FLOOD RISK ASSESSMENT AND SURFACE WATER DRAINAGE STRATEGY

Proposed LDES Facility

Land at the M74 Heat and Power Park (now known as Conexus West)
West of Junction 11 of the M74
Coalburn
Lanark
ML11 0RL

Prepared for:
Hagshaw LDES Ltd

29th April 2025

Project Number:
RMA-C2819

environmental planning consultancy

THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY

Document Production Record:

Report Number: RMA-RC819

Prepared by: Sam Allder

Checked by: Melissa Seymour

Approved by: Rob Murdock

Document Revision Record:

Issue Number	Date	Revision Details
1	3rd April 2025	Client Issue
2	11th April 2025	Revised
3	29th April 2025	Final

RMA Environmental Limited has prepared this report in accordance with the instructions of the above-named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

CONTENTS

FIGURES

APPENDICES

1 INTRODUCTION

Background

1.1 RMA Environmental Limited was commissioned by Hagshaw LDES Ltd to prepare a Flood Risk Assessment (FRA) and Surface Water Drainage Strategy to support a full planning application for a proposed Long Duration Electricity Storage (LDES) facility ("the proposed development") at land adjacent to the M74 Heat and Power Park (now known as Conexus West), West of Junction 11 of the M74, Coalburn, Lanark, ML11 0RL.

1.2 This FRA has been prepared in accordance with the National Planning Framework 4 (NPF4) and Scottish Environment Protection Agency (SEPA) guidance.

Site Location and Land Use

1.3 The site is brownfield land which was part of the former Dalquhandy Opencast Coal site; the area was not subject to coal extraction but was principally used for coal stocking and associated coal dispatch operations. The site now forms part of the Hagshaw Energy Cluster, an established strategic location for large scale renewable energy projects.

1.4 A small biomass Combined Heat and Power Facility, along with associated hardstanding is located in the northern extent of the site and an existing access road bisects the overall site area. Overhead powerlines run north-south along the eastern site boundary adjacent to an embankment of a dismantled railway line.

1.5 The site extends a total area including access tracks of approximately 46.6 hectares (ha), 17 ha of which forms the developable area of the site; the site is centred on National Grid Reference NS 82682 33315 (refer to Figure 1.1).

1.6 The site is bordered by the following land uses:

- agricultural land surrounds the site to the north and west
- commercial woodland surrounds the site to the east and south;
- Coalburn is situated approximately 1.5 km to the north-west of the site; and
- the M74 is located around 2.85 km east of the proposed development area.

1.7 Access to the site is via the B7078 roundabout to the north of the proposed development. Further details on site topography, geology and hydrology are set out in Section 2.

Proposed Development

1.8 The proposed development consists of a 500 MW Long Duration Electricity Storage (LDES) facility utilising Vanadium Flow Battery (VFB) technology, with a discharge duration of up to 12 hours to support the National Grid.

1.9 The site will include LDES containers, inverters, string control units, AC/DC distribution panels, water tanks and a substation, with internal access roads constructed from recycled aggregate (refer to Appendix A).

1.10 The facility will operate for 40 years before being decommissioned and restored to its original condition.

1.11 A previous application (South Lanarkshire Planning Application Number: CL/17/0157 and subsequently extended under Planning Application Number P/20/0772) was granted planning permission in principle for a mixed-use development at the site. SEPA had no objection in principle to the development of the site on flood risk grounds and agreed that a site specific FRA would be submitted as part of any reserved matters planning application.

Requirements for a Flood Risk Assessment

1.12 The requirements for FRA are provided in NPF4 and the Flood Risk Management (Scotland) Act 2009 which sets in place a statutory framework for delivering a sustainable and risk-based approach to managing flooding in Scotland. The main elements of flood risk management relevant to the proposed development are assessment of flood risk as well as undertaking structural and non-structural flood management measures.

1.13 Policy 22 of NPF4 outlines the flood risk considerations for new developments. This includes strengthening the resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding.

1.14 SEPA's Planning Background Paper – Flood Risk (July 2018) states the following:

- "*To ensure that flood risk is adequately considered and development directed away from medium to high-risk areas (or depending on the nature of the proposal - low to medium risk areas), planning applications in fluvial and coastal flood risk areas should be supported by a flood risk assessment (FRA); and*

- *although the SEPA Flood Maps are a good indicator of when a flood risk assessment is required, we may also recommend a flood risk assessment for developments in other areas that may be at risk e.g. areas immediately adjacent to the inundation areas on the flood map, where the catchment is smaller than 3km^2 and not modelled by our flood map or where we hold information on historical flooding. We will generally recommend a flood risk assessment (FRA) for proposed developments that may lead to an increase in the number of buildings or people at flood risk*".

1.15 SEPA's Technical Flood Risk Guidance for Stakeholders (June, 2022) states the following:

- "*the functional floodplain is defined as land where there is a 0.5% or greater annual probability of flooding in any year. This probability is sometimes referred to as a 1 in 200-year flood;*

- *an FRA for a specific site should investigate what the likelihood of flooding is, and should consider flood risk from all sources. It should demonstrate if the site is out with the required flood extent for the relevant probability, or if development of the site would be, appropriate, then what acceptable mitigation measures would be required. The complexity of the flooding mechanism(s) will inform the scope of the FRA required, and the information required can take a variety of forms*".

1.16 The SEPA's Flood Risk Extents are defined as follows:

- Very low flood risk is defined where each year, this area has a chance of flooding of less than 1 in 1000 (0.1%);
- Low flood risk is defined where each year, the area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 200 (0.5%);
- Medium flood risk is defined where each year, this area has a chance of flooding of between 1 in 200 (0.5%) and 1 in 10 (10%); and
- High flood risk is defined where each year, this area has a chance of flooding of greater than 1 in 10 (10%).

