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NORTHERN LITHIUM LIMITED

APPLICATION AND PLANNING STATEMENT

CONTINUED EXPLORATION AT LUDWELL FARM, EASTGATE, COUNTY DURHAM

TO DEVELOP THE ABSTRACTION AND RE-INJECTION OF GROUNDWATER FOR THE EXTRACTION AND PROCESSING OF LITHIUM AT A PILOT SCALE

NOVEMBER 2022

wardell armstrong

Wardell Armstrong LLP
City Quadrant, 11 Waterloo Square, Newcastle upon Tyne, NE1 4DP, United Kingdom
Telephone: +44 (0)191 232 0943 www.wardell-armstrong.com

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NOVEMBER 2022

PREPARED BY:

Glen Shah Associate Director [redacted]

REVIEWED AND APPROVED BY:

Nicholas Beale Technical Director [redacted]

CONTENTS

TABLES

IMAGES

APPENDICES

DRAWINGS/FIGURES

1 INTRODUCTION

1.1.1 This application seeks permission for exploration, monitoring appraisal and development of a pilot scale, field development scheme for the extraction of lithium from underground saline brines for a temporary period comprising five years of operation and five years of periodic monitoring at Ludwell Farm, Eastgate, County Durham.

1.1.2 The applicant is Northern Lithium Limited (NLi), a private UK company based in Wolsingham, County Durham. It was established in 2017 to develop lithium extraction from geothermal hot saline brines, initially focused on Weardale. The directors, major shareholders and advisors have substantial expertise in the fields of mining and mineral extraction, sustainable project development experience, fundraising capabilities and a strong knowledge of the local area.

1.1.3 The agent is Wardell Armstrong LLP, a multi-disciplinary engineering and environmental consultancy with 185 years of experience advising landowners and developers in the mining and minerals industries across the UK and internationally, and with a substantial presence in these sectors in the North East of England.

1.1.4 An initial exploration borehole has been drilled at Ludwell Farm under permitted development rights. In addition to demonstrating that the exploration process can be managed in an exemplary manner, with minimal environmental impact and no negative reactions from the local community, the first exploration borehole has provided sufficient data on geology and hydrology to justify a second exploration borehole also located at Ludwell. Exploration drilling for this second well commenced in September 2022 and is currently ongoing. This second borehole also benefits from permitted development rights.

1.1.5 This application seeks to move the whole scheme beyond exploration to a point where the commerciality of full production can be tested. The scheme involves the development of up to four further boreholes on site as well as the continued use of the two permitted boreholes for monitoring, testing and similar range of exploration and development activities. A further application will provide the details that would be required to support commercial operations at Ludwell, based on the proof of concept achieved by further monitoring and testing.

1.2 Overview and opportunity

1.2.1 Northern Lithium Ltd. has identified a strategic opportunity to establish a new mineral extraction business in the north east of England potentially capable of delivering 10,000 tonnes of battery grade lithium carbonate equivalent (LCE) per annum, within the next five to eight years.

1.2.2 If successful, the company will provide an essential supply of lithium to support large scale lithium-ion battery manufacturing at gigafactories in the North East and across the UK, helping to supply the forecasted significant increase in the UK's lithium demands to 75,000 tonnes per

year by 2035[1] (and it is anticipated that this figure will increase sooner than 2035). Lithium demand is being accelerated by the UK government's focus on ensuring a secure and sustainable supply of lithium to underpin a strong EV battery and vehicle manufacturing industry.

1.2.3 The successful outcome from this application, if consented, could ultimately help establish Weardale and the North East as a new centre of lithium production, lithium-ion battery and electric vehicle manufacturing using locally sourced raw materials. This will capitalise on plans to establish and expand, lithium-ion battery manufacturing in the North East, as well as recent announcements that could see the UK's first Lithium Hydroxide Processing Facility and a further gigafactory being established on Teesside. The company's primary customer base will be the UK electric vehicle (EV) sector and it is intended that discussions will be held with manufacturers regarding the viable local market for battery-grade lithium produced in Weardale.

1.2.4 Assuming this scheme is a success, Nli will bring investment into the North East and provide direct employment opportunities in the area as well as support further jobs. Where possible and appropriate, the company engages local advisers, contractors and businesses within its own supply chains and seeks to employ local people where possible. Based upon early indications, if successful in getting to full scale production of lithium, it is anticipated that 60-80 full and part time jobs could be brought to County Durham.

1.2.5 The importance of the scheme regionally can be seen by the level of local backing and support to date, including recently being classified as a key Development Project for the region by the North East Local Enterprise Partnership (LEP).

1.3 The importance of lithium

1.3.1 Climate change is widely regarded as being the most significant long-term challenges facing the world, today. The cause of climate change is a rise in the concentration of greenhouse gasses in the atmosphere, a major contributor being the use of fossil fuels in transport. The development of renewable and low carbon energy technologies is an essential component of the Government's approach to combating climate change, as set out in the UK Renewable Energy Strategy 2009 and the 2020 Policy Paper: The Ten Point Plan for a Green Industrial Revolution[2]. The use of electric vehicles offers a sustainable means of low-carbon renewable energy that can be used locally, thereby supporting a low carbon future for the region.

1.3.2 Lithium is a critical component of lithium-ion batteries, which are used to power a multitude of everyday electronic devices, including electric vehicles and renewable energy storage devices. Lithium was added to Europe's Critical Raw Materials (CRM) list for the first time in

[1] The Faraday Institution - Powering Britain's Battery Revolution: https://www.faraday.ac.uk/.

[2] Following the Paris Agreement, which is a legally binding international treaty on climate change that was adopted by 196 parties at COP (Conference of the Parties) 21 in Paris in December 2015 and entered into force in November 2016. Link: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement.

2020 and to the UK's first ever Critical Minerals Strategy (CMS) in 2022. The UK Government has defined lithium as being of strategic importance to the country and stressed the importance of prioritising the development of a domestic supply through UK-based extraction and production; thereby 'bolstering energy security and domestic industrial resilience' by reducing the existing reliance upon imports from oversees supply markets. A domestic supply would also serve to reduce the associated carbon footprint linked to oversees importation.

1.3.3 In its 2022 policy paper 'Resilience for the Future: The UK's critical minerals strategy', the UK government states that the UK's automotive and electric vehicle battery ecosystem has the potential to grow by 100,000 jobs by 2040, but that this is reliant upon the development of a UK battery manufacturing capability. With the development of the gigaplant in Blyth, developments at the International Advanced Manufacturing Park (IAMP) venture located in Sunderland and the expansion of battery production at the existing Nissan car manufacturing facility in Washington, the proposed development provides an exciting opportunity to for the North East region to become a leading economic hub promoting low-carbon renewable energy development.

1.3.4 Recent market forecasts suggest global EV adoption rates increasing from 4% currently to 20% by 2025 and 50% in 2030, growing from just over 3 million vehicles in 2020 to 46 million by 2030. Lithium-ion battery demand is expected to increase over 30-fold to 3,860 GWh by 2035 and overall lithium demand to rise 6-fold from circa 400 kt in 2021 through to circa 2,500 kt in 2035, by which time batteries will account for over circa 95% of demand (from the current 50%, now).

1.3.5 Overall, forecasts suggest that global production of lithium will need to increase five-fold between today and 2035.

1.3.6 Supporting the UK's battery and car manufacturing bases to accelerate the transition to Evs, as well as transforming the UK's national infrastructure to support Evs, is one of the key elements of the UK Government's 10 Point Plan for a Green Industrial Revolution. The Government's Net Zero Strategy: Build Back Greener, published in October 2021, committed an extra £350m to help the automotive supply chain move to electric and £620m in grants for electric vehicles and street charging points. A secure and sustainable domestic supply of lithium is vital to the industrial strategy of the UK as it moves towards net zero by 2050.

1.3.7 New, more local sources of lithium need to be developed to access to the projected levels of lithium required by the UK EV manufacturing industry, particularly given the majority of lithium produced today comes from China, South America and Australia. The UK Government has defined lithium as a critical mineral of strategic importance to the country and is concerned about the potential impact of relying on imports of key raw materials as well as the lengthy supply chains and associated carbon footprint to import lithium from existing supply chain markets. The Covid-19 pandemic and current happenings in Ukraine have highlighted

further the need to diversify and regionalise supply chains and therefore prioritise the development of a domestic supply of lithium for the UK.

1.4 Establishing the presence of lithium

1.4.1 Weardale in County Durham is located in the Northern Pennine Orefield and has a long history of mining fissure veins that contained lead, silver and fluorspar. Historic mining has occurred in the sedimentary beds that overlie an igneous body, the Weardale Granite. Past exploration of this granite has shown that the saline fluids associated with it contain potentially economic concentrations of lithium.

1.4.2 The presence of lithium in saline brines in the Weardale Granite was established through the chemical analysis of local mine waters in 1988. Commencing in May 2022, Nli has drilled one exploration borehole at Ludwell Farm to a depth of circa 750m to obtain further geology and hydrology information to build on the 1988 information. This has proved sufficiently beneficial to justify the drilling of a second borehole onsite, which began in September 2022.

1.4.3 The first borehole was drilled under permitted development rights granted in March 2022 under planning reference DM/21/03151/PNME. Drilling was undertaken between May and August 2022 using a mobile drill rig as shown, below.

Image 1. The first exploration borehole

1.4.4 The borehole itself is of a narrow diameter, no more than 50cm in width at the surface, decreasing to approximately 15cm at c300m below ground level. The borehole is cased in steel to the top of the granite to ensure any groundwaters in the overlying limestone and whinstone have no ability to intermix with any saline brines from the underlying granite.

1.4.5 The location of the first borehole and its location in the wider valley setting is shown in the image, below.

Image 2. The valley setting

1.4.6 The cores extracted from the borehole are providing a detailed understanding of the underlying geology.

Image 3. Cores from the first exploration borehole

1.4.7 Various tests have been undertaken at this exploration borehole, including pump tests, to assess the volume, flow rates and chemical profile of the saline brines. These are extracted in small volumes and stored in intermediate bulk containers (IBCs) as shown, below. The fluids have been taken off-site for testing and storage. The intention of the next phase of development at the site will be to reinject the waters after the tests have been completed back down a steel-lined borehole, thereby creating a completely closed-loop system, all under the purview of the Environment Agency who have granted a Groundwater Investigation Consent for this activity.

Image 4. Intermediate bulk containers

1.4.8 The drill rig has now been moved to the location for the second borehole and drilling commenced in a similar manner in September. This is likely to take approximately four months. A similar programme of testing will be undertaken. The location of this borehole has been determined using a wide variety of forecast techniques, to select an optimum site further along the same vein (the Slitt Vein) for potential groundwater flows.

1.4.9 This second borehole is also being drilled under permitted development granted in August 2022, reference DM/22/01784/PNME. The location is shown, below.

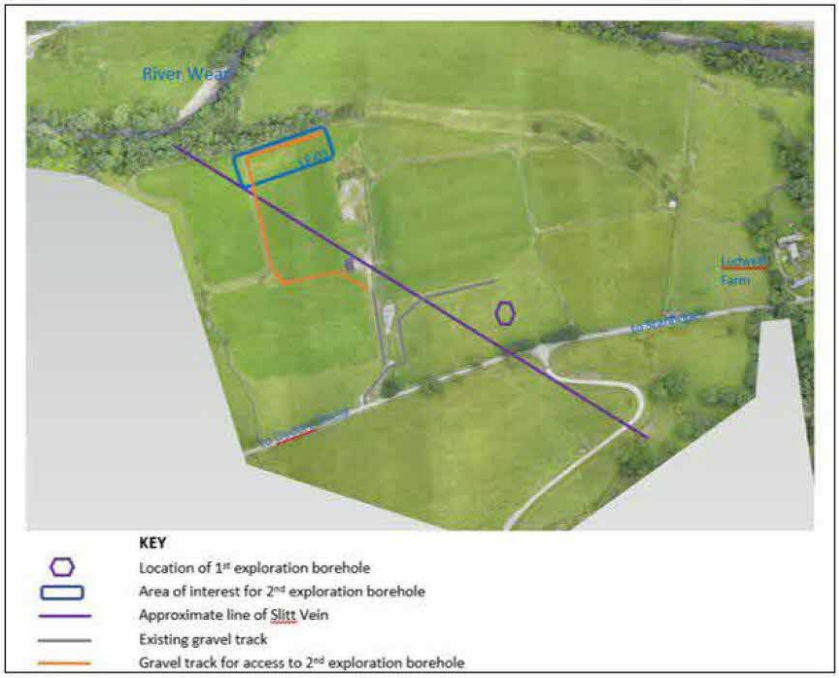

Image 5. The location of the second exploration borehole

1.4.10 Included as part of both part exploration boreholes was the creation of a gravel access track (both installed under an archaeological watching brief) and fenced compound area. Upon cessation of drilling activities approved under permitted development, the boreholes,

compound areas and gravel tracks are to remain in situ and are to be integrated into the planning application for the proposed development.

1.5 The process of extracting lithium

1.5.1 In recent years, a number of companies in Cornwall, the USA, France and Germany have sought to exploit lithium and other mineral extraction from saline fluids and progress in this area has been helped by the development of new Direct Lithium Extraction (DLE) technology, helping reduce costs and environmental footprint of lithium production when compared to the outputs from traditional sources like Chilean and Argentinean salars.

1.5.2 A future, schematic lithium production site in Weardale could look like the diagram, below.

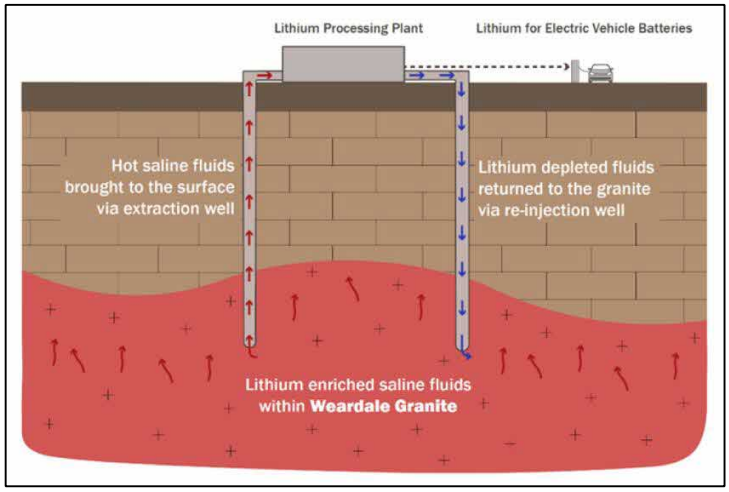

Image 6. A schematic representation of potential lithium extraction

1.5.3 Each production site would likely comprise lined wells drilled down into the granite comprising extraction wells and re-injection wells, with a DLE processing facility to extract the lithium. The wells will be lined to keep saline fluids out of the overlying geology. Saline fluids will be allowed to flow out of the extraction well, passed through a DLE processing plant to extract the lithium and the lithium depleted fluids allowed to flow back into the granite via the re-injection well. The overall extraction process will be designed to be as closed loop as possible, whilst also ensuring minimal environmental impact.

1.5.4 It should be noted that commercial techniques of DLE processing are at an early stage of development. This proposed pilot phase application will give Nli the opportunity to support and test various technologies, mainly mechanical, filtration and ion-exchange processes that are already available or at an advanced stage of development. A specific extraction process will be required to be developed to match the physical and chemical characteristics of the Weardale hot saline brines.

1.5.5 The scale of commercial processing will be designed as part of this pilot phase application.

2 PROPOSED DEVELOPMENT

2.1 Development components

2.1.1 The development would comprise

- Continued exploration for groundwater at Ludwell Farm, from up to six boreholes (two of which have been constructed under permitted development);
- The abstraction of groundwater from the boreholes for the purpose of analysis and to develop a direct lithium extraction process at a pilot scale (for which the processing plant would be off-site);
- The reinjection of groundwater within one of the boreholes;
- The transfer of groundwater off-site for processing by water tanker, and the return of groundwater to the site for reinjection. The average number of tankers accessing the site would be two per day. All other heavy goods traffic would be minimal; and
- The maintenance and further construction of tracks to access each of the boreholes.

2.1.2 The application boundary is shown in Figure 2A. The location of the compound areas is shown in Figure 2B. The areas already permitted for exploration are shown on Figure 2C.

2.1.3 The development would be for a temporary period of five years of exploration and operation and five years of periodic monitoring.

2.1.4 The development would enable the further appraisal of two exploration boreholes, already drilled within the site, together with up to four additional exploration boreholes in order to determine the abstraction and reinjection of groundwater (brine containing lithium) at Ludwell Farm. The abstracted water would be used to develop the processing for the extraction of lithium to a grade suitable for battery production (by others). The processing required to extract and produce lithium suitable for battery grade would be undertaken offsite.

2.1.5 The benefits of the proposal would be to:

- Demonstrate that the supply of lithium as a critical mineral can be achieved by abstraction of groundwaters from the granite located in Weardale;
- Enable a detailed appraisal of this pilot scale development of the process; and
- Demonstrate scale-up of lithium production at a commercial scale.

2.1.6 The proposed development is a small-scale development, with an overall footprint of 0.91 hectare (ha). The proposed redline boundary is shown at Figure 2, with a breakdown of the redline detailed within Table 1, below. For ease of reference, a close-up of Figure 2 is also shown (see image 7).

Table 1: Redline Boundary – Area Breakdown	
Existing temporary gravel access track(s)*	0.2907 ha
Existing temporary compound area(s)*	0.1332 ha
Proposed temporary gravel access track(s)	0.0894 ha
Proposed temporary compound area(s)	0.3977 ha
Total	0.9110 ha
* Created in 2022 under Permitted Development rights (planning ref. no. DM/21/03151/PNME and DM/22/01784/PNME).	

Image 7. Proposed site layout.

2.1.7 The proposed development will comprise two phases. The first phase will extend for a period of five years and will include both construction (i.e. drilling) and testing of the boreholes (i.e. abstraction and reinjection), as detailed below. At the end of the five years, and unless further permission has been approved to develop the site for commercial abstraction and lithium extraction, the site will be restored, by capping the boreholes (see Image 9) and subject to periodic monitoring for a period of up to five years.

