farmhouse. While the Proposed Scheme will not be visible from the historic core of the farmstead, due to the modern agricultural buildings that surround it, the change in use of some of the surrounding fields from arable land will degrade the setting of farmhouse. As a result, the level of impact is considered to be Minor adverse (Not Significant).

Decommissioning

Decommissioning would take place under a Decommissioning Environmental Management Plan (produced at the time of decommissioning). The potential for discovering unrecorded archaeological remains on the Site will be determined within the construction phase and managed appropriately in accordance with legislation and best practice measures. As such, it is considered there would be no effects upon buried archaeology during the decommissioning phase.

Mitigation

Consultation withtheWest of Scotland Archaeology Service has confirmed that a mitigation strategy relating to cultural heritage will be developed post-determination.

Mitigation measures to reduce setting impacts during the operational phase includes landscape planting which includes heavily planted green corridors to the south and east of the Site.

Mitigation proposed as part of Chapter 4 Landscape and Visual includes the use of new planting around the Site to provide screening to limit the visual impact of the Proposed Scheme. This will reduce the visual appearance of the Proposed Scheme from heritage assets and their settings.

The Applicant is investigating the use of green coloured battery units which would further help blend the units into the surrounding landscape. This would reduce the visual impact of the Proposed Development from Low Dallars House (AECOM006). This mitigation will be considered within the next stage of the project, during detailed design works.

7. Noise and Vibration

Chapter 7: Noise and Vibration reports the potential noise and vibration impacts associated with the construction and operation of the Proposed Scheme. Due to the distances between sensitive receptors and the nature of the construction and operational noise, an assessment of vibration has been scoped out. Noise monitoring to inform the noise baseline conditions was undertaken on three nearby receptors, considered noise sensitive receptors.

7.1 Baseline

In order to define baseline noise conditions, continuous ambient noise measurements were undertaken between Friday 10th to Thursday 16th June 2022 at three noise sensitive receptors (NSR) locations.

The baseline noise environment is in general dominated by road traffic noise at the monitoring locations. In both the day-time and night-time existing ambient sound levels are similar at all receptors. The night-time levels are slighter lower, this is likely to be due to the reduction in distant road traffic numbers on the A76 and A77.

No Noise Important Areas (NIAs – those areas most exposed to noise) have been identified within 1 km of the Site.

7.2 Summary of Effects

Construction Noise

The construction of the Proposed Scheme will involve a range of activities and equipment. At this stage in the project design development, before the appointment of a construction contractor, site specific details regarding the construction activities, programme and numbers and types of construction plant cannot be definitively assessed. Therefore a qualitative assessment focussing on best practical means (BPM) and the most likely construction plant has been completed. This considers the potential for significant effects to occur based on the expected construction activities, distance and timings of the proposed works as well as the anticipated scale of each task.

Based upon the design of the Proposed Scheme, it is considered that the works associated with excavation and terracing of the land would result in the highest noise emissions. Construction noise levels may result in temporary, short-term adverse (not significant) effects at the worst affected NSRs.

Construction Traffic

The Proposed Scheme intends to utilize the existing farm access road, linked via Treeswoodhead Road/Sidewood Terrace, for construction access. During construction there would be additional vehicle movements from staff and delivery HGVs accessing the Site from the surrounding road network. Statistics were provided for both typical and peak construction vehicle flows, with peak flows extending over an 11-week duration.

After considering the outcome of the quantitative assessment, the temporary nature of the peak flows of construction vehicles and provided a Traffic Management Plan is implemented and agreed with the Local Authority, construction vehicle movements on public roads can be considered as having a Minor adverse effect or less (Not Significant).

Operational Noise

Operational acoustic modelling has been undertaken. The assessment has assumed the BESS site will be operational 24/7 and that operational plant will operate constantly at the provided sound power levels. These assumptions provided the basis for a robust and worst case quantitative assessment, but it is important to acknowledge this context becasue in practice BESS site are not typically noisy as cooling is required infrequently. The equipment is designed to operate in a range of climates and the need for cooling is dependent on the ambient temperature, it is unlikely that cooling at maximum load will be required frequently and even less so in the night-time.