1.17 FRAs should be undertaken prior to any development and used to inform the siting, layout, design and capacity of development on site and ensure the provision of pedestrian access/egress.

2 BASELINE ENVIRONMENTAL CONDITIONS

Topography

2.1 The topography of the site is varied due to the restoration of land associated with the former Dalquhandy Opencast Coal Mine with many drainage features of its former use being retained. Elevations on site range from approximately 213 metres above Ordnance Datum (mAOD) in the northern section to 259 mAOD in the southern area (refer to Appendix B).

2.2 In the northern section, elevations start at around 213 mAOD, marking the lowest point of the site. The ground gently rises to 230 mAOD, where the terrain begins transitioning into steeper gradients moving southward.

2.3 The central section of the site presents a more complex topography, with noticeable undulations and depressions, particularly around the CHP area, which sits at approximately 235 mAOD. Elevations here fluctuate between 230 mAOD and 240 mAOD, contributing to the varied drainage patterns observed across the site.

2.4 The southern part of the site has a more pronounced rise in elevation, reaching 259 mAOD at the site's southern boundary.

Hydrology

2.5 Poniel Water is the closest main watercourse to the site and this is located adjacent to the northern boundary of the site. Poniel Water originates 4.5 km north-east of the site and flows in a south-westerly direction before it is culverted and partially flows into a small lake 1.2 km south east of the site.

2.6 Alder Burn is classified as an 'ordinary watercourse' and is located within the western part of the site; it flows into Poniel Water just outside the site boundary. There is a pond located in the south-western extent of the site which, anecdotally, was created when the internal access road was installed in the 1980s for the Dalquhandy Opencast Coal Site.

2.7 Given the former use of the site, there are a number of drains and ditches that originate on the site and drain ultimately into Poniel Water.

2.8 Multiple unnamed ponds are located within a 2 km radius of the site. These are situated to the north, south and west of the site and tie in with local watercourses. There are no other significant watercourses or water bodies within the surrounding area.

Geology and Hydrogeology

2.9 According to the British Geological Survey (BGS) online Geology of Britain Viewer, the site is predominantly underlain by the superficial geology consisting of Till, a Devensian deposit made up of Diamicton. To the north of the access road into the site, near the entrance at the B7078 roundabout, the superficial geology is reported to be Alluvium, which comprises clay, silt, sand and gravel.

2.10 The eastern half of the site and the access road is further underlain by the bedrock geology consisting of the Passage Formation, comprising of coarse sandstone and seatearths. The western half of the site is underlain by the Upper Limestone Formation comprising of mixed shelf carbonate and deltaic.

2.11 According to the 1:625,000 scale Hydrological Map of Scotland the bedrock is considered to be a moderately productive aquifer which is characterised as '*Multi-layered aquifer with low yields except where disturbed by mining. Passage group has moderate yields up to 10 /s'.*

2.12 The BGS Borehole Viewer indicates that borehole records are available in close proximity to the site. However, these records are outdated and, as such, they do not provide detailed information on the current subsurface conditions. Additionally, the borehole scans do not specify the depth at which groundwater was encountered which limits the ability to assess current subsurface conditions.

3 EXTERNAL FLOOD RISK

Flooding Mechanisms

3.1 SEPA's coastal flood risk map indicates that the site is not at risk of coastal flooding.

3.2 SEPA's river flood risk mapping (refer to Figure 3.1) indicates that the majority of the site is not subject to fluvial flood risk. There is a small portion in the north-western part of the site that is shown to be at risk of flooding from a low, medium, high and climate change fluvial flood extent associated with the Poniel Water, although this does not impact the developable area and is discussed further below. The access road is not impacted by any of the above fluvial flood extents.

3.3 SEPA's latest surface water and small watercourse flood risk mapping (refer to Figure 3.2) indicates that there are areas in the centre of the site and along the routes of the Alder Burn and ditches in the east of the site that have up to high surface water flood risk as well as medium risk with the added effects of climate change (for a 2070 scenario). This is discussed further below.

3.4 SEPA's Flood Risk Management maps shows that the site has a low likelihood of groundwater flooding and there are no records of groundwater flooding in the vicinity of the site. There is some evidence of groundwater habitats in the southern part of the site and therefore groundwater is discussed further below.

3.5 SEPA's reservoir flood mapping indicates that the site is not risk of flooding during a reservoir breach and there are no reservoirs within close proximity to the site.

3.6 A review of the Clyde and Loch Lomond Flood Risk Management Plan (SEPA) and SEPA flood maps identified that there are no other significant sources of flooding at the site, i.e. from sewers.

Historic Flooding

3.7 A review of the Chronology of British Hydrological Events[1] and the Clyde and Loch Lomond Flood Risk Management Strategy (SEPA) confirms that there are no historical fluvial flood events relating to the site.

Fluvial Flood Risk

3.8 Consultation was undertaken with SEPA on the 7th February 2025 and this confirmed that they do not hold any site specific modelled flood data for the area and that the flood extents have been produced using national scale mapping (refer to Appendix C).

[1] https://www.cbhe.hydrology.org.uk/

3.9 SEPA's fluvial flood risk mapping identifies that the majority of the site is located in an area with no risk of fluvial flooding (refer to Figure 3.1). There is a small area in the north-western part of the site that is shown to be at risk of flooding from a low, medium, high and climate change fluvial flood extent associated with the Poniel Water.

3.10 The mapping confirms that with the added effects of climate change on the medium flood risk scenario, the developable area of the site would not be affected by a fluvial flood event.