2.1.8 Phase 1 will comprise the following stages:

a) Exploration drilling for new boreholes (as set out in 2.1.10 – 2.1.19) – with a duration of approximately 6 months in total for each new borehole.

b) Period for testing and assessment for abstraction, reinjection and monitoring that will take place over the remaining period of the consent (see para 2.1.20 to 2.22).

2.1.9 Phase 2 will continue for a period of 5 years, unless it is supplemented by a second consent that will contain the details and controls required for commercial production of Lithium from the Ludwell site, this application has and will be informed by the findings of the exploration programme and subsequent proof of concept, as set out in this application.

2.1.10 The development comprises a total of up to six boreholes, including the two already permitted, within five of the 'exploration borehole' locations illustrated on Image 7. The boreholes will be drilled to a depth of between 500m to a maximum of c1,000m below ground level (bgl), will be between 10cm and up to a maximum of 50cm in diameter (at surface). The boreholes will be exploratory to develop the geological and hydrogeological understanding and 3-dimensional model and also to test abstraction or reinjection techniques (as appropriate).

2.1.11 The location of the boreholes on Figure 2 will be as follows:

Borehole 1 (already drilled): Labelled LEB01.

Borehole 2 (drilling currently ongoing): Labelled LEB02.

Boreholes 3 (LEB03), 4 (LEB04) and 5 (LEB05): in the three compound areas to the east of LEB02.

Borehole 6 (LEB06): adjacent to LEB01 as a monitoring borehole (possibly to be drilled at an incline).

2.1.12 Each borehole will be capped with a metal well head, approximately 0.5m in height.

2.1.13 The existing gravel access track will be extended east from LEB02 as shown on Figure 2c.

2.1.14 During drilling of each borehole a temporary compound will be constructed similar to that shown in Image 1 on page 4. Up to two drill rigs will be used at any one time; the existing 12m high drill rig shown in Image 1 and a slightly larger drill rig, up to 27m in hight, but more likely to be circa 20m in height. An example of this type and size of drill rig is shown, below.

Image 8. Proposed larger drill rig (example type)

2.1.15 Each borehole being drilled will have its own compound with associated equipment. The general arrangement during the construction of the borehole is shown schematically on Figure 11, including the details of the size and height of the individual components. The compound will be maintained for the duration of the drilling programme (~ 4 months), after which, there will be a period when the initial pump tests and survey of the borehole will be completed (a further 3 months, approximately). When this programme has been completed, the equipment in the compound, including the drill rig will be relocated to the next exploration borehole. The area around the drilled borehole will be completed cleared of equipment.

2.1.16 Once testing and monitoring starts at each borehole, new equipment will be brought in for the duration (up to five years) to undertake trials to remove groundwater and process, offsite. A schematic layout of this is shown at Figure 12. The equipment would include the wellhead equipment (less than 5 metres in height), a generator, a pump, up to two cabins, bladder tanks, up to six IBCs or two single axle road tankers, and any other ancillary equipment necessary for the monitoring and testing process.

2.1.17 During the drilling phase there will be no requirement for centralised ancillary equipment as the plant and equipment will be moved to each successive borehole. On completion of the exploration drilling, and when the boreholes are being tested and monitoring, the site office and welfare facilities may be centralised at borehole LEB002. In the monitoring phase (after five years), unless further permission has been approved to develop the site for commercial abstraction and lithium extraction, the site will be cleared of cabins and other equipment.

2.1.18 Each borehole could take approximately four months to drill. Once drilled, they will be capped with a metal cap, approximately 0.5m in height. Once all boreholes have been drilled, the rigs will be permanently removed from site. From that time on, the only surface development visible will be the access track, any generators, water storage and associated equipment associated with monitoring, testing, abstracting and reinjecting, and vehicles used to transport fluids either in the $1m^3$ Intermediate Bulk Containers (IBCs) offsite for testing (shown in Image 4) or in single axle road tankers.

2.1.19 It should be noted that, with the exception of the drilling of the boreholes and the abstraction and reinjection of groundwaters, there will be no other below-ground processes or activities.

2.1.20 Abstracted groundwater will be transferred to the IBCs or single-axle road tanker for temporary onsite storage prior to transportation offsite for lithium extraction testing. IBCs will also be retained on site for trials of reinjection of the groundwater, these will be temporarily stored at the reinjection wells, prior to reinjection of the groundwater into the rock strata. The empty IBCs will then either be moved to the abstraction wells for further groundwater transfer or removed from site, as required.

2.1.21 The saline brines will be taken off site in IBCs or single axle road tankers for testing and processing[3], elsewhere. The location of testing and processing is not yet known and could include multiple locations, particularly early on at the bench-scale laboratory testing stage, across the UK and Europe. Once testing and processing is completed, the IBCs will be returned to the site for reinjection, subject to regulatory control by the Environment Agency (as appropriate).

2.1.22 As this pilot phase develops it is likely that the volumes of water taken off site and volumes returned and reinjected will increase to the point where it can mirror continuous abstraction, processing and reinjection which would occur at full production stage.

2.1.23 It is anticipated that initially, only small quantities of water would be abstracted (of approximately 150m^3 per day) at any one time, but such volumes could increase at later stages in order to test proof of concept and reliability of the process. In the early stages abstraction and removal offsite in IBCs, and/or single axle road tankers, is likely to be sporadic, while at later stages removal off site could happen daily.

2.1.24 This will, in turn, have an impact on traffic numbers. In the early stages, it is likely that there will be around 7 vehicles in and 7 out per day, mostly associated with the borehole drilling activities. Once abstraction and testing off site happens on any significant scale traffic movements associated with the drilling phases will be replaced with traffic associated with abstraction, reinjection and testing. This could be in the order of about 10 vehicles in and 10 vehicles out each day.

2.1.25 All vehicles will enter and leave the site via the existing access onto the C74, which runs parallel to the site and leads either east to Stanhope or west to Daddry Shield where junctions meet the main A689 valley road for onward connection into the wider highway network.

2.1.26 Drilling will take place between the hours of 07:00 and 19:00 Monday to Sunday, excluding bank holidays. Testing and monitoring, including abstraction and reinjection, being considerably quieter activities, would take place 24 hours per day.

2.1.27 All activities will be carried out under the relevant permitting regimes to be approved by the Environment Agency.

2.1.28 Following completion of operation, and in the absence of further planning consents, all boreholes will be capped with a c10cm metal cap (as shown by Image 9, below) and utilised for periodic monitoring to record groundwater levels over a period of five years.

[3] The preferred option is to process the lithium within the lithium chloride as lithium carbonate, but it may also be processed as lithium hydroxide for the same end use.

Image 9. Borehole cap

3 SITE DESCRIPTION

3.1 The site

3.1.1 The site is located at Ludwell Farm, Eastgate, in County Durham (grid reference 3944 5381). Figure 1 Site Location Plan illustrates the location of the site, Figure 2 Redline Boundary illustrates the application redline boundary for the proposed development and Figure 3 Study Area illustrates the onsite study area that has been used when obtaining existing baseline conditions at the site.

3.1.2 Ludwell Farm comprises a number of grazing fields with associated farm buildings, tracks and other minor structures. The farm is located to the south of the A689 (main valley road) and is bisected east to west by the C74 (single lane minor road). Figure 6 illustrates the local access network. There are isolated farmhouses along the C74 road, with more farms within the wider area that, together, form the landscape typical of this part of the Weardale Valley.

3.1.3 To the north of the site is the River Wear, into which flows Ludwell Burn. The site falls within Flood Zone 1 (low probability of flooding). Beyond the site, by the River Wear and the Ludwell Burn, are areas that fall within Flood Zones 2 (medium probability of flooding) and Flood Zones 3 (high probability of flooding). Figure 9 illustrates the flood zones at the site.

3.1.4 Areas of woodland are found around the edge of the site and next to the River Wear. Some of the woodland situated beyond the site is designated as Ancient, Semi-Natural and Ancient Replanted Woodland.

3.2 The wider area

3.2.1 A small part of the western extent of the site (and the majority of the surrounding area) falls within the North Pennines Area of Outstanding Natural Beauty (AONB), which was covers an area of 1,983 km^2 and is the second largest of the forty AONBs designated within England and Wales. The rest of the site and land along the valley to the east are designated as an Area of High Landscape Value (AHLV) within the County Durham Local Plan. Figure 7 illustrates the topography at the site and the surrounding area, and Figure 8 illustrates the relating zone of theoretical visibility.

3.2.2 There are two Special Areas of Conservation (SAC) sites located within 2.5 km of the site. These are the North Pennine Moors SAC, located 1.8 km to the south and 2.4 km to the north, and the North Pennine Dale Meadows SAC, located 2.1 km to the south-east. There are also four Sites of Special Scientific Interest Sites (SSSI) present within 2 km of the site. The closest of these are the Fairy Holes Cave SSSI, located 800 m to the south-west, and the Westernhope Burn Wood SSSI, located 1.5 km to the south. Figure 4 illustrates the designated sites present at the site.

3.2.3 There are twenty-one Grade II and one Grade II* Listed Buildings located within 2 km of the site. Three of these are associated with Ludwell Farm, itself, including the Grade II Farmhouse, Grade II Barn Range and the Grade II Former House and Byre, with Loose Boxes, South of

Ludwell Farmhouse Barn. The Cambokeels Medieval Site Scheduled Monument (1002343) is located to the north of the River Wear, approximately 300 m to the north-west of the site. Figure 5 illustrates the sensitive receptors present within the local area.

4 ENVIRONMENTAL CONTEXT

4.1 Air Quality

4.1.1 There are two air quality management areas present within County Durham, both declared due to exceedance of the annual mean objective for nitrogen dioxide (NO_2) and neither located near to the site; the nearest being 32 km away. Background pollutant concentrations at the site are very low, measuring 3.66µg/m^3 of NO_2, 7.38µg/m^3 of PM_{10} and 4.88µg/m^3 of $PM_{2.5}$. The proposed development will not introduce a new dust source to the area. Emissions associated with plant during both construction (as demonstrated by the exemplar works undertaken to date in relation to borehole LEB01) and operation will be minimal, and vehicle generation associated with the proposed development will also be minimal. On this basis, the proposed development will not introduce any new pollutant sources.

4.2 Ecology and biodiversity

4.2.1 Habitats onsite are dominated by semi-improved, sheep-grazed pasture and silage / hay pasture, with scattered mature and semi-mature trees and scrub. The tree-lined corridor of the River Wear lies to the north of the site. A stand of coniferous woodland plantation lies beyond the southern boundary, with broadleaved woodland also located beyond the southern boundary alongside the steep clough of Ludwell Beck. With the exception of a single linear waterbody surrounded by woodland beyond the north-western boundary, there are no ponds present at the site.

4.2.2 The habitats onsite provide good connectivity the wider landscape via the River Wear and wooded margins and are of low to moderate suitability foraging bats, with moderate activity levels of foraging bats species (i.e. common pipistrelle Pipistrellus, soprano pipistrelle Pipistrellus pygmaeus and nathusius pipistrelle Pipistrellus nathusii, plus myotis and Nyctalus sp.) recorded. The habitats onsite also provide suitable nesting habitat for breeding birds, with circa 60 species of breeding birds recorded onsite during 2022.

4.2.3 The North Pennine Moors SAC is located 1.8 km to the south and 2.4 km to the north of the site, the North Pennine Dale Meadows SAC is located 2.1 km to the south-east, the Fairy Holes Cave SSSI is located 800 m to the south-west and the Westernhope Burn Wood SSSI is located 1.5 km to the south. The proposed development will not affect any of these designated sites. Some of the woodland situated beyond the site is designated as Ancient, Semi-Natural and Ancient Replanted Woodland.

4.2.4 Approximately 0.42ha of sheep-grazed pastureland was temporarily removed from use when the existing gravel access tracks and compound areas were installed, and the proposed development will result in an additional 0.49ha of pastureland being temporarily removed from use when the new gravel access tracks and compound areas are installed. This is not a priority habitat and is considered to be of limited ecological value, the new gravel tracks would

be installed outside of the bird nesting season[4] (i.e. March to September, inclusive) and the pastureland would be fully restored following at the end of the operational phase.

4.2.5 The proposed development will not impact upon any other existing habitats at the site and, on the basis of the above, the overall effect of the proposed development is considered to be long-term neutral.

4.3 Geology and ground conditions

4.3.1 Superficial deposits at the site comprise circa 4 m thick glacial deposits comprising clay, sand, gravel and boulders of sandstone and limestone. Solid geology underlying the site comprises the Carboniferous Limestone Sequence (Alston Formation, previously known as the Lower Limestone Group and Middle Limestone Group), comprising bioclastic limestones, sandstones, mudstones, siltstones and rare coals typically in a regular cyclothemic sequence to approximately 265m bgl. The Carboniferous Limestone Sequence is intruded mid-sequence by the Great Whin Sill, comprising quartz-dolerite, identified by investigation between 92 – 158 m bgl. Underlying the carboniferous strata at circa 270 m bgl is the Weardale Granite Pluton, part of the North Pennine Batholith. The solid geology beneath the site is cut by the north-west to south-east trending Slitt Vein, a major mineralised sub-vertical vein structure within the North Pennine orefield. Quartz veins and evidence of hydrothermal alteration are present throughout the granite, associated with the Slitt Vein. It is not anticipated that the site has had any historical land use with significant contaminative potential.

4.3.2 The proposed development would include intrusive investigation of the solid geology limited to four locations with borehole diameters between 10-30 cm and up to 1,000 m bgl in depth. As such, the intrusive investigation of the solid geology is minimal and it is anticipated that there will be no significant adverse impacts in relation to geology and ground conditions as a result of the proposed development.

4.4 Historic environment

4.4.1 There are no designated heritage assets within the site area. Within a wider 1 km search area of the site, centred on the proposed works, there are eight designated heritage assets comprising one scheduled medieval hunting lodge site, one Grade II* listed structure and six Grade II listed structures. Within a wider 2 km search area, there is one Grade II* Listed Building, three Scheduled Monuments and one Conservation Area present.

4.4.2 In respect to non-designated heritage assets, the Durham Historic Environment Record (HER) was consulted in July 2022 to identify any recorded entries within the site and a wider 1 km search radius. The site is located within the grounds of Stanhope Park, which is a non-designated heritage asset that is thought to have medieval origins and the Durham HER

[4] Should works need to be undertaken during the bird nesting season, a pre-works check and monitoring during the onset of works will be undertaken by a suitably qualified ecologist to ensure that no ground nesting birds are present / disturbed.

includes details of medieval and post-medieval archaeological remains within the local area. The area appears to have lain largely in agricultural use, utilised as such during the Roman Period, as a number of lynchets, banks, and clearance cairns relating to Romano-British field systems have been identified from previous archaeological investigations in the area. Earlier, prehistoric activity has also occurred, demonstrated by the number of flint findspots of the Mesolithic to Bronze Age and the presence of a later prehistoric stone circle, a cairn and settlement activity of the Bronze Age in the landscape. Additional features of uncertain origin may also represent early activity in the vicinity. During the early medieval period, an Anglo Saxon settlement was established, and in the mid-15th century a hunting park was created (known as the New Park, located north of the River Wear c1.5km west of the site at its closest point); an old park likely established by the early 14th century. Several features relating to these medieval parks are known from the wider area, including the scheduled hunting lodge cited above, a gatehouse, several shielings and buildings and several boundary features.

4.4.3 Evidence for early industrial activity is also known from the area in the form of medieval mine shafts, though the biggest impact from mining came in the post medieval period with Cambokeels Lead Mine, also producing fluorspar and ironstone, a little to the north and Ludwell Lead Mine and Billings Hill Lead Mine also established in the area. Additional individual mine shafts and quarry sites of the post medieval are also represented in the wider area, as is agricultural activity in the form of boundary ditches and banks, areas of ridge and furrow, trackways, lynchets and sheepfolds. Mining continued into the modern period, as did quarrying and agricultural activity, and more modern features of these later activities are also known from the wider area. A prisoner of war camp was established at Eastgate.

4.4.4 The high number of recorded assets on the HER in the vicinity may be the result of a higher level of interest in the area, rather than a true indicator of high archaeological potential. A site visit did not reveal any specific evidence for high archaeological potential within the site, though an archaeological watching brief monitoring soil stripping works associated with the permitted rights stage of the development did encounter a stone spread and a shale object of unknown origin, recorded in the field to the south.

4.5 Landscape

4.5.1 The site lies within the North Pennines County Character Area (as categorised within the Durham Landscape Character Assessment) and the Middle Weardale Broad Character Area, characterised as: "A broad and deep dale with a narrow dale floor. The dale is bounded by high moorland ridges divided by numerous tributary valleys. Older field systems of pastures and meadows bounded by dry stone walls are found on the south facing daleside and the dale floor. Later, more regular, enclosures are found on the higher dale side. The landscape is generally open with few trees or woodlands. Small ash and oak woodlands are found in daleside gills, and conifer plantations are scattered across the daleside. Villages, hamlets and building clusters lie along the roads of the dale floor, and isolated farms are strung out along

the daleside and moorland edge. The landscape has been heavily influenced by mineral workings with many lead mining remains and active limestone quarries." The site also falls within an AHLV, and the western extent of the site falls within the North Pennines AONB.

4.5.2 The existing site is generally visible from along the valley to the east and west and the valley sides, as illustrated by Figure 8, which shows both a Zone of Theoretical Visibility (ZTV) of the existing site and of a drill rig that could be about 20-27m in height on site. The ZTVs have been produced using the Environment Agency Lidar Digital Surface Model (DSM) to illustrate the potential screening provided by surrounding buildings and vegetation.

4.5.3 Landscape and visual impacts would result from the change in land use and presence of new structures onsite, changing the landscape character of the site and becoming visible in views of the site from the surrounding visual receptors (residents, visitors, road and public rights of way users). Impacts would result from:

The temporary presence of up to two tall drill rigs onsite, one up to 12 m in height and one up to about 20-27m.

The short-term (up to 5 years) testing period in which associated plant will be low-scale and temporary (no more than approximately 4 m in height).