The residual effects are not considered to be Significant at any of the key NSRs and therefore at any other NSR and no further mitigation is required.

Operational Traffic

At worst case there would be one vehicle attending site on a weekly basis for maintenance works. Therefore, an assessment on operational traffic noise effects has also been scoped out.

Decommissioning

Decommissioning would take place under a Decommissioning Environmental Management Plan (produced at the time of decommissioning). As such a further noise assessment will occur at this point, and decommissioning effects are considered to be similar to the above construction effects.

7.3 Mitigation

Construction

Significant increases in noise levels, especially during peak periods, are predicted for Treeswoodhead Road/Sidewood Terrace and the Site Farm Access Road. A Traffic Management Plan is recommended as part of the preparation of the CEMP and to be agreed with East Ayrshire Council. For example, the plan would:

- include a plan for appropriate communication with residents prior and during the works; and
- identify best practices to be observed to minimise the negative impacts of construction traffic noise, such as avoiding queuing, idling noise and maintaining good road surfaces near NSRs.

Operation

It is concluded that mitigation would not be required to achieve operational sound level criteria at the assessed NSRs. Though it is worth noting that the blast walls on the transformers do act as sound level reducing barriers.

8. Water Environment

Chapter 8: Water Environment reports the assessment of effects on water resources and flood risk as a result of the construction and operation of the Proposed Scheme. The assessment of potential effects on the water environment includes consideration of changes to surface water and groundwater level/flow, quality and resources, hydrology, fluvial geomorphology, and flood risk. In undertaking this assessment, consideration is also given to where changes or alteration to surface and groundwater hydrology (level and flow pattern) and quality may impact dependent habitats. This assessment was informed by desk-based research and a site visit.

8.1 Baseline

The Site is characterised by a consistent gradient from northwest to southeast towards Cessnock Water. The Site is located on the southern side of the Irvine River valley. The study area is contained within one Water Framework Directive (WFD) water body catchment; Cessnock Water (Scottish waterbody ID 10937) which is part of the River Irvine Catchment of the Scotland River Basin District Management Plan. Cessnock Water and the following tributaries are present within the study area:

- Cessnock Water – a WFD designated watercourse, just to the east of the Proposed Scheme.
- Muggersland Burn – an ordinary watercourse, running adjacent to the southeast edge of the Proposed Scheme. Muggersland Burn joins Cessnock Water at the Northeast tip of the Site.
- Unnamed Tributary of Cessnock Water – an ordinary watercourse sited to the north of the access road to the Site of the Proposed Scheme.

The Site is underlain by bedrock of the Upper Limestone Formation, overlain by glacial till. The majority of the catchment is on faulted Carboniferous-Devonian Sandstone bedrock overlain by glacial till with alluvium along the river corridor.

There are no identified Public Water Supply (PWS) abstractions, therefore, no PWS risk assessment is required for the Proposed Scheme.

Fluvial flooding is described as exceedance of river capacity, leading to overtopping of the riverbanks. The Site is located immediately adjacent to the Cessnock Water, and areas which may be at risk of fluvial flooding.

A site walkover was undertaken on 23rd March 2023 by a water scientist in dry conditions (although wet in the run up to the Site visit). The walkover focused on confirming the location of surface water features in the study area, observing their current character and condition, the presence of existing risks (including an electrical sub-station in the study area), and any potential pathways for construction, operational and decommissioning impacts from the Proposed Scheme.

8.2 Summary of Effects

Construction

There is potential for adverse impacts on surface water quality of Muggersland Burn and Cessnock Water from construction site runoff during construction as they are located adjacent to the Site and would receive surface water runoff from the Site. With the requirement for a CEMP to be in place to mitigate risks to water quality, it is considered the resultant effect would be not significant.

It is anticipated that there would be no significant effects on hydromorphology of Muggersland Burn and Cessnock Water.

The groundwater receptors identified as potentially at risk from the Proposed Scheme are the groundwater baseflow which feeds into Muggersland Burn and Cessnock Water. The construction of the underground surface water drainage infrastructure would be elements of the design which require excavation into the underlying ground. In this area groundwater is anticipated to discharge to Muggersland Burn and Cessnock Water. No significant effects on baseflow within Muggersland Burn and Cessnock Water are anticipated.