3.11 The lowest recorded elevation of the developable area is 222.25 mAOD, which is 1.21 m higher than the climate change flood extent according to the topographical survey (i.e. 221.04 mAOD). This elevation difference confirms that the site is located above the design flood levels and it is therefore concluded that the site will remain outside of the fluvial flood extent for the operational lifetime of the proposed development with the added effects of climate change.

Surface Water Flood Risk

3.12 SEPA's latest surface water and small watercourse flood risk mapping (refer to Figure 3.2) indicates that there are areas in the centre of the site and along the routes of the Alder Burn and ditches in the east of the site that have up to high surface water flood risk as well as medium risk with the added effects of climate change (i.e. a 1 in 200 year event for a 2070 scenario).

3.13 SEPA's online depth mapping for 'Surface Water and Small Watercourse' is derived from Lidar data and suggests that flood depths range between 0.3 m and 1 m for the medium climate change flood extent. The surface water mapping suggest there are areas of ponding zones and flow paths associated with the existing drainage arrangement on the site as a result of the former quarrying use.

3.14 The site's hydrology has been significantly altered from its original state due to historic quarrying activities; this was confirmed by SEPA in consultation that was undertaken for a previous planning application for the site that was granted permission in 2017. The SEPA small watercourse mapping is based on Lidar data and therefore does not reflect changes in site levels and the proposed introduction of new drainage infrastructure as a result of the proposed development.

3.15 The proposed Surface Water Drainage Strategy (included as Appendix D) includes a series of new rerouted drainage channels and swales as well as the developable area being underlain by a stone drainage blanket which has been designed to manage runoff for the 1 in 200 year event plus a 41% climate change allowance. These drainage features will be maintained and managed privately by the developer to a suitable standard and the strategy will provide a betterment on existing overland flows rates for the area for the 30 year and 100 year storms.

3.16 The levels plan indicates that the battery units have been positioned on levelled platforms for the purpose of the drainage strategy. This means that in most places the platforms are above the ground level, resulting in surface water naturally flowing within the routed channels as per the existing scenario. This helps to manage runoff effectively and reduces the risk of localised surface water ponding.

3.17 Any exceedance flows beyond this capacity would continue to follow the site's natural contours, ultimately discharging to the north, consistent with the existing hydrological regime.

3.18 On this basis, it is considered that surface water flows would be routed within the new drainage channels proposed as part of the development and the proposed development would not increase flood risk off-site.

Groundwater Water Flood Risk

3.19 SEPA's flood risk maps confirm that the site is not within a designated groundwater flood risk zone or a future potentially vulnerable area. Although it should be noted that during consultation with SEPA on the previous application at the site (Application No: CL/17/0157), wetland habitat was identified in the southern half of the site and this would usually be indicative of shallow groundwater and the presence of springs.

3.20 Given the former quarry land use, the hydrological regime within the site has been severely altered and therefore this area is not considered sensitive, resulting in an overall low vulnerability. These wetland areas are located at a lower elevation than the surrounding land due to the previous activities on site and therefore it is most probable that surface water has collected in these areas, rather than resulting from groundwater emergence on the site.

3.21 The proposed development includes a drainage strategy which proposes an impermeable liner around the developable area. This will ensure that should any emerging groundwater occur in the south, it is separated from surface water drainage and would naturally flow northward, where it would be captured within the new drainage channels designed as part of the development's drainage plan.

3.22 It is considered that groundwater is not anticipated to pose a significant flood risk to the site.

Safe Access/Egress

3.23 The access route is an established existing access road that is located outside of the fluvial and surface water flood extents and therefore access/egress is considered safe.

3.24 On this basis, it is concluded that proposed development would be safe for the operational lifetime of the development.

Land Use Vulnerability

3.25 Table 1 of SEPA's Flood Risk and Land Use Vulnerability Guidance (2018) which classifies land uses according to how they are impacted by flooding. This states that a BESS facility is classified as 'essential infrastructure'.

3.26 With reference to Table 2 of the SEPA guidance, the proposed development is in the 'Essential Infrastructure' category which states that a medium to high flood risk (0.5% - 10% AEP) is generally suitable where a flood risk location is required for operational reasons and an alternative lower-risk location, is not available. The site is not situated within a fluvial flood extent and therefore is considered suitable in planning policy terms.

4 DRAINAGE ASSESSMENT

Introduction

4.1 This Surface Water Drainage Strategy outlines how surface water flows are proposed to discharge from the site in accordance with the relevant statutory standards and guidance, including 'The SuDS Manual' (CIRIA Report C753, 2021).

4.2 Surface water arising from a developed site should, as far as is practicable, be managed to mimic the surface water flows arising from the site prior to the proposed development while reducing the flood risk to the site itself and elsewhere.

4.3 The surface water drainage strategy has been prepared by Tumu Consulting Limited in collaboration with RMA Environmental Ltd and is provided in Appendix D.

Summary

4.4 Surface water from the existing land use drains via a number of watercourses and ditches, to a centralised watercourse which is culverted a number of times before it discharges to Poniel Water.

4.5 The reported hydrological and soil characteristics of the site and the presence of the watercourse in the north-western corner of the site suggest that infiltration-based SuDS are unlikely to be feasible. It is therefore proposed to discharge surface water runoff to the existing watercourses on site.

4.6 In order to attenuate the surface water flows on site, the developable area will be constructed on a 300 mm stone drainage blanket (refer to Appendix D), which will be installed beneath the LDES development. This drainage blanket will store surface water within the voids between the stones, helping to regulate runoff. The discharge from each blanket will be controlled by a flow control device before being released into the wider drainage system.