4.5.4 The short-term, temporary and reversible nature of the development phases is one of the three factors to be considered when assessing the magnitude of the impacts, along with the size and scale and geographical extent of the impacts.

4.5.5 The magnitude of the impacts of the construction phase, based on the general arrangement shown in Figure 2b, would be medium to low within approximately 2 km of the site, as the drill rigs would be prominent locally but very short-term, temporary and reversible. Therefore, the overall landscape and visual effects within approximately 2 km would not exceed moderate adverse and would reduce with distance from the site.

4.5.6 For the operational phase, the smaller scale of the structures and short term, temporary and reversible nature of the operation would mean that the magnitude of the operational impacts low within approximately 2 km of the site. Therefore, the overall landscape and visual effects within approximately 2 km would not exceed slight to moderate adverse and would reduce with distance from the site.

4.6 Noise

4.6.1 The A689 runs east from the A595 to the west of Carlisle, through Weardale to Hartlepool. It is a two-way single carriageway with a bus route some HGV traffic. Existing noise levels at the site are likely to be relatively low due to the rural nature of the location, but with some contribution from the River Wear and the distant A689.

4.6.2 As vehicle generation associated with both construction and operation will be minimal, it is anticipated that there will be no significant adverse impact upon existing sensitive receptors as a result of changes in road traffic noise levels due to the development.

4.6.3 During the construction phase, drilling would be limited to daytime working hours and would be temporary, and the drill rig would be located at least 150 m away from the nearest existing sensitive receptor, at Ludwell Farm itself. As such, it is expected that no significant impact would occur as a result of this. Similarly, during the operational phase, the plant at the surface will be minimal (i.e. mostly pumps with appropriate, current sound attenuation methods) and would also be located at least 150 m away from the nearest existing sensitive receptors. As such, no significant impacts are anticipated.

4.7 Soils and Agricultural Land

4.7.1 The site consists of agricultural land divided into a number of fields that are used for livestock grazing, plus associated farm buildings and structures.

4.7.2 The Provisional 1:250,000 mapping provided by Defra shows the site to be located in an area of Grade 4 (poor quality) and Grade 5 (very poor quality) agricultural land, which do not comprise Best and Most Versatile (BMV) land and are restricted to a narrow range of agricultural uses. The Provisional mapping also provides an indication of the prevailing land quality in the region, which is shown to be comprised almost entirely of Grade 5 agricultural land. Grade 4 agricultural land is present next to the River Wear at the northern extent of the site. The site is located at 109 to 298 m AOD; climate data for the area is limited to Grade 4 for altitudes above 260 m AOD and Subgrade 3b[5] (moderate quality) for altitudes below 260 m AOD. The results of a site survey that was undertaken by Wardell Armstrong in July 2022 confirm that the agricultural land at the site to comprise of Grade 3b (non-BMV) land.

4.7.3 Approximately 0.4239 ha of of Grade 3b (non-BMV) pastureland was removed from use when the existing gravel access tracks and compound areas were installed, and the proposed development will result in an additional 0.4871 ha of of Grade 3b (non-BMV) pastureland being removed from use when the new gravel access tracks and compound areas are installed. This would be a temporary removal and the whole area would be fully restored at the end of the operational phase. As such, the overall effect of the proposed development would be long-term neutral.

4.8 Traffic and transport

4.8.1 The A689 runs east from the A595 to the west of Carlisle through Weardale to Hartlepool. It is two-way single carriageway and bus route and, taking into consideration the previous cement works, Heights Quarry and a number of caravan holiday parks, is considered capable

[5] Also constitutes non-BMV land.

of accommodating HGV traffic. A cycle route runs along the C74, parallel to the A689, towards Stanhope where it links to Cycle Route 7.

4.8.2 Traffic generation associated with the proposed development, during both construction and operation, are to be very limited. As such, there are anticipated to be no significant adverse impacts in relation to traffic and transport as a result of the proposed development.

4.9 Water resources

4.9.1 The site is located within the Northumbria River Basin District, the Wear Management Catchment, the War Upper Operational Catchment, and the Wear from Middlehope Burn to Houselop Beck surface water body (ID: GB103024077461). The Wear from Middlehope Burn to Houselop Beck surface water body has an ecological status of Moderate and a chemical status of Fail. The reasons for not achieving Good status are listed as point source pollution of zinc from abandoned mines, and polybrominated diphenyl ethers and mercury and its compounds that are awaiting classification.

4.9.2 The site is not located within a Nitrate Vulnerable Zone (NVZ), a groundwater Source Protection Zone (SPZ), a groundwater drinking water safeguard zone or a drinking water protected area for surface water.

4.9.3 The River Wear is a main river located to the north of the site, and there are a number of small watercourses present at / around the site that outfall into the River Wear. These include Ludwell Burn located to the east of the site and an unnamed tributary to Ludwell Burn that joins Ludwell Brook where the C74 (minor road) intersects the site. There are unnamed watercourses present along the western site boundary, immediately north-east of the site and 140 m north-east, plus an unnamed tributary to the River Wear 320 m to the east. Western Hope is located 340 m west and flows into the River Wear 420 m west of the site boundary.

4.9.4 Ordnance Survey mapping indicates that there are springs located within the north-east of the site and south-east of the site, plus further springs located 50 m north-east, 430 m to the east and 930 m to the east, all of which flow north into the River Wear. The Whitewell springs are located approximately 700 m south-west of the site and form Western Hopeburn, which flows north into Western Hope 350 m west of the site boundary.

4.9.5 According to British Geological Survey (BGS) mapping, the area of the site to the north of the C74 road is predominantly underlain by Devensian Till (diamicton). The area of the site adjacent to the River Wear is shown to be underlain by alluvium (clay, silt, sand, and gravel). The superficial deposits are classified as a Secondary Undifferentiated Aquifer "…assigned in cases where it has not been possible to attribute either category A or B to a rock type."

4.9.6 The superficial deposits are underlain by the Carboniferous Limestone Series (Alston Formation, previously known as the Lower Limestone Group and Middle Limestone Group), comprising limestone, sandstone, siltstone and mudstone. The Carboniferous Limestone Series are classified as a Secondary A Aquifer, defined as "…permeable layers capable of

supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers."

4.9.7 The Great Whin Sill forms a stepped intrusion within the Carboniferous Limestone Series. The Great Whin Sill is classified as a Secondary B Aquifer and defined as "…predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering".

4.9.8 The Weardale Granite is located at approximately 270 m bgl and is not designated as an aquifer. Granite is a competent massive rock, which typically has very low transmissivity. A sub-vertical mineral vein, referred to as the 'Slitt Vein', trends north-west to south-east through the geological succession below the site. There are numerous branches off the main Slitt Vein.

4.9.9 The site is located within the Northumbria Groundwater Management Catchment, the Wear Carboniferous Limestone and Coal Measures Operational Catchment, and the Wear Carboniferous Limestone and Coal Measures Groundwater Body (ID: GB40302G701600)[6]. The Wear Carboniferous Limestone and Coal Measures Groundwater Body has a quantitative status of Good and a chemical status of Poor. The reason for not achieving Good status are listed as point and diffuse source pollution from abandoned mining.

4.10 Flood risk

4.10.1 The Environment Agency Flood Map for Planning shows that there are areas of Flood Zone 2 (medium probability of flooding) and Flood Zone 3 (high probability of flooding) present to the north of the site, adjacent to the River Wear. The proposed development will, however, be wholly sited within Flood Zone 1 (Low probability of flooding). Environment Agency surface water flood maps show that surface water flood risk is deemed to be low risk, with small areas of medium and high risk. Upon the final layout of the development, infrastructure can be located away from overland flow routes, and areas at high risk of surface water flooding.

4.10.2 The site is shown to be at risk of flooding from artificial sources when river levels are normal and also when there is flooding from rivers. The source of artificial flooding is shown to be from a failure of the Burnhope Reservoir 9 km northwest of the site. Owing to the impact that a reservoir failure would have on a number of existing developments located adjacent to the River Wear, it is considered that any embankments or dams at the reservoir are be maintained and that the risk of failure is minimal. The water table could potentially be in continuity with the water level of the River Wear to the north of the site and, therefore, close to the ground level. However, the County Durham Council Preliminary Flood Risk Assessment (2016) states that there have been no records of groundwater flooding found within the County of Durham.

[6] Environment Agency (2022) Catchment Data Explorer: Wear Carboniferous Limestone and Coal Measures.

4.10.3 The footprint of the proposed development is less than 1 ha and there will be no impermeable surfacing created as part of the development proposals. As such, it is anticipated that there will be no increase in surface runoff that would increase flood risk. Therefore, the proposed development is not predicted to cause an increase in flood risk to the surrounding area.

5 PLANNING POLICY CONTEXT

5.1 Legislative requirements

5.1.1 Section 38(6) of the Planning and Compulsory Purchase Act 2004 (as amended) and Section 70(2) of the Town and Country Planning Act 1990 (as amended) require planning applications to be determined in accordance with the policies of the development plan unless material considerations indicate otherwise.

5.1.2 A small portion of the site is located within the North Pennines AONB and, as such, this application will demonstrate the 'very special circumstances' of the proposed development, including the wider environmental benefits associated with increasing lithium production, to a point where the scheme can be considered acceptable under the AONB policy.

5.2 National planning policy

UK Renewable Energy Strategy 2009

5.2.1 Within this document, the Government details its strategy to radically increase the use of renewable electricity, heat and transport (including electric vehicles). This is required in order to meet the legally binding targets to ensure that, by 2020, 15% of energy comes from renewable sources.

The Ten Point Plan for a Green Industrial Revolution 2020

5.2.2 Within this policy paper, the UK government outlines the approach it will take to build back better, support green jobs, and accelerate the path to net zero. Specifically, Point 4 of the policy paper relates to 'accelerating the shift to zero emission vehicles', including the decision to ban the sale of new diesel and petrol cars in 2030, ten years earlier than originally proposed, and increase essential EV-related infrastructure.

National Planning Policy Framework (NPPF) 2021

5.2.3 The National Planning Policy Framework (NPPF), as revised and updated in July 2021, sets out the UK Government's planning policies for England and is a key material consideration in the determination of any application for planning permission. National Planning Practice Guidance (NPPG) is a web-based resource that was launched in March 2014 by the Department for Communities and Local Government to provide planning guidance on a range of subject areas relevant to the NPPF.

5.2.4 At the heart of the NPPF is a presumption in favour of sustainable development, which runs through both plan-making and decision-taking. In relation to planning for sustainable development, paragraph 8 of the NPPF outlines three overarching objectives for the planning system in order to contribute towards achieving sustainable development. These are an 'Economic' objective, a 'Social' objective and an 'Environmental' objective, which are identified as being interdependent and need to be pursued in mutually supportive ways, and

should be delivered through the preparation and implementation of plans and the application of the policies in the NPPF.

5.3 Local planning policy

County Durham Plan 2020

5.3.1 The site is located wholly within the administrative boundaries of Durham County Council. The County Durham Plan was adopted by the Council in October 2020 and provides a framework for development through to 2035 and is, therefore, pertinent to the proposed development.

5.4 Supplementary planning documents and other material considerations

Countryside and Rights of Way Act 2000

5.4.1 A small part of the western extent of the site lies within the North Pennines AONB, which is a statutory designated site afforded protection under the Countryside and Rights of Way Act 2000. Under the Act, Natural England is required to advise local planning authorities in relation to development proposals falling within in an AONB.

5.4.2 The North Pennines AONB covers an area of 1,983 km^2 and extends into the administrative boundaries of Carlisle City Council, Cumbria County Council Durham County Council, Eden District Council and Northumberland County Councils. All five authorities have a duty under the Act to (jointly) prepare an AONB management plan, a duty that is discharged by the North Pennines AONB Partnership.

5.4.3 Under the Countryside and Rights of Way Act 2000, the Under the Crow, the management plan is reviewed every five years by the AONB Partnership. The current management plan is the 'North Pennines Area of Outstanding Natural Beauty Management Plan 2019-24'.

North Pennines Area of Outstanding Natural Beauty Management Plan 2019-24

5.4.4 Published in 2019, this management plan identifies actions required to help conserve the landscape character, protect the heritage assets and to reverse the decline in biodiversity within the AONB. Whilst management plans do not form part of any local development plan, they are relevant within the planning system as they are:

> *"…the basis for identifying the special qualities of the area, those aspects of the AONB which are critical in contributing to its natural beauty and potentially influential in development planning policy; and*
>
> *a material consideration in the determination of individual planning applications and at appeal."*

North Pennines AONB Planning Guidelines

5.4.5 This provides guidance on development within or affecting the North Pennines AONB and is intended to aid the implementation of local authority planning policies relating to the AONB.

5.4.6 The main objectives of the guidelines are to:

> *"…*help promote new development that conserves and enhances the natural beauty of the North Pennines while accommodating the needs of its communities;
>
> stimulate the highest standards of design, conservation and development;
>
> support the production and implementation of local planning policy; and
>
> secure a consistency of approach towards planning matters across the AONB.*"*

5.4.7 Within the document, there are guidelines specific to renewable energy development, including small-scale wind energy, small-scale hydro-electric, small to medium-scale biomass development and small-scale (domestic) photovoltaic installations.

6 PLANNING ASSESSMENT

6.1 Planning policy assessment

6.1.1 This section assesses the proposed development against the planning policy and guidance identified within the previous section.

6.2 Very special circumstances

6.2.1 The site is located within an area of higher landscape value and a small portion of the western extent of the site falls within the North Pennies AONB. As such, this application puts a case for considering that there are 'very special circumstances' that justify the scheme that are in line with national policy and are in the public interest.

6.2.2 The current global reliance upon fossil fuels for energy is the major contributing factor in climate change. There is, therefore, a global urgent necessity to reduce / remove this reliance and to move towards the long-term adoption of renewable, low carbon alternatives. This is emphasised within the UK Renewable Energy Strategy 2009 and the 2020 The Ten Point Plan for a Green Industrial Revolution policy paper.

6.2.3 Lithium is one of thirty materials included on Europe's CRM list and, defined by the UK Government as being of strategic importance to the country, is now included within the Uks CMS. The proposed development will extract lithium (for processing into battery grade lithium[7]) from the abstracted groundwater prior to the reinjection of the lithium-depleted groundwater back into the rock strata. Lithium is a critical component in the manufacture of lithium-ion batteries used in renewable energy technology (i.e. electric vehicles and energy storage devices) and is, therefore, a vital factor in the move towards the development and use of renewable, low carbon energy.

6.2.4 Additionally, as the UK's supply of lithium is currently imported into the UK from overseas, the proposed development also offers an opportunity to establish a domestic supply; thereby serving to reduce the associated carbon footprint linked to the importation and improving long-term sustainability in accordance with the objectives and principles of the 2021 NPPF.

6.2.5 Given planning consent (by Northumberland County Council in July 2022) for a gigaplant in Blyth, additional gigaplants plants underway as part of the International Advanced Manufacturing Park (IAMP) venture located in Sunderland and the existing Nissan car manufacturing facility in Washington, the proposed development provides an essential opportunity for the North East region to become a UK hub in promoting low-carbon renewable energy development.

6.2.6 Whilst a small portion of the western extent of the site falls within the boundary of the North Pennine AONB (see Figure 10) the location of the proposed development is directly tied to both the presence of lithium-rich groundwater within the Weardale granite and, as such, the

[7] The lithium within the lithium chloride will either be processed as lithium carbonate or as lithium hydroxide.

location of the proposed development is limited to the Weardale area. It should also be noted that, within the context of permissible development in the local area, there are a number of existing quarries present within Weardale. The proposed development would be vastly smaller in terms of physical scale and visual presence, with limited plant onsite. Furthermore, during the operation phase, the plant would be appropriately coloured / screened to be sensitive to the surrounding landscape. As such, any visual impact would be minimal.

6.3 County Durham Plan 2020

6.3.1 The following County Durham Plan 2020 policies (see Appendix 1 for full details) are also considered to be relevant to the proposed development:

Policy 10 – Development in the Countryside.

Policy 14 – Best and Most Versatile Agricultural Land and Soil Resources.

Policy 31 – Amenity and Pollution.

Policy 33 – Renewable and Low Carbon Energy.

Policy 35 – Water Management.

Policy 38 – North Pennines Area of Outstanding Natural Beauty.

Policy 39 – Landscape.

Policy 40 – Trees, Woodlands and Hedges.

Policy 41 – Biodiversity and Geodiversity.

Policy 42 – Internationally Designated Sites

Policy 43 – Protected Species and Nationally and Locally Protected Sites.

Policy 44 -Historic Environment.

<u>Policy 10 Development in the Countryside</u>

6.3.2 Under this policy, development is permitted within the countryside providing that it "…accords with all other relevant development plan policies and by virtue of their siting, scale, design and operation must not:

10. give rise to unacceptable harm to the heritage, biodiversity, geodiversity, intrinsic character, beauty or tranquillity of the countryside either individually or cumulatively, which cannot be adequately mitigated or compensated for."

6.3.3 In relation to 'economic development', permissible development must comply with one of four specified types, all of which '…must be of a design, construction and scale which is suitable for and commensurate to the intended use'. Of the four types, the proposed development falls under Type C, which relates to "…new agricultural or other rural land-based enterprise which clearly demonstrates an essential and functional need for that specific location and where it can be clearly demonstrated that it has the prospect of being financially sound and will remain so."

6.3.4 Investment in the development and use of renewable energy technology is vital to enable the transition away from the current reliance upon fossil fuels. As the purpose of the proposed development is the abstraction of lithium-rich groundwater to extract and process battery grade lithium, an essential component in the manufacture of lithium-ion batteries for electric vehicles / renewable electric technology, it would aid in enabling this transition. The location of the site is tied to the availability of lithium-rich groundwater within the ground strata, which, in turn, is known to be associated with the presence of the Slitt Vein (sub-vertical mineral vein) within Weardale. On the basis of this, the proposed development accords with Policy 10.