The majority of the construction will take place outside of areas at risk of fluvial flooding. The Proposed Scheme's Flood Risk Assessment (FRA) confirms there is no risk on the Site from other sources of flooding. Based on the management measures to be included within the CEMP, and the majority of the construction not being within areas at risk of flooding, it is considered there would be no significant effects on flood risk.

Operation

The operation of the Site will take place under the management procedures within an Outline Environmental Management Plan (OEMP), which will include maintenance intervals for the attenuation pond and the inspection and emptying of the oily water drainage system. Consequentially, it is considered there would be no significant effects on surface water quality of Muggersland Burn and Cessnock Water.

With regard to the construction of a new outfall to Muggersland Burn, the design of the outfall would minimise hydromorphological impact and will be micro sited at detailed design stage to minimise loss of bank habitat, minimise potential for scour, and avoid dead spaces with sedimentation and vegetation blockage during operation. It is anticipated that there would be no significant on hydromorphology of Muggersland Burn.

The drainage from the Site is directed to surface water. Rainfall on the Site, including sealed contained units, access roads, transformer compound, would be directed through the surface water drainage system. As such, there are no discharges to ground, with the exception of infiltration to permeable areas, which is unchanged from the existing situation. Therefore, it is considered there would be no significant effects on groundwater.

The FRA demonstrates through hydraulic modelling the Site is not at fluvial flood risk from Cessnock Water for the 1 in 200 year plus climate change event. There are no risks from other sources of flooding.

Decommissioning

Decommissioning would take place under a ?Decommissioning Environmental Management Plan (produced at the time of decommissioning). As such a further assessment on the water environment will occur at this point, and decommissioning effects are considered to be similar to the above construction effects.

8.3 Mitigation

Construction

During construction, all works would be carried out in accordance with a Construction Environmental Management Pan (CEMP). There will be a requirement that it contains suitable management and mitigation measures to minimise risks to the receiving water environment. The implementation of standard implementation measures would help avoid or reduce any potential adverse effects on surface water quality impacts during construction.

The CEMP will ensure provisions within the Water Environment (Controlled Activities) (Scotland) Amendment Regulations 2021, more commonly known as the Controlled Activity Regulations (CAR), are adhered to. This covers items such as abstraction, aquaculture, engineering, groundwater, impoundment, pollution control, discharge, culverting and watercourse diversion.

Prior to operation the Proposed Scheme will require the appropriate CAR permits to be in place and this is expected to include new, as well as potential updates to existing, permits.

Operation

An open ditch for outfall from the attenuation pond to Muggersland Burn would have no headwall construction or scour protection. The siting and design of the outfall into Muggersland Burn should be undertaken with advice from a specialist and suitably qualified hydromorphologist and ecologist.

9. Traffic and Transport

Chapter 9: Traffic and transport assessment identifies and assesses the potential traffic and transport effects on receptors. This assessment was informed by desk-based research, a site visit and speed traffic surveys.

9.1 Baseline

Sidehead Terrace / Treeswoodhead Road is a country road which runs east to west to the south of the Site. The route connects to Kilmarnock in the west and the A719 in the east. It provides access to the Farm Access Road from which the Proposed Scheme Site is accessed. Sidehead Terrace / Treeswoodhead Road is a National Speed Limit road of 60mph. However, speed surveys indicate the average speed on this road is approximately 31mph.

The A76 runs north west to south east to the north of the Site and connects Kilmarnock in Ayrshire to Dumfries to the south east via the nearby towns of Mauchline and Cumnock. It is a single carriageway road with a National Speed Limit of 60mph as it routes to the north of the Site.

The A719 runs north to south to the east of the Site between Galston and the A77 to the east of Prestwick. It is a National Speed Limit 60mph single carriageway road which connects to the A76 at a roundabout junction and Sidehead Terrace to the south east of the Site via a priority junction.