4.7 A flow control device will be utilised to discharge at a controlled rate equal to the pre-development greenfield QBAR rate. This will ensue that there is no increase in runoff rate entering the watercourse for all storm events up to and including the 200 year (0.5% AEP) plus 41% climate change allowance rainfall event (refer to Appendix D). This will provide a betterment on existing overland flow rates, for the area of the associated development, for the 30 and 100 year storms.

4.8 The restricted surface water discharge will then be conveyed from the site towards ponds by a shallow swale, which will provide additional SuDS water quality treatment, interception and biodiversity enhancements.

4.9 New access tracks will be constructed of permeable materials; these will offer a significant volume of storage above that of the existing soil structure.

4.10 In the event that the infiltration capacity of the permeable surfaces is exceeded, runoff would flow from the permeable surfaces mimicking existing conditions as sheet runoff and would ensure that runoff rates are not increased post-development.

Water Quality Treatment

4.11 One of the guiding principles of SuDS is the appropriate management of water quality and the use of pollution prevention techniques to improve the quality of runoff from developed sites.

4.12 The CIRIA 753 SuDS Manual has been consulted to ensure that the SuDS provided to successfully mitigate the anticipated pollutants, which may arise for the land use.

4.13 The recommended number of treatment stages is dependent on the type of development and sensitivity of the discharge receptor and the mitigation indices of proposed SuDS features. Surface water requiring treatment will come from the permeable surfaces including access roads. In this instance, mitigation with an index or combined indices of more than 0.5 for Total Suspended Solids (TSS), 0.4 for metals and 0.4 for hydrocarbons is acceptable. As the mitigation indices for the pollutants are higher than the hazard indices, the SuDS provided successfully mitigate against the expected pollutants.

4.14 The battery units are located within double skinned containers, with the void space between the skins containing 130% of the battery liquid. In the unlikely event that a leak occurred it would be retained within the containers. Any leaks within the battery units would be extracted and pumped into baffled holding tanks before being removed from site by specialist contractors using appropriate environmental permits.

Long Term Maintenance of SuDS

4.15 It will be the responsibility of the developer to either maintain the SuDS features themselves or to negotiate with and secure the agreement of a third party to maintain the sustainable drainage system.

4.16 The maintenance requirements of the proposed SuDS features for use in the outline drainage strategy are detailed in the SuDS Manual and would be carried out accordingly (refer to Appendix D).

5 CONCLUSIONS

5.1 The requirements for FRA are provided in NPF4 and the Flood Risk Management (Scotland) Act 2009 which sets in place a statutory framework for delivering a sustainable and risk-based approach to managing flooding in Scotland. The main elements of flood risk management relevant to the proposed development are assessment of flood risk as well as undertaking structural and non-structural flood management measures

5.2 SEPA's coastal flood risk map indicates that the site is not at risk of coastal flooding.

5.3 SEPA's river flood risk mapping indicates that the majority of the site is not subject to fluvial flood risk. There is a small area in the north-western part of the site that is shown to be at risk of flooding from a low, medium, high and climate change fluvial flood extent associated with the Poniel Water, although this does not impact the developable area which is located 1.21 m higher in elevation than the flood extent and therefore the site will remain outside of the fluvial flood extent for the operational lifetime with the added effects of climate change.

5.4 SEPA's latest surface water and small watercourse flood risk mapping indicates that there are areas in the centre of the site and along the routes of the Alder Burn and ditches in the east of the site that have up to high surface water flood risk as well as medium risk with the added effects of climate change (for a 2070 scenario). Depth mapping suggests that flood depths range between 0.3 m and 1 m for the medium climate change flood extent and the mapping suggests there are areas of ponding zones and flow paths associated with the existing drainage arrangement on the site as a result of the former quarrying use.

5.5 The hydrology of the site has been significantly altered from its original state due to historic quarrying activities and SEPA mapping does not reflect changes in site levels and the proposed introduction of new drainage infrastructure as a result of the proposed development.

5.6 The proposed Surface Water Drainage Strategy has been designed to manage runoff for the 1 in 200 year rainfall event plus a 41% climate change allowance in new drainage features. These SuDS features will be maintained and managed privately by the developer to a suitable standard and the strategy will provide a betterment on existing overland flows rates for the area for the 30 year and 100 year storms.

5.7 The battery units have been positioned on levelled platforms for the purpose of the drainage strategy and, in most places, the platforms are located above ground level, resulting in surface water flows naturally flowing within the routed channels as per the existing scenario. This helps to manage runoff effectively and reduces the risk of localised surface water ponding.

5.8 On this basis, it is considered that surface water flows would be routed within the new drainage channels proposed as part of the development and the proposed development would not increase flood risk off site.

5.9 The SEPA flood risk maps confirm that the site is not within a designated groundwater flood risk zone or a future potentially vulnerable area. Although wetland habitat was identified in the southern half of the site and this would usually be suggestive of shallow groundwater flows. However, given the former quarry land use, these wetland areas are located at a lower elevation than the surrounding land due to the previous activities on site and therefore its most probable that the surface water has collected in these areas, rather than resulting from groundwater emergence on the site. It is considered that on this basis, groundwater is not anticipated to pose a significant flood.

5.10 SEPA's reservoir flood mapping indicates that the site is not at risk of flooding during a reservoir breach and there are no reservoirs within a close proximity to the site.

5.11 A review of the Clyde and Loch Lomond Flood Risk Management Plan (SEPA) and SEPA flood maps identified that there are no other significant sources of flooding at the site, i.e. from sewers.

5.12 Access/egress to the site would be via the existing unnamed private road located to the north-east of the site from the B7078 roundabout and is not impacted by fluvial or surface water flooding.