Policy 14 Best and Most Versatile Agricultural Land and Soil Resources

6.3.5 This policy seeks to conserve and protect best and most versatile (BMV) agricultural land and associated soil resources. The results of the July 2022 site survey confirm that there is no BMV land present at the site and, as such, this is aspect of the policy not relevant. The proposed development will result in the temporary removal of approximately 0.0894 ha of Grade 3b (non-BMV) agricultural pastureland from agricultural use when the gravel access track is installed, but this will be fully restored upon decommission.

6.3.6 In terms of the soil resource, the policy states that "…all development proposals relating to previously undeveloped land must demonstrate that soil resources will be managed and conserved in a viable condition and used sustainably in line with accepted best practice." As part of the proposed development, soils will be protected via the adoption of current best practice methodology. On this basis, the proposed development accords with Policy 14.

Policy 31 Amenity and Pollution

6.3.7 Under this policy, "…development will be permitted where it can be demonstrated that there will be no unacceptable impact, individually or cumulatively, on health, living or working conditions or the natural environment." Development will not be permitted if there are unacceptable impacts due to 'reduced air quality, inappropriate odours, increased noise and vibration or any other sources of pollution, visual intrusion, visual dominance, overlooking or loss of light, amenity or privacy'.

6.3.8 The scale of the proposed development is very small (less than 1 ha in total), especially in the spatial context of the valley. The presence of the drill rigs will be temporary and restricted to the construction phase, after which they will be removed. During operation, onsite plant will be limited to well heads and pumps, which can be appropriately screened, plus the IBCs. Activities associated with drilling will be restricted to daytime hours only. It is, therefore, considered that the proposed development will not result in significant impacts as a result of visual intrusion or reduced amenity. In terms of pollution (i.e. air quality, odour, noise and vibration), the proposed development will not introduce and new sources of pollution and no significant adverse impacts upon existing sensitive receptors are anticipated. On the basis of this, the proposed development accords with Policy 31.

Policy 33 Renewable and Low Carbon Energy

6.3.9 Policy 33 states that "…renewable and low carbon energy development in appropriate locations will be supported. In determining planning applications for such projects significant weight will be given to the achievement of wider social, environmental and economic benefits." Additionally, "where relevant, planning applications will also need to include a satisfactory scheme to restore the site to a quality of at least its original condition once operations have ceased."

6.3.10 The proposed development will extract fluids from within the groundwater prior to lithium extraction (offsite) and reinjection of these fluids into the granite, rock strata. Lithium is a critical component in the manufacture of lithium-ion batteries for renewable electric energy technology and is, therefore, a vital component in the move towards renewable, low carbon energy. On the basis of this, the proposed development accords with Policy 14.

Policy 35 Water Management

6.3.11 This policy aims to safeguard against increased flood risk (onsite and offsite) as a result of new development, including any impacts in relation to climate change for the lifetime of the new development. The proposed development will be located wholly within Flood Zone 1 and outside of the floodplain associated with the River Wear. There will be no impermeable surfaces created at the site as part of the proposed development as the temporary gravel access tracks will be permeable. During the construction phase, appropriate permeable trackway matting will be placed within the compounds in order to protect the soil resource present from potential adverse impacts associated with the use of plant and will be removed once construction is complete. The lifespan of the (temporary) proposed development would be five years, with five years of periodic monitoring, after which the site would be restored to its former use. The proposed development is not anticipated to result in an increased flood risk and, as such, accords with Policy 35.

Policy 38 North Pennines Area of Outstanding Natural Beauty

6.3.12 Policy 38 states that "The North Pennines Area of Outstanding Natural Beauty (AONB) will be conserved and enhanced. In making decisions on development great weight will be given to conserving landscape and scenic beauty. Major developments will only be permitted in the AONB in exceptional circumstances and where it can be demonstrated to be in the public interest, in accordance with national policy. Any other development in or affecting the AONB will only be permitted where it is not, individually or cumulatively, harmful to its special qualities or statutory purposes. Any development should be designed and managed to the highest environmental standards and have regard to the conservation priorities and desired outcomes of the North Pennines AONB. Management Plan and to the guidance given in the North Pennines AONB Planning Guidelines, the North Pennines AONB Building Design Guide and the North Pennines AONB Moorland Tracks and Access Roads Planning Guidance Note as material considerations."

6.3.13 Whilst the western extent of the site falls within the boundary of the North Pennine AONB, it should be noted that the location of the proposed development is directly tied to both the presence of lithium-rich groundwater within the Weardale granite and, as such, the location of the proposed development is limited to the Weardale area. It should also be noted that, within the context of permissible development, there are a number of existing quarries present within Weardale. In comparison to these, the proposed development would be very small-scale and there would be a limited amount of plant onsite. During the operation phase, the plant would be appropriately coloured / screened to be sensitive to the surrounding landscape.

6.3.14 In relation to national policy and public interest, the processed lithium would be used locally in the manufacture of lithium-ion batteries for renewable electric energy technology, which is vital in the move towards renewable, low carbon energy. The proposed development accords with the objectives of the UK Renewable Energy Strategy 2009 and the principles of the 2021 NPPF and, in aiding the move away from a reliance upon fossil fuels (a major contributing factor in climate change), it is considered to be of in the interest of the public.

6.3.15 It is considered that the development is in accordance with Policy 38 (and the landscape and visual aspects of polices 10 and 31) of the County Durham Plan 2020. It would not be harmful to the special qualities or statutory purposes of the AONB, it would not cause substantial harm to the character, quality or distinctiveness of the landscape, or to important features or views and it would not result in prominent visual intrusion or visual dominance to residential amenity.

Policy 39 Landscape

6.3.16 Under this policy, new development will be permitted where it does not result in unacceptable harm to the 'character, quality or distinctiveness of the landscape, or to important views'. Development within areas of higher landscape value will only permitted where it protects and enhances the special qualities of the landscape, or where the benefits of development outweigh the harm.

6.3.17 The proposed development would be very small scale, especially within the context of the valley. Whilst there would be two drill rigs present onsite during the construction phase, their presence would be temporarily and the rigs would be removed from site once construction is complete. During operation, the onsite plant would comprise equipment needed for monitoring, testing, abstraction and reinjection and is unlikely to be higher than a maximum of 3m in height. At the end of the operational phase, the site would be restored. As such, the proposed development is expected to result in a temporary minor adverse effect in relation to the landscape and views.

6.3.18 Whilst the site falls within an area of high landscape value, as stated in relation to Policy 38, the location of the proposed development is directly tied to both the presence of lithium-rich groundwater within the Weardale granite and is, therefore, limited to the Weardale area.

There are also a number of existing quarries present within Weardale which and, in comparison to these, the proposed development would be very small-scale with limited plant onsite that would (during the operation phase) be appropriately coloured / screened to be sensitive to the surrounding landscape. Furthermore, as the proposed development aims to aid the move towards the long-term use of renewable low carbon energy technology (in-line with the objectives of the UK Renewable Energy Strategy 2009, Point 4 of the 2020 The Ten Point Plan for a Green Industrial Revolution policy paper and the principles of the 2021 NPPF) to reduce current reliance upon the use of fossil fuels (a major contributing factor in climate change), it is considered to be of in the interest of the public.

6.3.19 It is considered that the development is in accordance with Policy 39 (and the landscape and visual aspects of polices 10 and 31) of the County Durham Plan 2020. It would not be harmful to the special qualities or statutory purposes of the AHLV, it would not cause substantial harm to the character, quality or distinctiveness of the landscape, or to important features or views and it would not result in prominent visual intrusion or visual dominance to residential amenity.

Policy 40 Trees, Woodlands and Hedges

6.3.20 This policy aims to protect and prevent the loss of existing hedgerows, trees and woodland. The proposed development will be sited to ensure that there is suitable standoff from existing hedgerows, trees and woodland (taking into account of root protection areas) to ensure that there will be no result in the damage or loss of any such habitats. On the basis of this, the proposed development accords with Policy 40.

Policy 41 Biodiversity and Geodiversity

6.3.21 Under this policy, new development will not be permitted if significant harm to biodiversity or geodiversity as a result of the development cannot be 'avoided, appropriately mitigated or compensated for'.

6.3.22 In terms of biodiversity, the proposed development would result in the temporary loss of a very small amount of sheep-grazed pasture grassland due to the installation of gravel access tracks onsite. The gravel tracks would be installed outside of the bird nesting season and the pasture grassland, which is considered to be of limited ecological value, would be restored at the end of the operational phase. As such, the impact is considered to be long-term neutral. In terms of geodiversity, the intrusive investigation of the solid geology associated with the proposed development is minimal and no significant adverse impacts are anticipated.

6.3.23 On the basis of the above, the proposed development accords with Policy 41.

Policy 42 Internationally Designated Sites

6.3.24 This policy relates specifically to the protection of statutory designated sites of international importance (e.g. Special Areas of Conservation (SAC), Special Protected Areas (SPA) and Ramsar sites, etcetera) located within 0.4 km of any new development. The only statutory

designated sites of international importance near to the site are the North Pennine Moors SAC and the North Pennine Dale Meadows SAC, the closest of which is located 1.8 km from the site. Owing to the nature and scale of the proposed development and the distance between the site and the SACs, there would be no impacts as a result of the proposed development. On the basis of this, the proposed development accords with Policy 42.

Policy 43 Protected Species and Nationally and Locally Protected Sites

6.3.25 This policy relates specifically to protected species and designated sites of local and / or national importance (e.g. Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR) and Local Sites (LS), etcetera).

6.3.26 There are four SSSIs located within 2 km of the site, the closest of which are the Fairy Holes Cave SSSI, located 800 m to the south-west, and the Westernhope Burn Wood SSSI, located 1.5 km to the south. Owing to the nature and scale of the proposed development and the distance between the site and the SSSIs, there would be no impacts as a result of the proposed development.

6.3.27 The habitats at / around the site support five bat species. The proposed development will not result in the damage or loss of existing hedgerows, trees or woodland, and as activities associated with the construction and operational phases will be restricted to the hours of 07:00 and 19:00, there would be no night-time working. As such, no impacts upon any roosting / foraging bats. The habitats at / around the site also support in the order of 60 breeding bird species. Whilst the installation of the gravel tracks would result in the temporary removal of pasture grassland, considered to be of limited ecological value, the installation would (where possible) be timed to occur outside of the bird nesting season and the pastureland would be restored at the end of the operational phase. As such, the impact is considered to be long-term neutral.

6.3.28 On the basis of the above, the proposed development accords with Policy 43.

Policy 44 Historic Environment

6.3.29 This policy states that new development should "...sustain the significance of designated and non-designated heritage assets, including any contribution made by their setting", with "...great weight given to the conservation of designated assets and their settings." Under the policy, new development that would result in 'less than substantial harm' to a designated heritage asset would be weighed against public benefits. Any development that would result in 'substantial harm to / total loss of the significance' of a designated heritage asset would only be acceptable where it is demonstrated that substantial public benefits outweigh the harm / loss.

6.3.30 There are no designated heritage assets within the site area. Within a wider 1 km search area of the site, centred on the proposed works, eight designated heritage assets are situated; one scheduled medieval hunting lodge site, one Grade II* listed structure and six Grade II listed

structures. Within a wider 2 km search area there is one Grade II* Listed Building, three Scheduled Monuments and one Conservation Area present. The proposed development would not directly (physically) impact the significance of known designated heritage assets within the vicinity of the site. The proposals, through introducing change within the setting of these assets has the potential to indirectly affect an appreciation of their significance.

6.3.31 The proposed works would result in visual changes to the setting of nearby heritage assets, but such change would be temporary and any potential harm to significance as result of the changes also temporary in nature. Upon completion of the boring works, the drill rigs will be removed, the abstraction and reinjection wells will be 6 feet in height and the monitoring borehole will be circa 30 cm in height. The testing will operate on a 24-hour basis over five years, after which the well heads will be capped (see Image 9) and periodic monitoring undertaken for a further five years.

6.3.32 It is anticipated that potential effects to significance would be less than substantial in effect with those effects arising from the presence of drill rigs being temporary in nature, with the drill rigs being removed on completion of the boring. In the medium and long-term, the location of the development proposals within the valley close to the River Wear would assist in minimising intervisibility with nearby assets. In accordance with Policy 44 (and paragraph 202 of the 2021 NPPF), less than substantial harm to the significance of designated heritage assets requires weighing against public benefits offered by the proposals, which are discussed in Sections 1.3 and 6.2 of this Planning Statement.

6.3.33 In consideration of the baseline, there is evidence for Romano-British agricultural activity within the vicinity of the site as recorded by the Stanhope Park Survey. No such potential for Romano-British remains in the vicinity of the boreholes was identified during the site visit, but there remains the potential for sub-surface remains to survive. However, it is anticipated that the proximity of the site to the flood plain and the embankment would reduce potential, this location likely being less desirable for occupation. There is moderate potential for remains relating to agricultural management from the medieval period onwards within the site. Any remains are anticipated to be of low importance. It is anticipated that, due to the nature of the proposals and the borehole diameters not exceeding 30 cm, potential impacts to unknown archaeological remains would be limited. In consideration of Policy 44, it is anticipated that a programme of archaeological fieldwork (if it is required) could be delayed as a condition to consent and undertaken as mitigation works, as a phased programme (if considered necessary), in accordance with a Written Scheme of Investigation prepared in consultation with the Durham Planning Archaeologist. This would, in consideration of the Planning Practice Guidance, be reasonable and proportionate on reflection of the information presented within the baseline data, which indicates that there is no evidence to suggest the presence of remains within the boundary of the site which could preclude development.

6.3.34 On the basis of the above, the proposed development accords with Policy 44.

6.4 North Pennines AONB Management Plan 2019-24

6.4.1 That states that "…change is inevitable and often desirable. Development which meets local and national need should take place in accordance with local and national policy and it is entirely possible to do this without compromising the special qualities of the North Pennines."

6.4.2 Whilst a small portion of the site falls within the North Pennines AONB, the proposed development is a very small-scale development, and the plant present onsite during both construction and operational phases would be limited. Once the construction phase is complete, the drill rigs would be removed from site. During operation, the plant would only comprise the wellheads, pumps and the IBCs. The wellheads and the pumps would be appropriately coloured / screened as to be sympathetic to the surrounding landscape; the IBCs would be removed from site at the end of each day. The lifespan of the (temporary) proposed development would be five years, with five years of periodic monitoring, after which the site would be restored to its former use.

6.4.3 In relation to national and local policy, the proposed development accords with the objectives of the UK Renewable Energy Strategy, Point 4 of the 2020 The Ten Point Plan for a Green Industrial Revolution policy paper 2009 and the principles of the 2021 NPPF in that it would aid in a move away from a reliance upon fossil fuels (a major contributing factor in climate change). The processed lithium would be used locally in the manufacture of lithium-ion batteries for renewable electric energy technology, which is vital in the move towards renewable, low carbon energy. Although partially falling within the North Pennines AONB, the location of the site is directly tied to where the presence of lithium-rich groundwater within the Weardale granite is available in commercially viable quantities.

6.4.4 On the basis of the above, the proposed development accords with the management plan.

6.5 North Pennines AONB Planning Guidelines

Guidelines: Development: Renewable Energy

6.5.1 In relation to renewable energy, AONB planning guidelines states that "…the AONB has the potential to contribute to this process by utilising its renewable resources where this can be done in a manner which is compatible with the purposes of its designation." As stated in relation to the AONB management plans, above, the location of the site is directly tied to where the presence of lithium-rich groundwater within the Weardale granite is available in commercially viable quantities. The proposed development is a small-scale development and the requisite plant would be limited. The drill rigs would be removed from site following construction and, during operation, the wellheads and pumps would be appropriately coloured / screened as to be sympathetic to the surrounding landscape; the IBCs would be removed from site at the end of each day. The lifespan of the (temporary) proposed development would be five years, with five years of periodic monitoring, after which the site

would be restored to its former use. On the basis of this, it is considered that the proposed development would not conflict with the aims of the management plan.

7 SUMMARY

7.1.1 The site is located at Ludwell Farm in County Durham, which is currently comprised of Grade 3b (non-BMV) agricultural land used for grazing. The proposed development is a pilot scale, field development scheme, with an overall footprint of less than 1 ha, that will abstract fluids from the lithium-bearing groundwater for offsite processing to obtain battery grade lithium and then inject the lithium-depleted groundwater back down into the granite. Battery grade lithium will be used as a raw material in the manufacture of lithium-ion batteries used in electric vehicles and other renewable energy technology. The abstraction wells, reinjection wells and associated pumps are to be located at Ludwell Farm, and the processing of the lithium-bearing groundwater will be undertaken offsite. The operational lifespan is to be five years, with a following five years of periodic monitoring, after which all plant would be removed and the site restored.

7.1.2 It has been demonstrated within this Planning Statement that the proposed development accords with the relating national and local planning policies. A small portion of the western extent of the site does fall within the North Pennines AONB and, under Policy 38 of the County Durham Local Plan, a case for 'very special circumstances' has been made (see Section 6.2) to justify that the proposed development is in-line with the Uks climate change ambitions and national policy, is in the public interest and should be considered appropriate development. Overall, it is considered that there are no constraints to prevent the proposed development.

APPENDICES

APPENDIX 1 RELEVENT POLICIES FROM THE COUNTY DURHAM PLAN 2020

Policy 10 – Development in the Countryside

Development in the countryside will not be permitted unless allowed for by specific policies in the Plan, relevant policies within an adopted neighbourhood plan relating to the application site or where the proposal relates to one or more of the following exceptions:

Economic Development

Development necessary to support:

a) an existing agricultural or other existing rural land-based enterprise or associated farm diversification scheme, including the provision of new or the extension of existing building(s), structures or hard standings required for the functioning of the enterprise;

b) the expansion of an existing business falling beyond the scope of a rural land based enterprise, where it can be clearly demonstrated that it is, or has the prospect of being, financially sound and will remain so;

c) the establishment of a new agricultural or other rural land-based enterprise which clearly demonstrates an essential and functional need for that specific location and where it can be clearly demonstrated that it has the prospect of being financially sound and will remain so; or

d) the undertaking of non-commercial agricultural activity which is located within or directly adjoining the applicant's existing residential curtilage which is of a scale commensurate to the incidental enjoyment of that existing dwelling.