The A77 is a key north to south trunk road in the region which connects Glasgow to the Ayrshire region and onwards, terminating in Stranraer, Dumfries and Galloway. The route is a dual carriageway between Glasgow and Ayr, reducing to single carriageway between the Whitletts Roundabout and Holmston Roundabout in Ayr.

A site visit was undertaken on 13th July 2022. The access routes considered included a route through the existing Kilmarnock South Substation, a route along the adjacent farm access road or a new route through surrounding fields.

Traffic surveys were undertaken between the 24th April 2023 and 7th May 2023. The traffic surveys took the form of automatic traffic counts (ATC) which

were taken at five different locations within the study area. The traffic surveys undertaken in proximity of the Site have indicated that the average speeds of vehicles along Sidehead Terrace / Treeswoodhead Road are significantly below the speed limit.

9.2 Summary of Effects

Construction

Information regarding the likely number and types of vehicular trips that will be necessary to construct the Proposed Scheme has been provided by the Applicant and is based on the estimated material quantities required and the number of workers estimated to be required on Site throughout the construction period.

For those links within the study area (Sidehead Terrace / Treeswoodhead Road; A76; A719 and A77) where assessment was required, the following impacts have been specifically assessed, as follows:

- HGV Construction Traffic
- Severance
- Fear and intimidation
- Accidents and road safety
- Pedestrian / cyclist delay
- Driver delay
- Hazardous loads

On the above impacts listed above, with the implementation of a CEMP and Travel Plan, there are considered to be no significant effects on Sidehead Terrace / Treeswoodhead Road; A76; A719 and A77.

Operation

Once in operation, it is anticipated that the Site would require maintenance which would amount to 1 weekly vehicular trip by LGV as a worst case. It is considered that these trips would have a negligible impact on the surrounding road network. In terms of potential annual shutdowns for maintenance, the vehicular movements to the Site would depend on the nature of the maintenance required, but it is considered that these movements would also have a negligible impact on the surrounding road network as it is likely to consist of a small number of LGV movements or potentially an HGV if replacement parts are required. Therefore, an assessment on operational vehicles has been scoped out.

Decommissioning

The decommissioning of the Proposed Scheme would take place under a Decommissioning Environmental Management Plan. As such a further assessment on the water environment will occur at this point, and decommissioning effects are considered to be similar to the above construction effects.

9.3 Mitigation

Construction

During construction, all works would be carried out in accordance with a Construction Environmental Management Pan (CEMP). The CEMP would detail measures to be undertaken during construction to mitigate temporary effects relating to traffic and transport.

A Construction Workers Travel Plan for the Site could be introduced in order to encourage sustainable travel to the Proposed Scheme. The Travel Plan would include measures such as encouragement of car sharing and public transport usage, better marketing of information and implementation of a Travel Plan Co-ordinator. Where appropriate, a shuttle bus to transport workers to key interchange locations could be introduced.

10. Combined and Cumulative Effects

Chapter 10: Combined and Cumulative Effects considers the combined effects within the Proposed Scheme, as well as the Scheme's cumulative effects with another development within 1 km of the Site.

Combined effects arise from the accumulation or interaction of different effects associated with the Proposed Scheme, at a specific location, or upon a specific sensitive receptor. For example, construction noise and visual intrusion affecting a single receptor. Individually, these may not be significant, but the accumulation of different effects may give rise to an overall significant effect.

Cumulative effects arise as a result of the combination of activities associated with the Proposed Scheme, together with the activities associated with other developments in the vicinity of the Site. For example, impacts caused by the Proposed Scheme may be exacerbated by the activities of other developments nearby, or non-significant individual effects on the same receptor or resource collectively may give rise to an overall significant effect.

10.1 Baseline

Combined effects

There are three residential receptors considered to have the potential for combined effects, as these receptors are assessed under both the Landscape and Visual Assessment and Noise Impact Assessment. These include:

- Receptor 1 – Residential Property Braehead View
- Receptor 2 – Residential Property Midton of Balgray
- Receptor 3 – Residential Property Pen-y-Dale

Cumulative effects

One other development within a 1 km radius of the Proposed Scheme, submitted to the Energy Consents Unit (ECU) and East Ayrshire Council (EAC) within the last five years (June 2018 – June 2023) was considered within the cumulative effects assessment.