5.13 The proposed land use is classified as 'essential infrastructure' and is considered appropriate in relation to the flood risk vulnerability classifications set out in Table 1 and 2 of SEPA's Flood Risk and Land Use Vulnerability Guidance (2018).

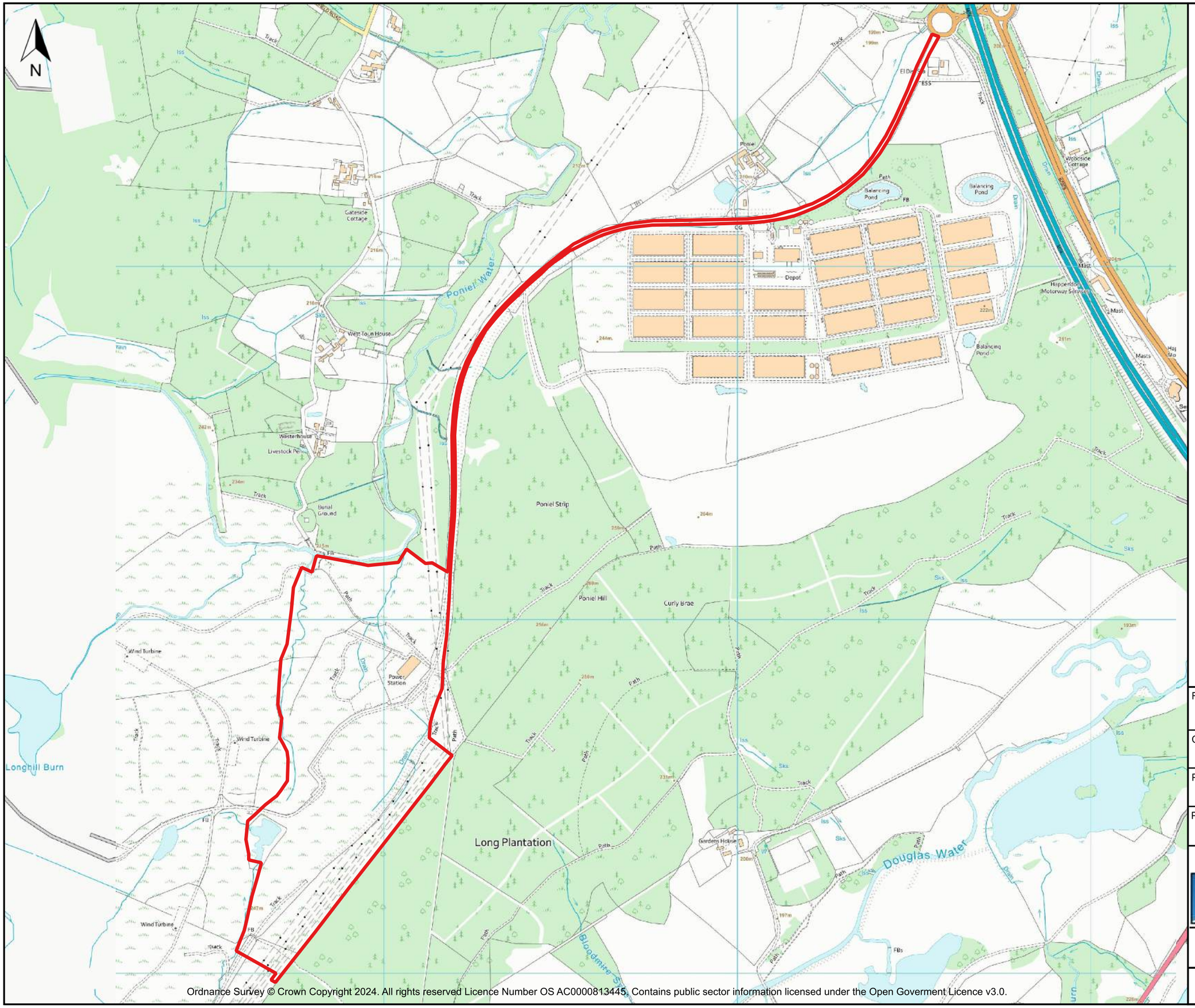
5.14 In order to attenuate the surface water flows on site, the developable area will be constructed on a 300 mm stone drainage blanket, which will be installed beneath the LDES development. The discharge from each blanket will be controlled by a flow control device equal to the pre-development greenfield QBAR rate before being released into the wider drainage system. This will ensue that there is no increase in runoff rate entering the watercourse for all storm events up to and including the 200 year (0.5% AEP) plus 41% climate change allowance, rainfall event. This will provide a betterment on existing overland flow rates, for the area of the associated development, for the 30 and 100 year storms.

5.15 The restricted surface water discharge will then be conveyed from the site towards ponds by a shallow swale, which will provide additional SuDS water quality treatment, interception and biodiversity.

5.16 It will be the responsibility of the developer to either maintain the SuDS features themselves or to negotiate with and secure the agreement of a third party to maintain the sustainable drainage system.

5.17 This FRA has therefore demonstrated that the proposed development will be safe and that it would not increase flood risk elsewhere.