In all instances the resulting development must be of a design, construction and scale which is suitable for and commensurate to the intended use. In respect to (a), (b) and (c) any resulting building(s), other structure(s) and hard standing(s) must be well related to the associated farmstead or business premises unless a clear need to ensure the effective functioning of the business for an alternative location can be demonstrated by the applicant.

Infrastructure Development

Development necessary to support:

e) essential infrastructure where the need can be demonstrated for that location;

f) the provision of new, or the enhancement of, existing community facilities; or

g) development of a new, or the enhancement of, an existing countryside-based recreation or leisure activity which will improve access to the countryside for all in terms of walking, cycling, horse riding and sailing without giving rise to adverse environmental impacts.

Development of Existing Buildings

Development necessary to support:

h) the change of use of an existing building or structure which: already makes a positive contribution to the character and appearance of the area and is capable of conversion without complete or substantial rebuilding, disproportionate extension or unsympathetic alterations;

results in an enhancement of the building's immediate setting;

does not result in the unjustified loss of a community service or facility; and

in the case of a heritage asset, represents the optimal viable use of that asset consistent with their conservation.

i) the intensification of a use through subdivision;

j) the replacement of an existing dwelling in the same location with one of a comparable footprint and mass where this is clearly justified; or

k) an extension of an existing dwelling or other householder development within the existing curtilage which is incidental to the enjoyment of the dwelling, including proposals to facilitate home working.

General Design Principles for all Development in the Countryside

New development in the countryside must accord with all other relevant development plan policies and by virtue of their siting, scale, design and operation must not:

l) give rise to unacceptable harm to the heritage, biodiversity, geodiversity, intrinsic character, beauty or tranquillity of the countryside either individually or cumulatively, which cannot be adequately mitigated or compensated for;

m) result in the merging or coalescence of neighbouring settlements;

n) contribute to ribbon development;

o) impact adversely upon the setting, townscape qualities, including important vistas, or form of a settlement which cannot be adequately mitigated or compensated for;

p) be solely reliant upon, or in the case of an existing use, significantly intensify accessibility by unsustainable modes of transport. New development in countryside locations that is not well served by public transport must exploit any opportunities to make a location more sustainable including improving the scope for access on foot, by cycle or by public transport;

q) be prejudicial to highway, water or railway safety; and

r) impact adversely upon residential or general amenity.

New development in the countryside must also:

s) minimise vulnerability and provide resilience to impacts arising from climate change, including but not limited to, flooding; and

t) where applicable, maximise the effective use of previously developed (brownfield) land providing it is not of high environmental value.

Policy 14 – Best and Most Versatile Agricultural Land and Soil Resources

Agricultural Land

Development of the best and most versatile agricultural land, will be permitted where it is demonstrated that the benefits of the development outweigh the harm, taking into account economic and other benefits.

Where mineral working is proposed on best and most versatile agricultural land, proposals should seek where practicable to minimise its loss and retain its longer-term capability unless the benefits of alternative restoration strategies outweigh its loss.

Soil

All development proposals relating to previously undeveloped land must demonstrate that soil resources will be managed and conserved in a viable condition and used sustainably in line with accepted best practice.

Policy 20 – Green Belt

Development proposals within the Green Belt will be determined in accordance with national planning policy.

Policy 31 – Amenity and Pollution

Development will be permitted where it can be demonstrated that there will be no unacceptable impact, either individually or cumulatively, on health, living or working conditions or the natural environment and that can be integrated effectively with any existing business and community facilities. The proposal will also need to demonstrate that future occupiers of the proposed development will have acceptable living and/or working conditions. Proposals which will have an unacceptable impact such as through overlooking, visual intrusion, visual dominance or loss of light, noise or privacy will not be permitted unless satisfactory mitigation measures can be demonstrated whilst ensuring that any existing business and/or community facilities do not have any unreasonable restrictions placed upon them as a result.

Development which has the potential to lead to, or be affected by, unacceptable levels of air quality, inappropriate odours, noise and vibration or other sources of pollution, either individually or cumulatively, will not be permitted including where any identified mitigation cannot reduce the impact on the environment, amenity of people or human health to an acceptable level.

Development which does not minimise light pollution and demonstrate that the lighting proposed is the minimum necessary for functional or security purposes will not be permitted.

Sensitive development (such as housing, schools and hospitals) will not be permitted near to an existing or potentially polluting development including wastewater and sewage treatment facilities. Potentially polluting development will not be permitted near to sensitive uses unless satisfactory mitigation can be demonstrated.

Policy 33 – Renewable and Low Carbon Energy

Renewable and low carbon energy development in appropriate locations will be supported. In determining planning applications for such projects significant weight will be given to the achievement of wider social, environmental and economic benefits.

Proposals should include details of associated developments including access roads, transmission lines, pylons and other ancillary buildings. Where relevant, planning applications will also need to include a satisfactory scheme to restore the site to a quality of at least its original condition once operations have ceased. Where necessary, this will be secured by bond, legal agreement or condition.

Policy 35 – Water Management

Flood Risk and Sustainable Drainage Systems

All development proposals will be required to consider the effect of the proposed development on flood risk, both on-site and off-site, commensurate with the scale and impact of the development and taking into account the predicted impacts of climate change for the lifetime of the proposal. This includes completion of a Flood Risk Assessment (FRA) where appropriate. Development will not be permitted unless:

a) in the functional floodplain (flood zone 3b), as identified in the Strategic FRA, it is water compatible or essential infrastructure;

b) in flood zones 2 and 3a it passes the Sequential Test, and if necessary the Exceptions Test, as required by national policy; and

c) it can be proven through an FRA that the development, including the access, will be safe, without increasing or exacerbating flood risk elsewhere, any residual risk can be safely managed and where possible will reduce flood risk overall.

Regarding Surface Water Flood Risk:

d) for major developments the management of water must be an intrinsic part of the overall development;

e) on all new development there is no net increase in surface water runoff for the lifetime of the development. Where greenfield sites are to be developed, the runoff rates must not exceed and where possible should reduce the existing greenfield runoff rates. On previously developed land, as close as practicable to a greenfield rate must be achieved. In exceptional cases where the developer can satisfactorily demonstrate that greenfield run-off rates are unachievable, a betterment rate (which should be a minimum of 50% of the existing site run-off rate) will be

agreed with the council. Surface water run-off must be managed at source wherever possible and disposed of in the following order:

to an infiltration or soak away system.

to a watercourse open or closed.

to a surface water sewer.

to a combined sewer.

f) Disposal to combined sewers should be the last resort once all other methods have been clearly explored and evidenced;
g) part of the development site is set aside for surface water management and uses measures that do not increase flood risk elsewhere. These measures will supplement green infrastructure networks, thereby contributing to mitigation of climate change, water quality and flooding as an alternative to, or complementary to, hard engineering;
h) where sites may be susceptible to over land flood flows (as shown in the Strategic Flood Risk Assessment) or lie within a Surface Water Risk Area (as shown in the Surface Water Management Plan) then developers must put adequate protection in place;
i) the development incorporates a Sustainable Drainage System (SuDS) to manage surface water drainage. Where SuDS are provided arrangements must be put in place for their whole life management and maintenance. Where appropriate' SuDS should contribute to the provision of Green Infrastructure and biodiversity net gains; and
j) all new development with culverts running through the site must seek to de-culvert watercourses for flood risk management and environmental benefit, unless it can be clearly demonstrated that this is not practical.

Where improvement works are required to ensure that the drainage infrastructure has sufficient capacity to support proposed new development, developer contributions will be required in accordance with Policy 25 (Developer Contributions).

Water Quality

The quantity and quality of surface and groundwater bodies shall be protected and where possible enhanced. All commercial, industrial and major residential development must demonstrate control of the quality of surface water runoff during construction and for the lifetime of the development. New development will be required to incorporate appropriate water pollution control measures.

Development adjacent to, over or in a watercourse should consider opportunities to improve the river environment and water quality.

Development which could adversely affect the quality or quantity of surface or groundwater, flow of groundwater or ability to abstract water will not be permitted unless it can be demonstrated that no adverse impact would occur or mitigation could be put in place to minimise this impact.

Policy 38 – North Pennines Area of Outstanding Natural Beauty

The North Pennines Area of Outstanding Natural Beauty (AONB) will be conserved and enhanced. In making decisions on development great weight will be given to conserving landscape and scenic beauty.

Major developments will only be permitted in the AONB in exceptional circumstances and where it can be demonstrated to be in the public interest, in accordance with national policy.

Any other development in or affecting the AONB will only be permitted where it is not, individually or cumulatively, harmful to its special qualities or statutory purposes.

Any development should be designed and managed to the highest environmental standards and have regard to the conservation priorities and desired outcomes of the North Pennines AONB Management Plan and to the guidance given in the North Pennines AONB Planning Guidelines, the North Pennines AONB Building Design Guide and the North Pennines AONB Moorland Tracks and Access Roads Planning Guidance Note as material considerations.

Policy 39 – Landscape

Proposals for new development will be permitted where they would not cause unacceptable harm to the character, quality or distinctiveness of the landscape, or to important features or views.

Proposals will be expected to incorporate appropriate measures to mitigate adverse landscape and visual effects.

Development affecting Areas of Higher Landscape Value defined on Map H, will only be permitted where it conserves, and where appropriate enhances, the special qualities of the landscape, unless the benefits of development in that location clearly outweigh the harm.

Development proposals should have regard to the County Durham Landscape Character Assessment and County Durham Landscape Strategy and contribute, where possible, to the conservation or enhancement of the local landscape.

Policy 40 – Trees, Woodlands and Hedges

Trees

Proposals for new development will not be permitted that would result in the loss of, or damage to, trees of high landscape, amenity or biodiversity value unless the benefits of the proposal clearly outweigh the harm. Where development would involve the loss of ancient or veteran trees it will be refused unless there are wholly exceptional reasons and a suitable compensation strategy exists.

Proposals for new development will be expected to retain existing trees where they can make a positive contribution to the locality or to the development, maintain adequate stand-off distances between them and new land-uses, including root protection areas where necessary, to avoid future

conflicts, and integrate them fully into the design having regard to their future management requirements and growth potential.

Where trees are lost, suitable replacement planting, including appropriate provision for maintenance and management, will be required within the site or the locality.

Where applications are made to carry out works to trees in Conservation Areas or that are covered by a Tree Preservation Order, they will be determined in accordance with the council's Tree Management Policy Document (or any subsequent revisions).

Woodlands

Proposals for new development will not be permitted that would result in the loss of, or damage to, woodland unless the benefits of the proposal clearly outweigh the impact and suitable replacement woodland planting, either within or beyond the site boundary, can be undertaken.

Proposals for new development resulting in the loss or deterioration of ancient woodlands as shown on the policies map, will be refused unless there are wholly exceptional reasons and a suitable compensation strategy exists. Proposals affecting ancient woodland (including planted ancient woodland sites) not previously identified as such, will be subject to the same considerations.

Proposals for new development will be expected to maintain adequate stand-off distances between woodland and new land-uses to avoid future conflicts, and integrate them fully into the design having regard to their future management requirements and growth potential.

Hedges

Proposals for new development will not be permitted that would result in the loss of hedges of high landscape, heritage, amenity or biodiversity value unless the benefits of the proposal clearly outweigh the harm.

Proposals for new development will be expected to retain existing hedgerows where appropriate and integrate them fully into the design having regard to their management requirements.

Where any hedges are lost, suitable replacement planting or restoration of existing hedges, will be required within the site or the locality, including appropriate provision for maintenance and management.

Policy 41 – Biodiversity and Geodiversity

Proposals for new development will not be permitted if significant harm to biodiversity or geodiversity resulting from the development cannot be avoided, or appropriately mitigated, or, as a last resort, compensated for.

Proposals for new development will be expected to minimise impacts on biodiversity by retaining and enhancing existing biodiversity assets and features and providing net gains for biodiversity including

by establishing coherent ecological networks. Measures should be appropriate, consistent with the biodiversity of the site and contribute to the resilience and coherence of local ecological networks.

Proposals for new development will be expected to protect geological features and have regard to Geodiversity Action Plans, the Durham Geodiversity Audit and where appropriate promote public access, appreciation and interpretation of geodiversity.

Development proposals where the primary objective is to conserve or enhance biodiversity or geodiversity will be permitted, where they accord with other relevant policies in the Plan.

Development proposals which are likely to result in the loss or deterioration of irreplaceable habitat(s) (such as peatlands or lowland fen) will not be permitted unless there are wholly exceptional reasons and a suitable compensation strategy exists.

Policy 43 – Protected Species and Nationally and Locally Protected Sites

All development proposals in, or which are likely to adversely impact upon (either individually or in combination with other developments), any of the following national designations (where not a component of an internationally designated site):

- Sites of Special Scientific Interest
- National Nature Reserves

will only be permitted where the benefits of development in that location clearly outweigh the impacts on the interest features on the site and any wider impacts on the network of sites.

All development proposals in, or which are likely to adversely impact upon, any of the following local designations:

- Local Sites (Geology and Wildlife)
- Local Nature Reserves (LNRs)

will only be permitted when it can be demonstrated that the benefits of development in that location outweigh the impacts on the local nature conservation interest or scientific interest on the site and any wider impacts on the network of sites.

In all cases where development impacts adversely on a designated site, mitigation, or as a last resort compensation, must be provided and it must be demonstrated that the proposed mitigation or compensatory measures are appropriate to the designations assigned to the site and deliver clear net gains for the habitats and/or species assemblages the site is designated for.

In relation to protected species and their habitats, all development which, alone or in combination, has a likely adverse impact on the ability of species to survive, reproduce and maintain or expand their current distribution will not be permitted unless:

appropriate mitigation, or as a last resort compensation, can be provided, which maintains a viable population and where possible provides opportunities for the population to expand; and

where the species is a European protected species, the proposal also meets the licensing criteria (the 3 legal tests) of overriding public interest, no satisfactory alternative and favourable conservation status.

Policy 44 – Historic Environment

Development will be expected to sustain the significance of designated and non-designated heritage assets, including any contribution made by their setting. Development proposals should contribute positively to the built and historic environment and should seek opportunities to enhance and, where appropriate, better reveal the significance and understanding of heritage assets whilst improving access where appropriate.

Designated Assets

Great weight will be given to the conservation of all designated assets and their settings (and non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments). Such assets should be conserved in a manner appropriate to their significance, irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance. Development which leads to less than substantial harm to a designated heritage asset will be weighed against the public benefits of the proposal.

Development which leads to substantial harm to, or total loss of, the significance of a designated heritage asset will only be acceptable where it can be demonstrated that it is necessary to achieve substantial public benefits that outweigh that harm or loss, or where all of the following apply:

- the nature of the heritage asset prevents all reasonable uses of the site;
- no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation;
- conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and
- the harm or loss is outweighed by the benefit of bringing the site back into use.

In determining applications, particular regard will be given to the following:

Scheduled Monuments

a) the sustainable management of the monument and its setting.

Listed Buildings

b) respect for the historic form, setting, fabric, materials, detailing, and, any other aspects including curtilage, which contribute to the significance of the building or structure; and
c) the retention of the character and special interest of buildings when considering alternative viable uses.

Historic Battlefields

d) the sustainable management of the battlefield site and its setting.

Registered Parks and Gardens

e) the sustainable management of the landscape, its features and setting.

Conservation Areas

f) the demonstration of understanding of the significance, character, appearance and setting of the conservation area and how this has informed proposals to achieve high quality sustainable development, which is respectful of historic interest, local distinctiveness and the conservation or enhancement of the asset;
g) the manner in which the proposal responds positively to the findings and recommendations of conservation area character appraisals and management proposals; and
h) respect for, and reinforcement of, the established, positive characteristics of the area in terms of appropriate design (including pattern, layout, density, massing, features, height, form, materials and detailing).

Non-designated Assets

A balanced judgement will be applied where development impacts upon the significance and setting of non-designated heritage assets.

In determining applications which would affect a known or suspected non-designated heritage asset with an archaeological interest, particular regard will be given to the following:

i ensuring that archaeological features are generally preserved in situ; and

ii in cases where the balanced judgement concludes preservation in situ should not be pursued, it will be a requirement that they are appropriately excavated and recorded with the results fully analysed and made publicly available.

Heritage at Risk

The council will seek to reduce the number of heritage assets identified at risk, from either neglect, decay or other threat, and seek to avoid assets becoming at risk in the future. Weight will be given to any significant improvements to at risk heritage assets as a result of development proposals. The deteriorated state of the heritage asset will not be taken into account where evidence shows that the asset has been deliberately neglected or damaged.

If the loss of the whole or part of a heritage asset is accepted, conditions will be secured to ensure the new development proceeds after the loss has occurred. Full and proper recording of the asset must be undertaken and made publicly available prior to its loss, in a manner proportionate to the importance of, and impact upon, the asset.