The other development is a BESS with maximum installed capacity of 300 MW, located 275m south west of the Proposed. The ECU planning reference for this one other development is ECU00003435 and EAC reference 22/0002/S36

10.2 Summary of Effects

Combined Effects

A combined effects assessment was undertaken which considered the potential for effects, for example dust, noise and visual effects to act in combination and affect the same receptor. Three receptors (residential property Braehead View, Midton of Balgay and Pen y Dale) have the potential to experience combined effects as a result of visual effects and noise emissions. With appropriate mitigation no significant combined effects were identified for all receptors.

Cumulative Effects

An assessment was undertaken considering the potential for cumulative effects to occur in combination with other developments. This included consideration of a 300 MW BESS located approximately 275 m south of the Proposed Scheme (Planning application references include energy consents unit: ECU00003435 and East Ayrshire Council: 22/0002/S36.

Technical teams undertook a cumulative effects assessment against this other development. During construction the assessment concluded significant adverse cumulative effects on the following:

- Visual effects on receptors at Viewpoint 1;
- Visual effects on receptors at Viewpoint 2;

- Visual effects on receptors at Viewpoint 7; and
- Visual effects on receptors at Viewpoint 8

During operation, the assessment concluded no significant adverse cumulative effect.

10.3 Mitigation

No additional mitigation is proposed above that which is already proposed in Chapters 4-9 of this EIAR.

11. Other Matters

Chapter 11: Other Matters provides an assessment of topics of the Proposed Scheme identified in the Screening Opinion as likely to have an impact that is not significant. This chapter provides justification for the de-scoping and exclusion of EIA topics discussed in the Screening Opinion.

11.1 Air Quality

Air Quality was scoped out as the Proposed Scheme would not produce any airborne emissions during its operational phase, while those emitted during the construction and decommissioning phases would not breach established air quality standards, owing to mitigation measures. Furthermore, the Site is not located within an Air Quality Management Area, and the nearest residential receptors sensitive to air quality changes are situated more than 1 km from the Site.

11.2 Agriculture and Soils

The Proposed Scheme is located on land not regarded as Prime Agricultural Land; it is therefore described as being capable of only average production. The Site is not located within an area identified as having potential for peat. The worst-case scenario would see a change of approximately 9 hectares of agricultural land to hardstanding. This is considered a small scale impact on a resource abundant throughout East Ayrshire. As such agriculture and soils were scoped out.

11.3 Arboriculture

The nearest Tree Preservation Order is located approximately 1.7 km north east of the Site. No tree clearance would be required as part of the Proposed Scheme. The closest tree line from the Proposed Scheme is located adjacent the eastern boundary of the access track. The access track would only be widened on the western side of the access track. During construction it is recommended an arboricultural method statement is undertaken and if required,

a buffer zone around the trees will be employed to ensure no potential of effects upon these trees. Following this, the second nearest tree line is located 30 m east of the Proposed Scheme. It is considered there is no potential for adverse effects upon trees and as such an arboricultural assessment has been scoped out.

11.4 Population and Human Health

At the peak of the Proposed Scheme's construction phase, employment would be provided for approximately 30 people per day, while limited employment would be provided during the operational phase. Such low levels of additional employment are not considered to be significant. There is not anticipated to be any significant impacts on local businesses. Any potential human health impacts would be limited to construction workers and mitigated by use of standard HSE best practice measures, while there would be no effects on the health of residential receptors. The topic was therefore scoped out.

11.5 Major Accidents and Disasters

Potential major accidents and disasters which could arise include physical accidents, spills, fire or explosion, hostility, flooding, utility-related incidents, and adverse weather. During construction best practice measures will be followed and a CEMP will be in place to manage risks on site and measures planned in the event an accident does arise. The Proposed Scheme has been carefully designed to account for the risk of fire and explosions. BESS facilities and associated infrastructure are designed to withstand extreme weather conditions. All areas of hardstanding and infrastructure are located outside the area of flood risk. The Applicant takes safety and security very seriously and will work closely with the policy and security services when designing equipment and security measures.