Figures



Key

Red Line Boundary

Figure 1.1: **Site Location Plan**

Client: **Hagshaw LDES Ltd**

Project: **Hagshaw LDES**

Project No.: **C2819**

RMA ENVIRONMENTAL

Drawn:	Checked:	Date:	Scale:
SA	MS	10/04/2025	1:10,000@A3

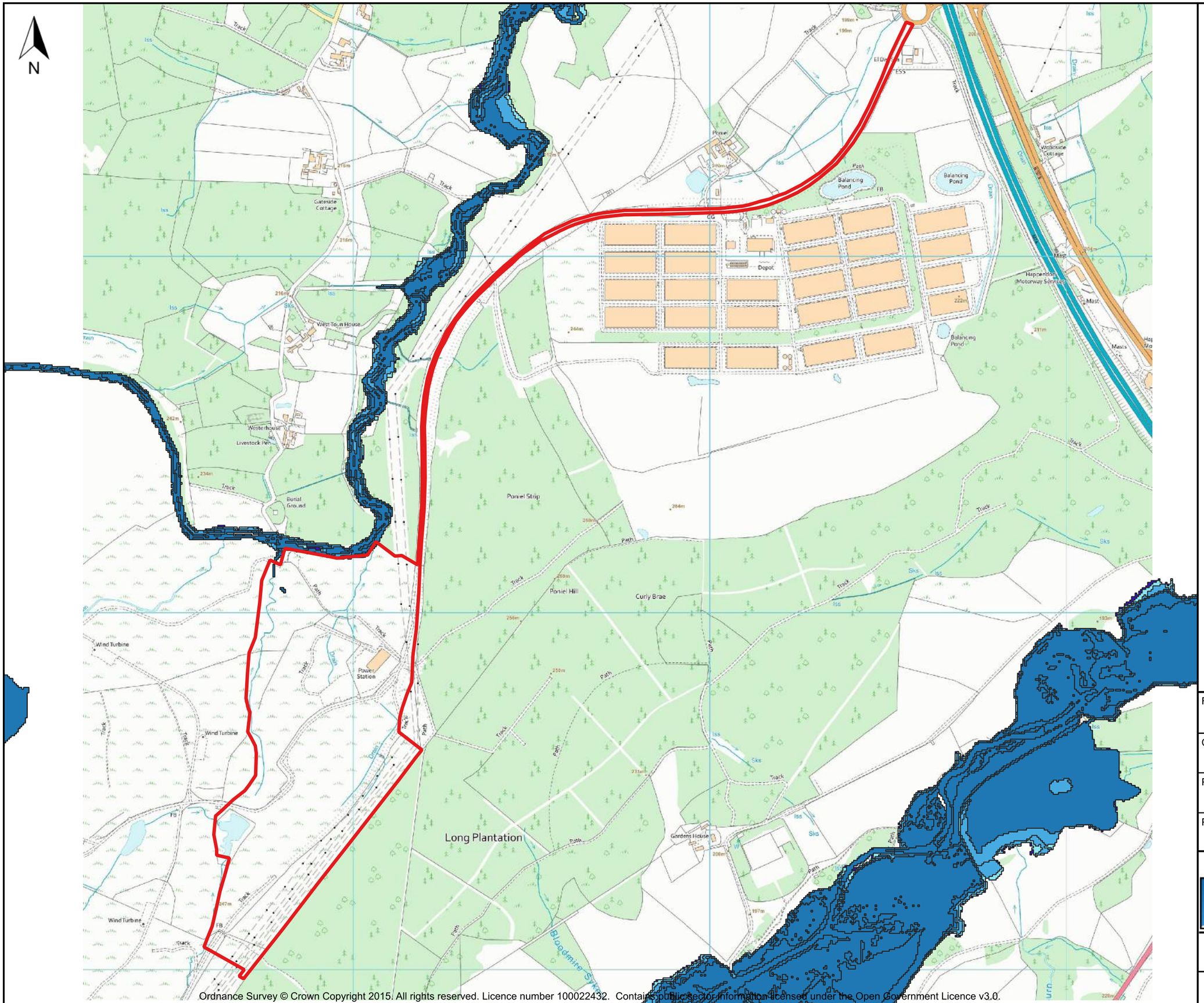


Figure 3.1: **SEPA Fluvial Flood Risk Map**

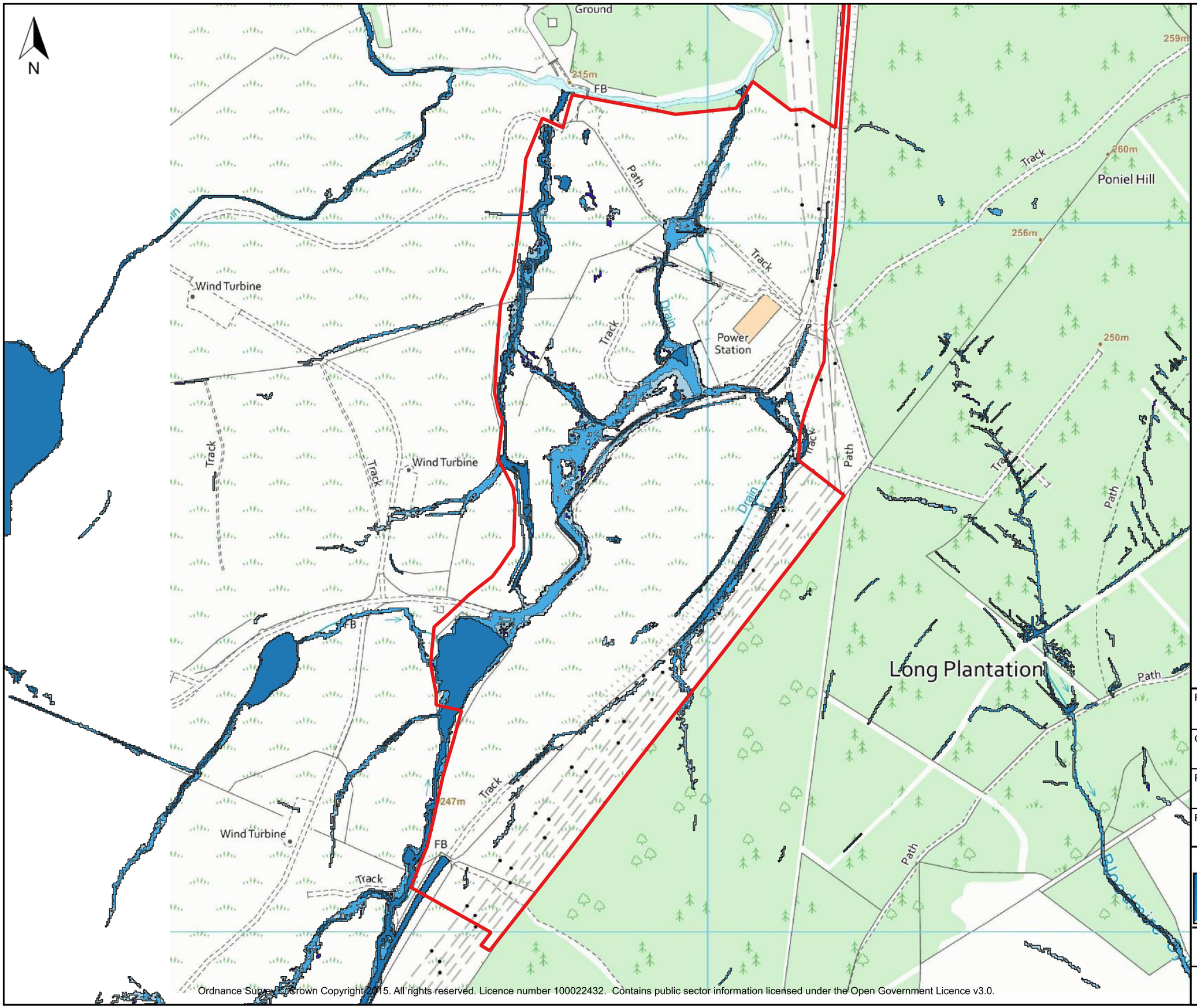
Client: **Hagshaw LDES Ltd**

Project: **Hagshaw LDES**

Project No.: **C2819**