APPENDIX 2 REFERENCES

The following have been referred to / used to inform this Planning Statement:

Countryside and Rights of Way Act 2000.
https://www.legislation.gov.uk/ukpga/2000/37/contents

County Durham Plan Adopted 2020 (Durham County Council, 2020).
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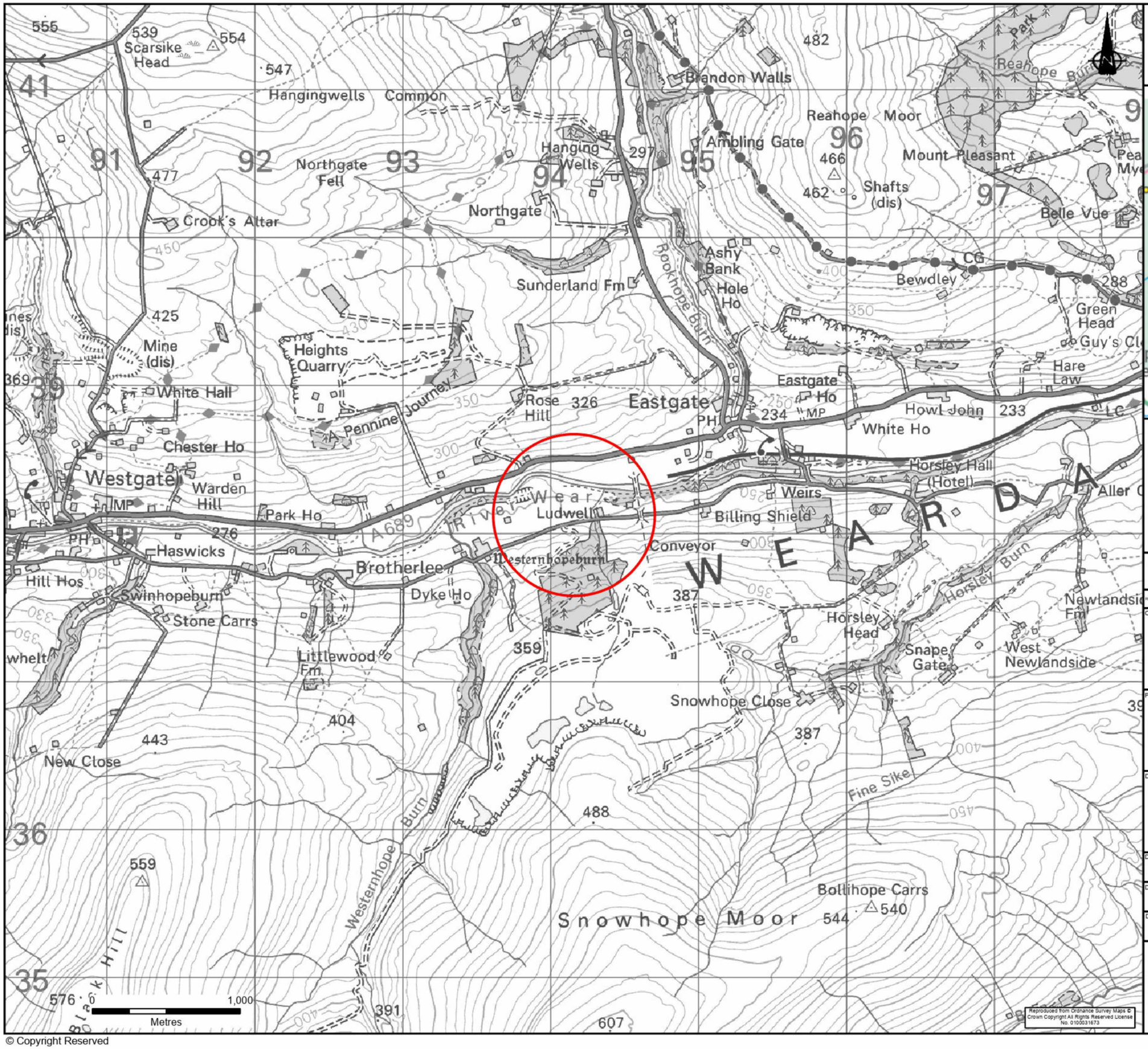
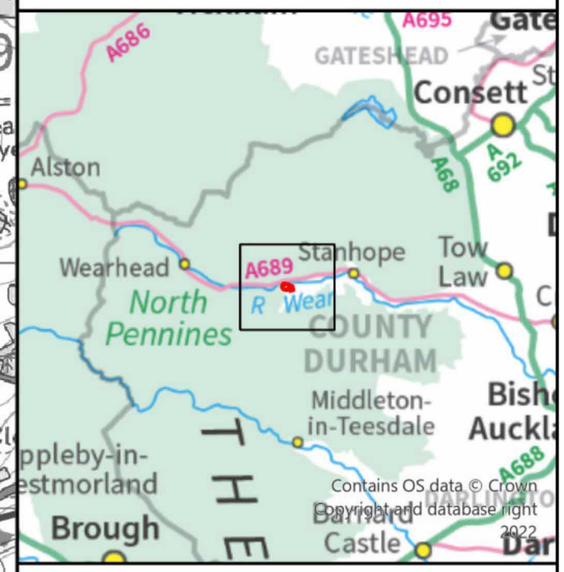
DRAWINGS / FIGURES

Figure 1 Site Location Plan





Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT

NORTHERN NLi LITHIUM

PROJECT

LUDWELL FARM WEARDALE

DRAWING TITLE

FIGURE 1
SITE LOCATION

DRG No.		REV
NT15799/PPPS/ FIGURE 1		A
DRG SIZE	SCALE	DATE
A3	1:25,000	13/09/2022
DRAWN BY	CHECKED BY	APPROVED BY
SRW	GS	LG

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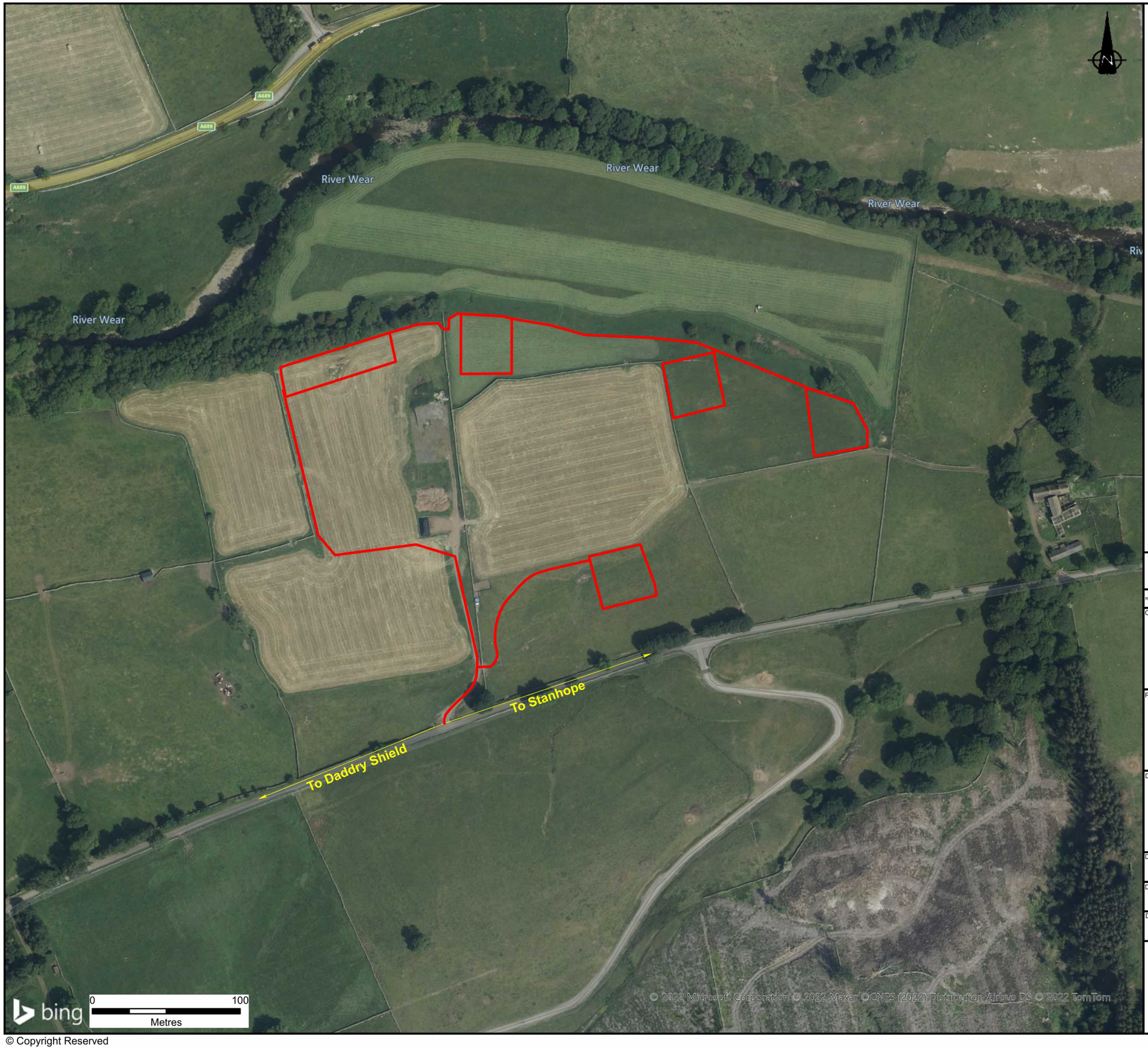
Figure 2a Redline Boundary



KEY

Redline Boundary

Total Site Area = 0.91 hectares (ha)

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

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PROJECT

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DRAWING TITLE

FIGURE 2A
PLANNING APPLICATION REDLINE BOUNDARY

DRG No.		REV
NT15799/PPPS/FIGURE 2A		C
DRG SIZE	SCALE	DATE
A3	1:2,500	26/10/2022
DRAWN BY	CHECKED BY	APPROVED BY
BRC	GS	NB

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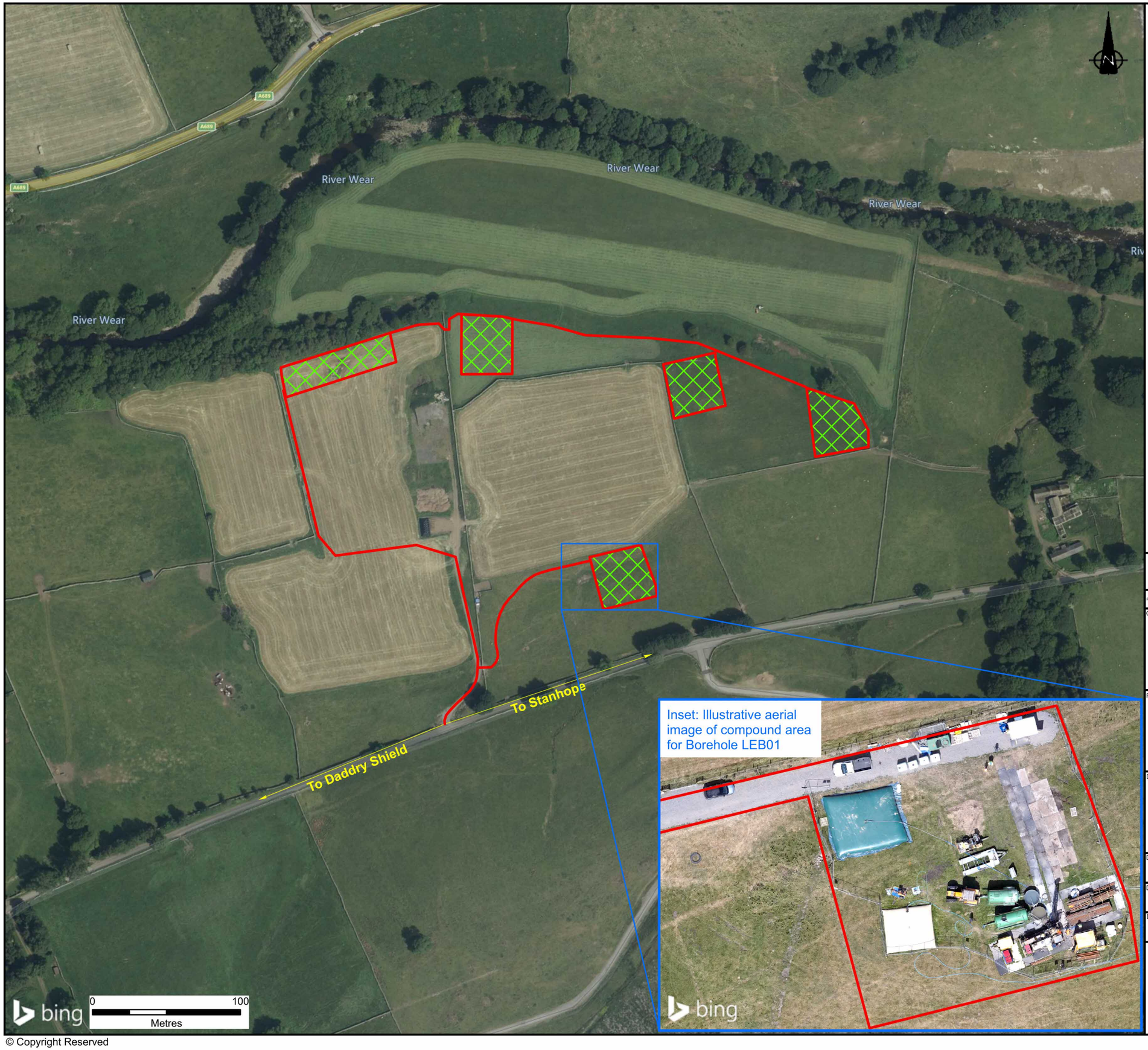
Figure 2b Compound Areas



KEY

Redline Boundary

Compound Areas

Total Site Area = 0.91 hectares (ha)

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

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DRAWING TITLE

FIGURE 2B
COMPOUND AREAS

DRG No.	REV
NT15799/PPPS/FIGURE 2B	A

DRG SIZE	SCALE	DATE
A3	1:2,500	26/10/2022

DRAWN BY	CHECKED BY	APPROVED BY
BRC	GS	NB

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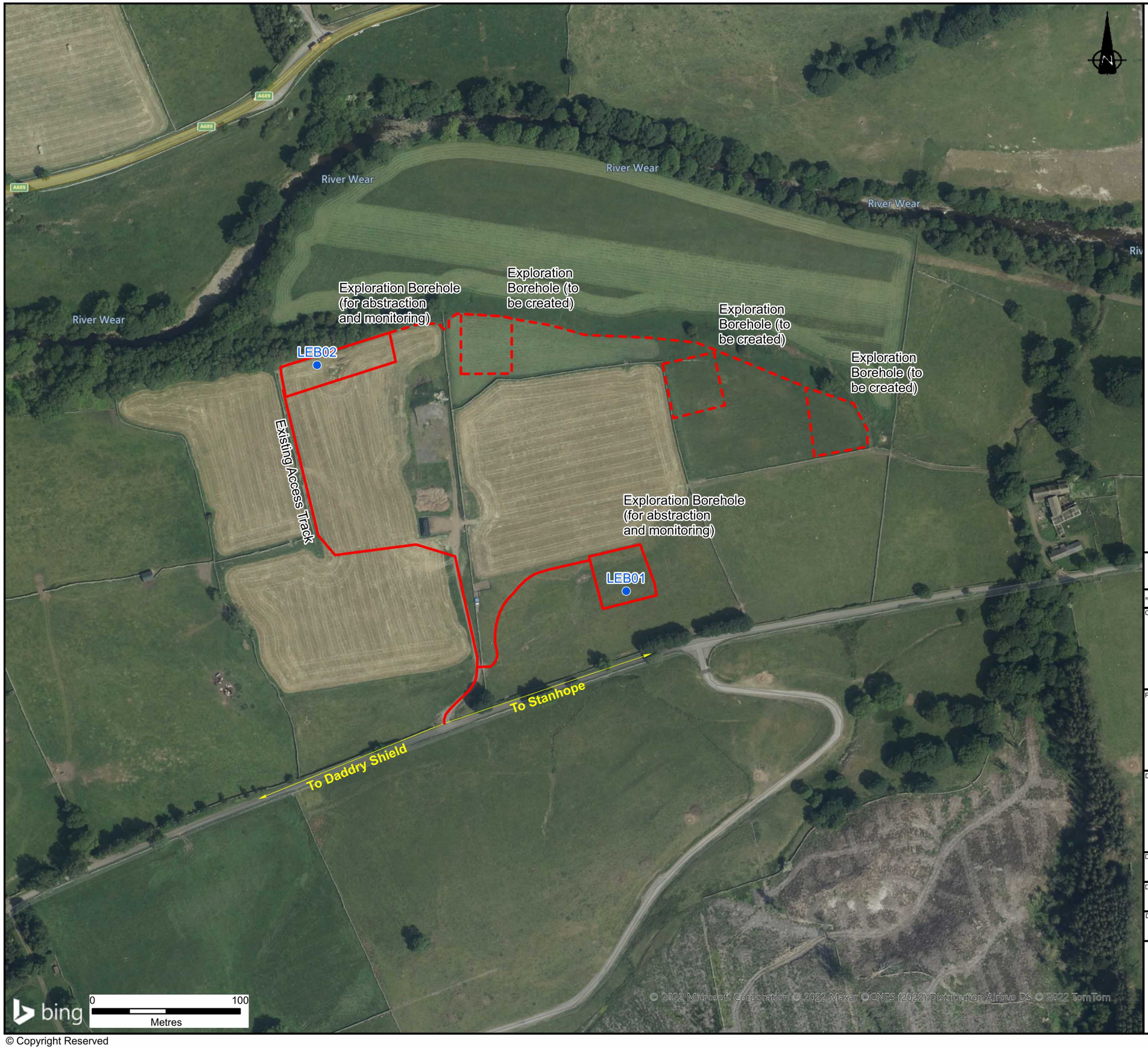
Figure 2c Existing Permitted Development Areas



KEY

- Exploration Borehole (for abstraction and monitoring)
- Exploration Borehole (to be created)
- Existing access track 3m wide (0.13 ha)
- Proposed access track 3m wide (0.08 ha)
- Road Direction
- Existing Borehole Location

Total Site Area = 0.91 hectares (ha)