The Applicant will apply a comprehensive risk management framework to reduce risks to as low as reasonably practicable and ensure that there are no significant effects throughout the lifecycle of the Proposed Scheme. The risk of these major accident and disaster events are considered low, and not significant.

11.6 Material Assets and Waste

Any waste soil material produced during the construction phase of the Proposed Scheme would be reduced through its re-use for cut and fill. The deployment of good construction management practices, following the requirements of waste regulations, will serve to minimise other waste as far as possible, as well as ensure any required storage, transport and disposal of waste has no significant environmental effects. Toilets will be self-contained and removed from the Site for disposal by certified contractors at the end of construction. At the end of the Proposed Scheme's lifecyle, a Decommissioning Environmental Management Plan would be prepared setting out the appropriate disposal of elements, in accordance with the prevailing regulatory and policy regime at that time. Material Assets and Waste were consequently scoped out of this EIA.

11.7 Climate Change

BESS technology is designed to withstand extreme climatic conditions and the Proposed Scheme has been designed so that all areas of hardstanding are outside the flood zone. The Proposed Scheme is therefore considered to be not susceptible to the effects of climate change.

The Proposed Scheme's lack of significant air quality effects means it is not anticipated to contribute to atmospheric climate change. The majority of its airborne emissions would be temporary, limited to its construction and decommissioning phases.

The variable nature of renewable energy resources means that storing energy such as BESS play a key role in mitigating climate change. The Proposed Scheme inherently promotes cutting greenhouse gasses and reducing climate change through supporting the transition to clean energy.

12. Summary of Residual Effects

Chapter 12: Summary of Residual Effects reports the likely significant effects of the Proposed Scheme, following implementation of the mitigation measures described in the EIAR.

Several measures to manage and mitigate the environmental effects of the construction and operational phases of the Proposed Scheme have been identified in Chapters 4 to 9 of this EIAR.

Some of the residual effects identified in the EIAR are beneficial, namely changes to the foraging and commuting habitat of bats and removal of invasive, non-native plant species.

The vast majority of assessments considered their identified residual effects to be not significant (i.e. negligible or minor), with the exception of the visual and cumulative effects assessment.

During construction the visual and cumulative effects assessment considered the following would experience significant effects:

- Receptors at Viewpoint 1;
- Receptors at Viewpoint 2;
- Receptors at Viewpoint 7; and
- Receptors at Viewpoint 8.

During operation the visual effects assessment considered the following would experience significant effects:

- Receptors at Viewpoint 1; and
- Receptors at Viewpoint 8.

During operation no significant cumulative effects are predicted.

13. Next Steps

The Applicant is seeking s36 energy consent for the Proposed Scheme under Section 36 of the Electricity Act 1989, as amended, from the Energy Consents Unit (ECU) of the Scottish Government, as well as a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 that planning permission for the Scheme be deemed to be granted.

If permission is granted, the Proposed Scheme will be constructed between March 2025 and April 2027. The Applicant expects that the ECU when granting s36 consent will impose conditions on both the s36 consent and the deemed planning permission requiring a number of documents to be prepared to address issues raised by the EIAR. It is recommended during the construction phase a CEMP, Biosecurity Management Plan, pre-commencement survey for protected species to be carried out by the ECoW and CTMP will be prepared.

All of the application documents, including the EIAR, are published on the ECU website. This is available at: www.energyconsents.scot.

The EIAR is available to view in print at the following address:

East Ayrshire Council Care at Home
The Johnnie Walker Bond
15 Strand Street
Kilmarnock
KA1 1HU

Any representations to the application may be submitted via the Energy Consents Unit website at: www.energyconsents.scot/Register.aspx; by email to the Scottish Government, Energy Consents Unit mailbox at: representations@gov.scot; or by post to the Scottish Government, Energy Consents Unit, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU, identifying the proposal and specifying the grounds for representation.

Comments made via email or post should be dated, stating the name in block capitals and the full return email and postal address of those making the comments. All representations should be received by 17th November, although Ministers may consider any received beyond this date.

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