RMA ENVIRONMENTAL

Drawn:	Checked:	Date:	Scale:
MS	MS	10/04/25	1:10,000@A3



Key

- Surface Water Extent (Low Risk)
- Surface Water Extent (Medium Risk)
- Surface Water Extent (High Risk)
- Surface Water Extent (Medium Risk with Climate Change)

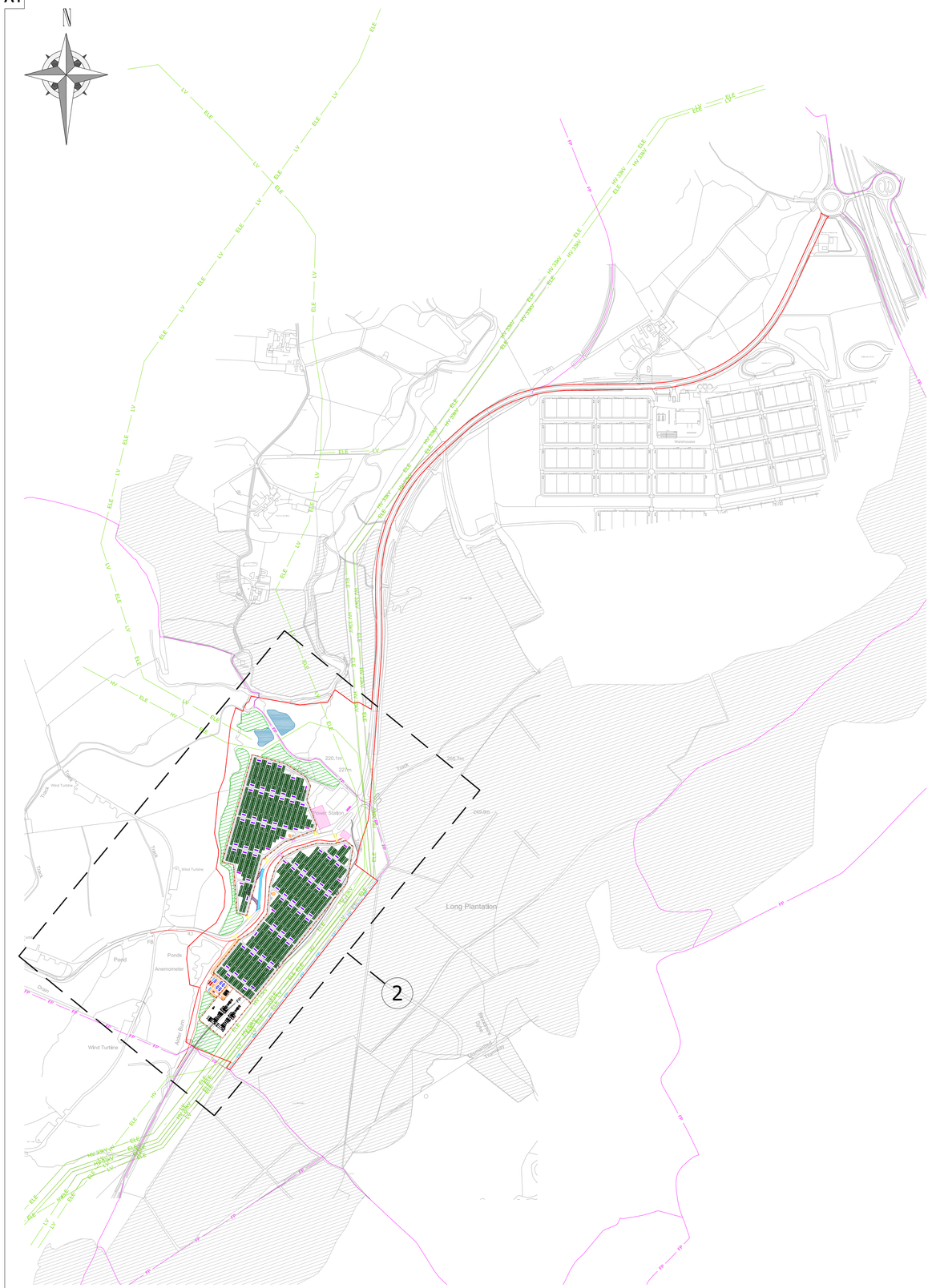
Figure 3.2:	**SEPA Surface Water and Small Watercourses Map**
Client:	**Hagshaw LDES Ltd**
Project:	**Hagshaw LDES**
Project No.:	**C2819**