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

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LUDWELL FARM WEARDALE

DRAWING TITLE

FIGURE 2C
EXISTING BOREHOLES DRILLED UNDER PERMITTED DEVELOPMENT AND PROPOSED ADDITIONAL AREAS

DRG No.	REV
NT15799/PPPS/FIGURE 2C	A

DRG SIZE	SCALE	DATE
A3	1:2,500	26/10/2022

DRAWN BY	CHECKED BY	APPROVED BY
BRC	GS	NB

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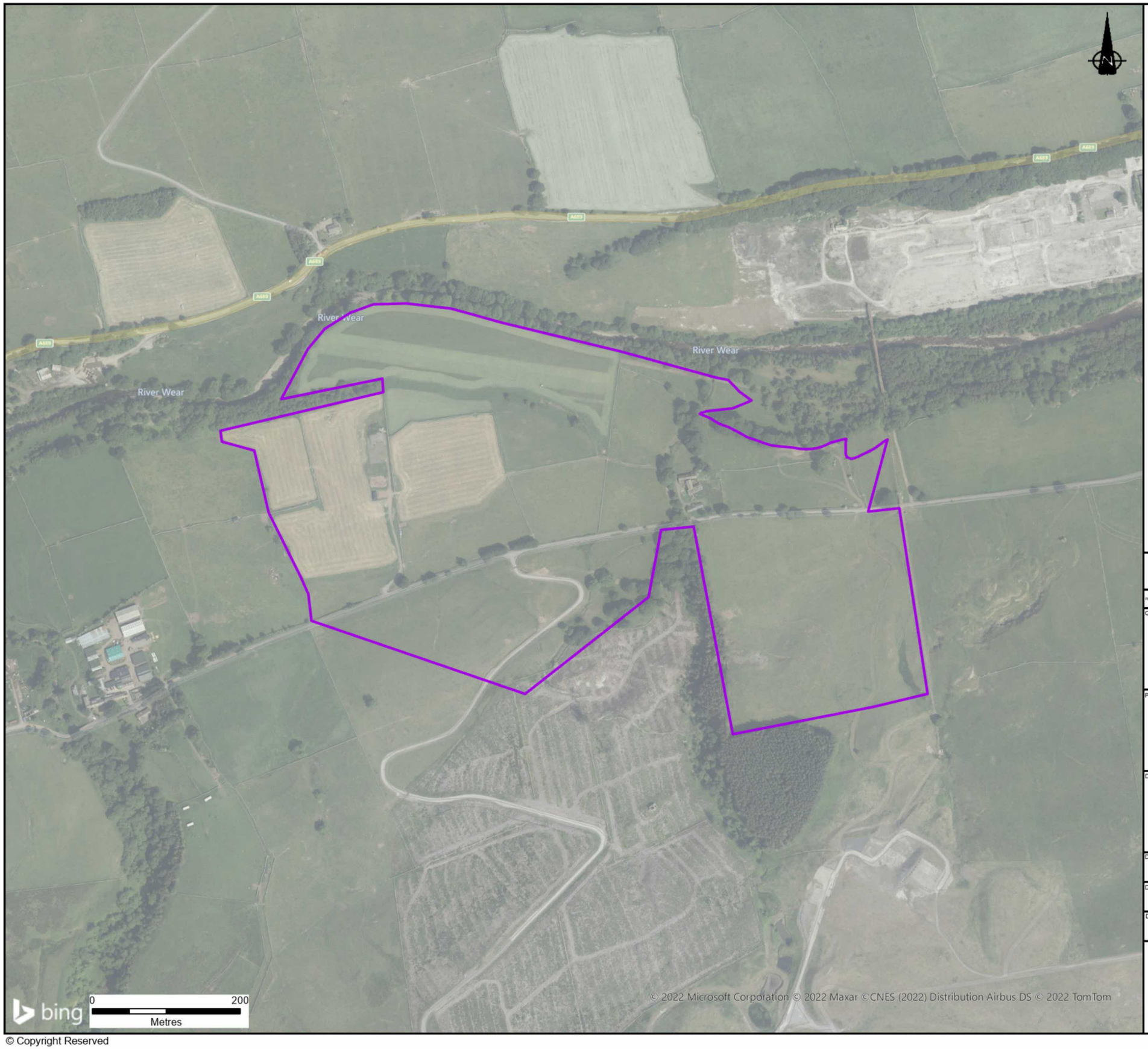
Figure 3 Study Area



KEY

Study Area

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

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DRAWING TITLE

FIGURE 3
STUDY AREA

DRG No.	REV
NT15799/PPPS/FIGURE 3	A

DRG SIZE	SCALE	DATE
A3	1:5,000	13/09/2022

DRAWN BY	CHECKED BY	APPROVED BY
HM	GS	NB

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Figure 4 Designated Areas

Hexhamshire Moors

North Pennine Moors

Muggleswick,Stanhope & Edmundbyers Commons & Blanchland Moor

Slit Woods

West Rigg

Open Cutting

Greenfoot Quarry

Rogerley Quarry

North Pennine Dales Meadows West Newlandside Meadows

Westernhope Burn Wood

Fairy Holes Cave

Bollihope, Pikestone, Eggleston and Woodland Fells

Upper Teesdale

Moor House-Upper Teesdale

0 2 Kilometres

KEY

- Study Area
- 2 and 5 km Buffer
- North Pennines Area of Outstanding Natural Beauty
- North Pennine Moors Special Protection Area
- Special Areas of Conservation
- Sites of Special Scientific Interest
- Ancient Woodland
- North Pennine Moors Important Bird Area
- Areas of High Landscape Value

Notes:

Boundaries are indicative.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

CLIENT: NORTHERN NLi LITHIUM

PROJECT: LUDWELL FARM WEARDALE

DRAWING TITLE: FIGURE 4 DESIGNATED AREAS

DRG No.	REV
NT15799/PPPS/ FIGURE 4	A

DRG SIZE	SCALE	DATE
A3	1:50,000	13/09/2022

DRAWN BY	CHECKED BY	APPROVED BY
SRW	GS	NB

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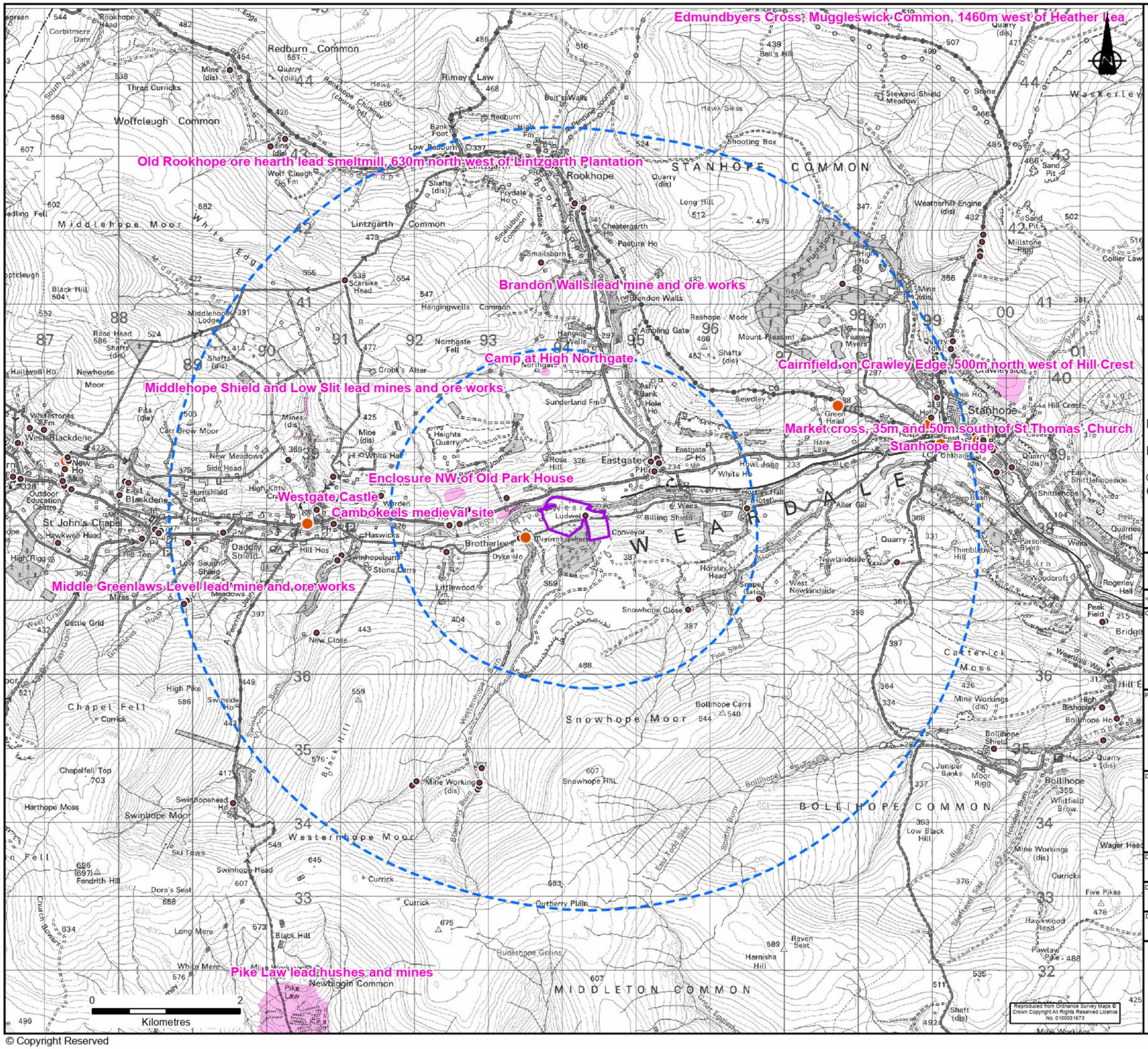
Figure 5 Sensitive Receptors



KEY

- Study Area
- 2 and 5 km Buffer

Listed Buildings

- Grade II* Particularly Important Buildings of more than Special Interest
- Grade II Nationally Important and of Special Interest
- Scheduled Monuments

Notes:

Boundaries are indicative.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

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FIGURE 5
SENSITIVE RECEPTORS

DRG No.	REV
NT15799/PPPS/ FIGURE 5	A

DRG SIZE	SCALE	DATE
A3	1:50,000	13/09/2022

DRAWN BY	CHECKED BY	APPROVED BY
SRW	GS	NB

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Figure 6 Access Network

KEY

- Study Area
- 2 and 5 km Buffer
- Countryside Rights of Way Open Access Land
- Public Rights of Way

National Cycle Network

- On Road
- Traffic Free

Notes:

Boundaries are indicative.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

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DRAWING TITLE

FIGURE 6
ACCESS NETWORK

DRG No.	REV
NT15799/PPPS/ FIGURE 6	A

DRG SIZE	SCALE	DATE
A3	1:50,000	13/09/2022

DRAWN BY	CHECKED BY	APPROVED BY
SRW	GS	NB

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0 2 Kilometres

Figure 7 Topography

KEY

Study Area

2 and 5 km Buffer

Terrain

700 mAOD

150 mAOD

Note:

Boundaries are indicative.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD

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LUDWELL FARM WEARDALE

DRAWING TITLE

FIGURE 7
TOPOGRAPHY

DRG No.		REV
NT15799/PPPS/ FIGURE 7		A
DRG SIZE	SCALE	DATE
A3	1:50,000	13/09/2022
DRAWN BY	CHECKED BY	APPROVED BY
SRW	GS	NB

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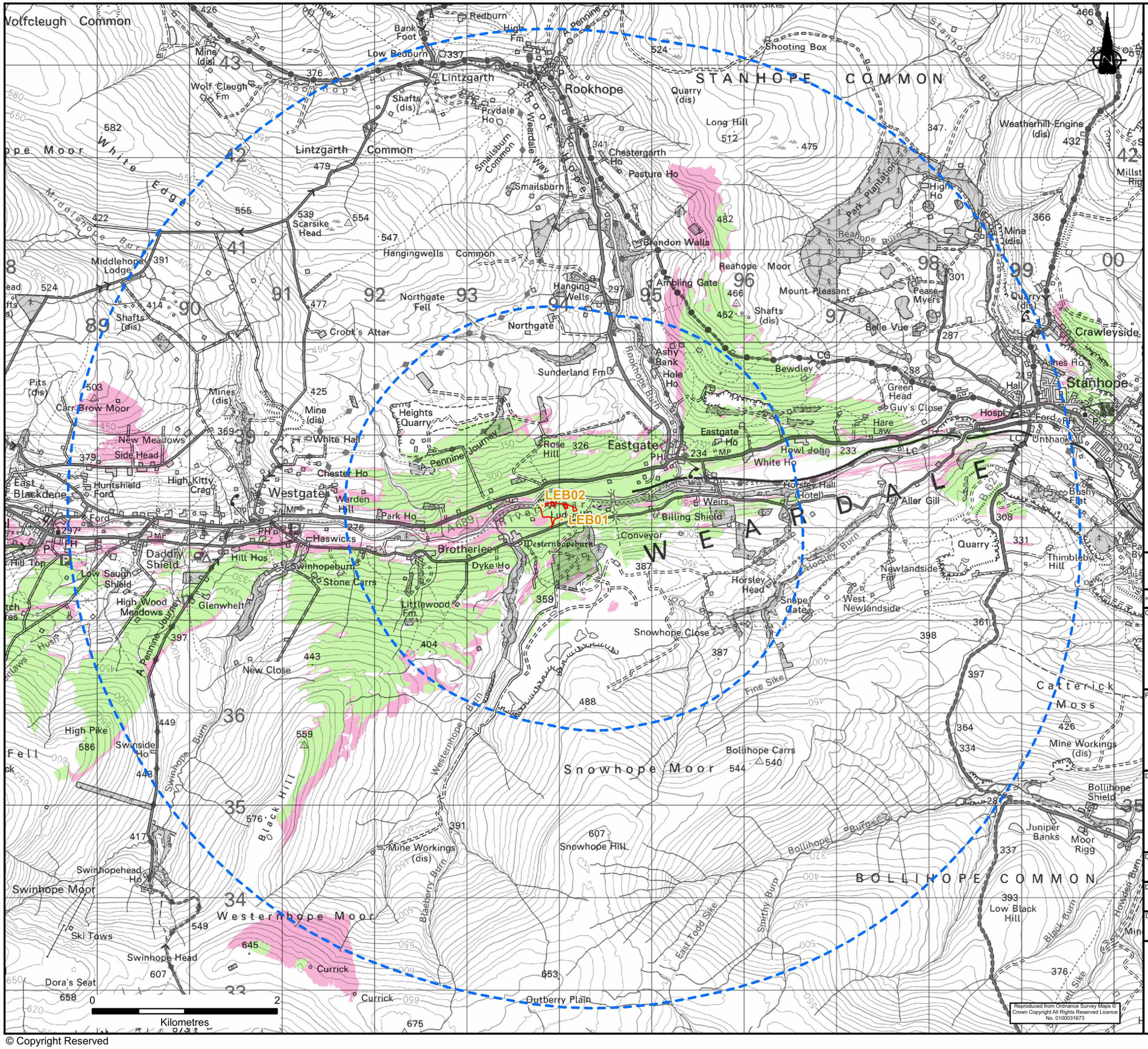
0 2
Kilometres

Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community

Figure 8 Zone of Theoretical Visibility



KEY

- Site Boundary
- 2 and 5 km Buffer
- Area where the Site Boundary is theoretically visible
- Area where drill rig 'LEB01' is theoretically visible
- Existing Borehole Location

Note:

Boundaries are indicative.

The ZTV is based on a multi point grid within the study area. Each point is 27 m above modelled ground level and at ground level.

ZTV is based on digital surface model (EA LiDAR DSM) and takes into account screening.

Environment Agency LiDAR DSM was used to create the model from which the ZTV was produced

The ZTV takes into account an eye height of 2 m.

The ZTV was created using QGIS Software which takes into account the curvature of the Earth.

REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	ZTV & BOUNDARY AMENDMENTS	09/22	SRW	GS	NB
A	FIRST ISSUE	09/22	BRC	GS	LG

CLIENT

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PROJECT

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DRAWING TITLE

FIGURE 8
ZONE OF THEORETICAL VISIBILITY

DRG No.	REV
NT15799/PPPS/FIGURE 8	B

DRG SIZE	SCALE	DATE
A3	1:40,000	29/09/2022

DRAWN BY	CHECKED BY	APPROVED BY
HM	GS	LG

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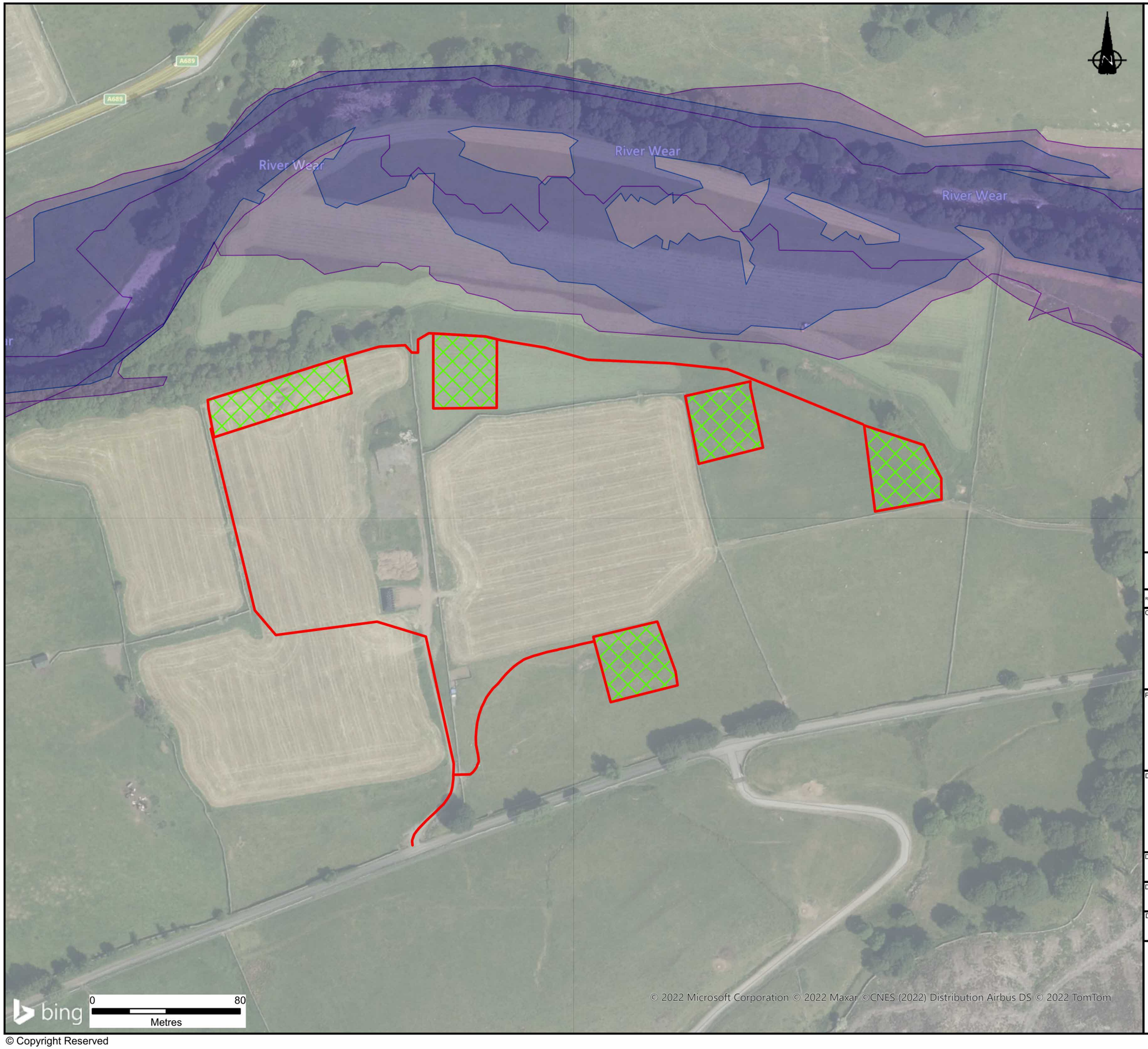
Figure 9 Flood Plain



KEY

- Redline Boundary
- Compound Areas
- Environment Agency Flood Zone 2
- Environment Agency Flood Zone 3

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

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DRAWING TITLE

FIGURE 9
FLOOD PLAIN

DRG No.	REV
NT15799/PPPS/ FIGURE 9	A

DRG SIZE	SCALE	DATE
A3	1:2,000	04/11/2022

DRAWN BY	CHECKED BY	APPROVED BY
BRC	GS	NB

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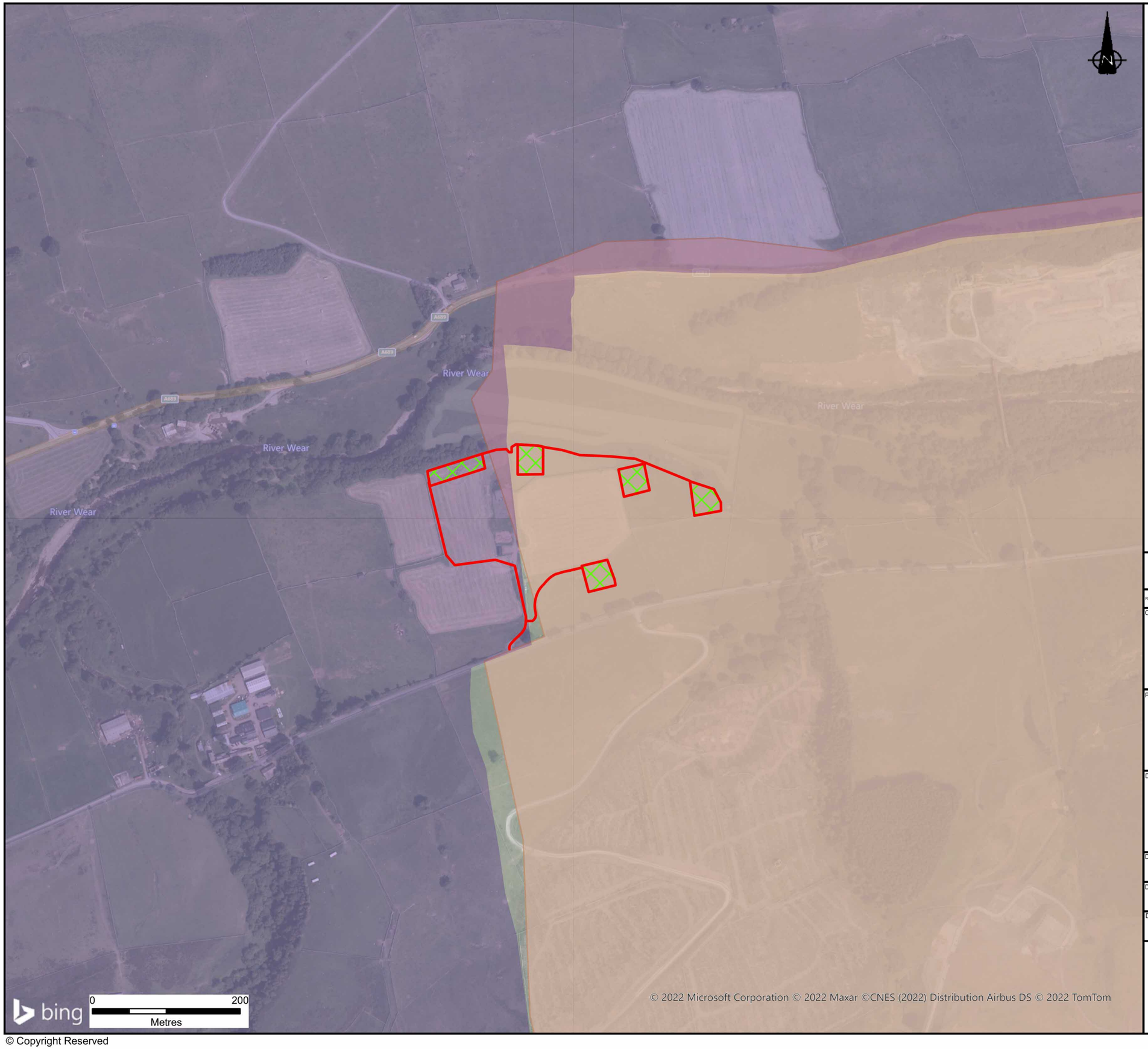
Figure 10 Landscape Designations



KEY

- Redline Boundary
- Compound Areas
- North Pennines Area of Outstanding Natural Beauty
- Areas of High Landscape Value

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

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LUDWELL FARM WEARDALE

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FIGURE 10
LANDSCAPE DESIGNATIONS

DRG No.	REV
NT15799/PPPS/FIGURE 10	A

DRG SIZE	SCALE	DATE
A3	1:5,000	04/11/2022

DRAWN BY	CHECKED BY	APPROVED BY
BRC	GS	NB

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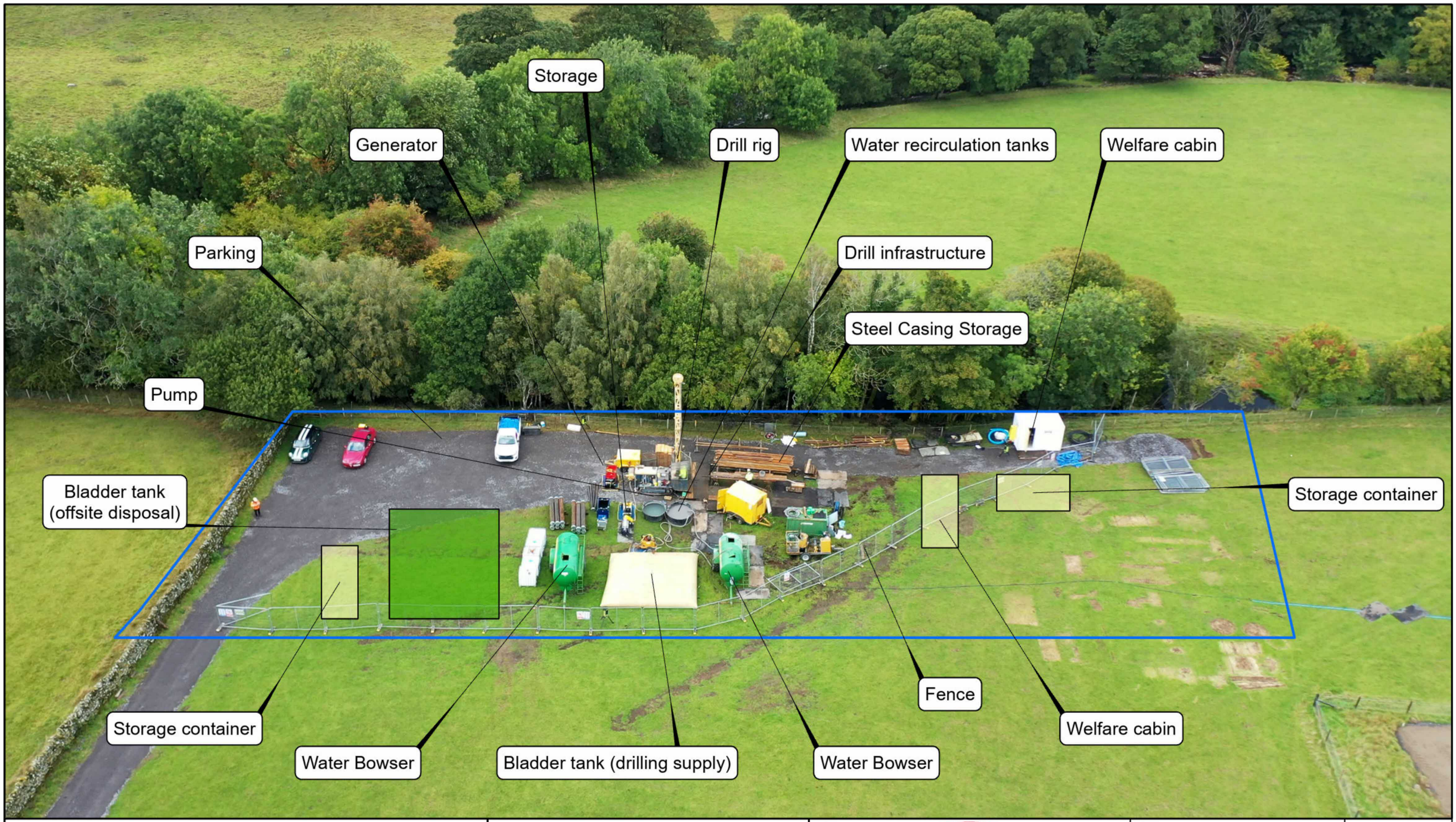
Figure 11 Schematic Compound Layout (Drilling)



Element	Size	Height
Parking	6 spaces	
Generator	Approximately 2 m x 4 m	~ 2 m
Pump	In the hole	bgl
Water bowser	2 bowsers approximately 3 m x 6 m	2 m
Drill rig	within infrastructure area	<15 m
Drill infrastructure	Approximately 20 m x 10 m	~1.5 m
Bladder tank (drilling supply)	Approximately 4 m x 4 m	0.5 m
Bladder tank (offsite disposal)	Approximately 10 m x 10 m	0.5 m
Storage	Approximately 6 m x 2.5 m	~ 3 m
Welfare cabins	Approximately 4 m x 2.5 m	2 m
Water Tank	Approximatley 2 m x 2 m	1. 5 m
Steel casing storage	Approximatly 6 m x 4m	2.5 m
Fence		2 m

Notes:

Aerial imagery shown for context purposes only.
This plan is for indicative purposes only.

CLIENT: NORTHERN NLi LITHIUM

PROJECT: WEARDALE LITHIUM

DRAWING TITLE: FIGURE 11
SCHEMATIC COMPOUND LAYOUT

DRG No. NT15799/PPPS/FIGURE 11			REV A
DRG SIZE A3	SCALE NTS		DATE 02/11/2022
DRAWN BY HM	CHECKED BY JC		APPROVED BY NB

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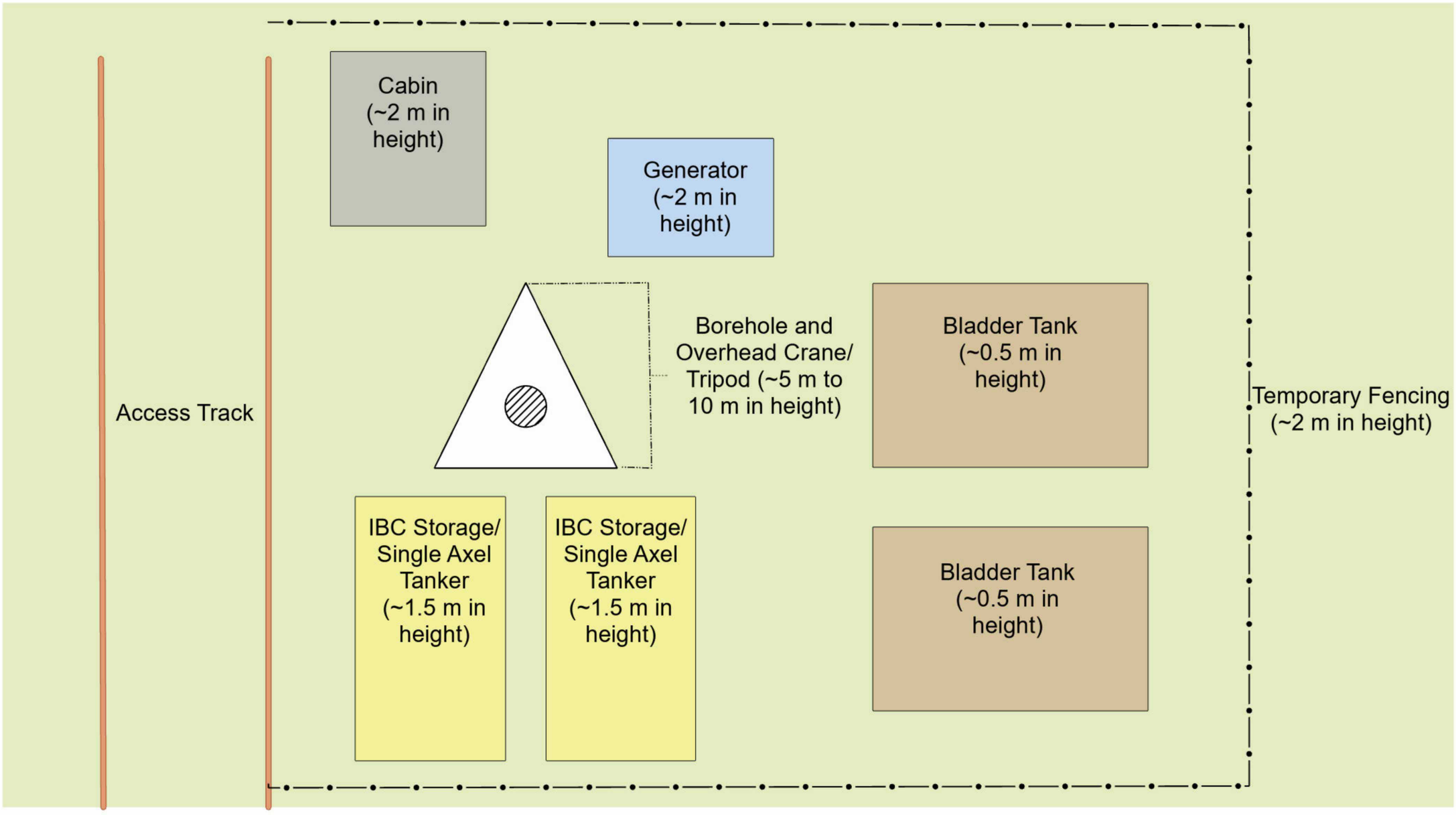
Figure 12 Schematic Compound Layout (Testing)



Element	Dimensions	Height
Compound	Approximately 35 m x 40 m	
Parking	6 Spaces	
Generator	Approximately 2 m x 4 m	~2 m
Cabin	Approximately 4 m x 2.5 m	~2 m
Borehole/Overhead Crane Tripod	Approximately 2 m x 2 m	~5 m to 10 m
Bladder Tank	Approximately 4 m x 4 m	~0.5 m
IBC Storage/ Single Axel Tanker	Approximately 6 m x 2.5 m	~1.5 m
Fence		~2 m

Notes:

Not to scale

CLIENT: NORTHERN NLi LITHIUM

PROJECT: WEARDALE LITHIUM

DRAWING TITLE: FIGURE 12
SCHEMATIC COMPOUND LAYOUT

DRG No.	REV
NT15799/PPPS/FIGURE 12	A

DRG SIZE	SCALE	DATE
A3	NTS	07/11/2022

DRAWN BY	CHECKED BY	APPROVED BY
GER	GS	NB

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Inside rear cover

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STOKE-ON-TRENT
Sir Henry Doulton House
Forge Lane
Etruria
Stoke-on-Trent
ST1 5BD
Tel: +44 (0)1782 276 700

BIRMINGHAM
Two Devon Way
Longbridge Technology Park
Longbridge
Birmingham
B31 2TS
Tel: +44 (0)121 580 0909

BOLTON
41-50 Futura Park
Aspinall Way
Middlebrook
Bolton
BL6 6SU
Tel: +44 (0)1204 227 227

BRISTOL
Desklodge
2 Redcliffe Way
Bristol
BS1 6NL
Tel: +44 (0)117 203 4477

BURY ST EDMUNDS
Armstrong House
Lamdin Road
Bury St Edmunds
Suffolk
IP32 6NU
Tel: +44 (0)1284 765 210

CARDIFF
Tudor House
16 Cathedral Road
Cardiff
CF11 9LJ
Tel: +44 (0)292 072 9191

CARLISLE
Marconi Road
Burgh Road Industrial Estate
Carlisle
Cumbria
CA2 7NA
Tel: +44 (0)1228 550 575

EDINBURGH
Great Michael House
14 Links Place
Edinburgh
EH6 7EZ
Tel: +44 (0)131 555 3311

GLASGOW
24 St Vincent Place
Glasgow
G1 2EU
Tel: +44 (0)141 428 4499

LEEDS
36 Park Row
Leeds
LS1 5JL
Tel: +44 (0)113 831 5533

LONDON
Third Floor
46 Chancery Lane
London
WC2A 1JE
Tel: +44 (0)207 242 3243

NEWCASTLE UPON TYNE
City Quadrant
11 Waterloo Square
Newcastle upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

TRURO
Baldhu House
Wheal Jane Earth Science Park
Baldhu
Truro
TR3 6EH
Tel: +44 (0)187 256 0738

International office:

ALMATY
29/6 Satpaev Avenue
Hyatt Regency Hotel
Office Tower
Almaty
Kazakhstan
050040
Tel: +7(727) 334 1310

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