RMA ENVIRONMENTAL

Drawn:	Checked:	Date:	Scale:
MS	MS	10/04/25	1:5,000@A3

Appendix A: Proposed Development Layout

A1

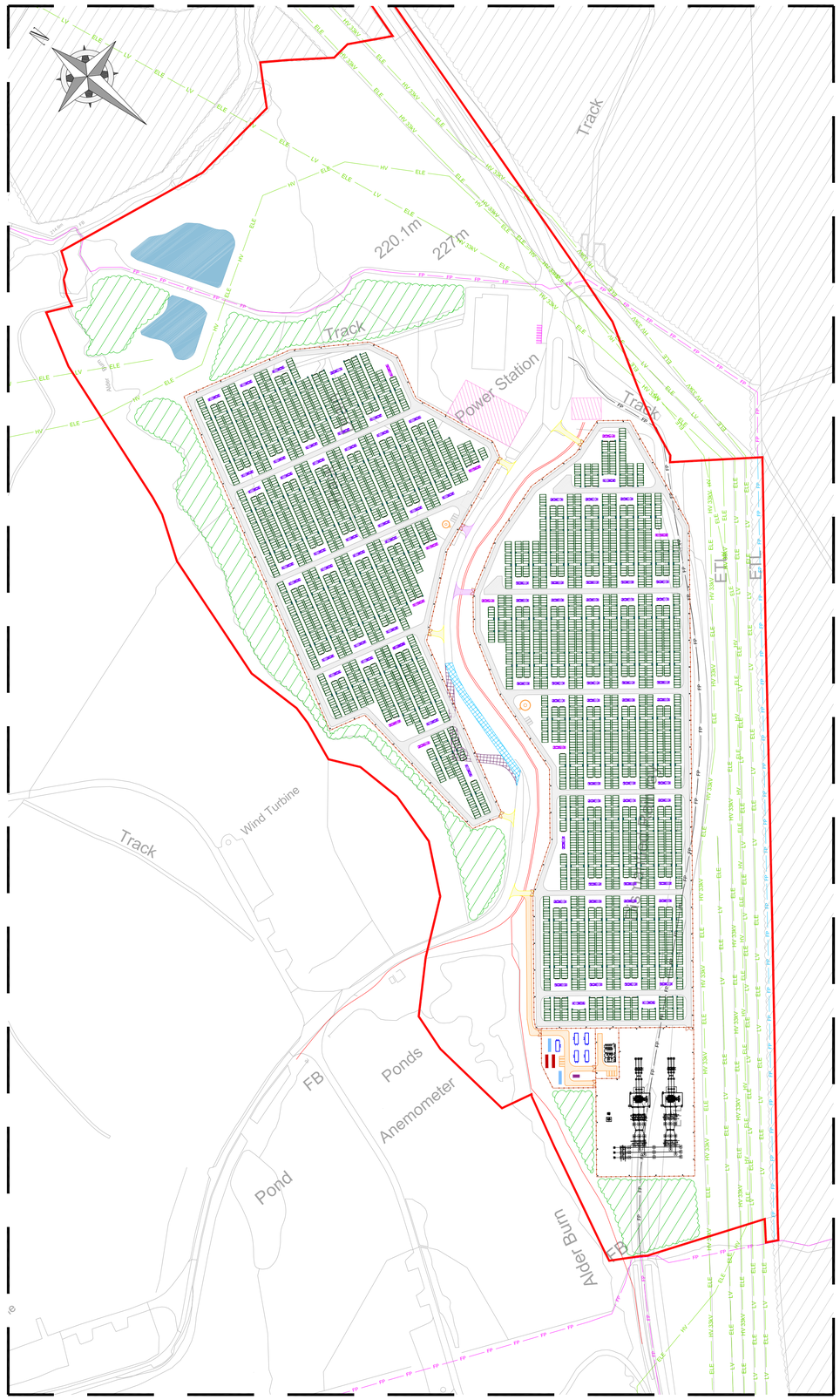


1 INDICATIVE SITE LAYOUT PLAN

Scale: 1:7500@A1

150 300 450 600 750m

SCALE 1:7500



2 INDICATIVE SITE DETAIL

Scale: 1:2500@A1

50 100 150 200 250m

SCALE 1:2500

Scaled dimensions must not be taken from this drawing. All dimensions are to be confirmed on site prior to commencement of work

Revisions:

Revision	Date	Revision Notes	Drawn	Inspected
01	20.02.25	First Issue	JC	TP
02	21.02.25	Minor Site Amendments	JC	TP
03	07.03.25	Site Layout Progressed	JC	TP
04	11.03.25	Amendments to Footpaths, Veg, & Roads	JC	TP
05	12.03.25	Planning Application Boundary Revised	JC	TP
06	18.03.25	Site Layout Progressed	JC	TP
07	19.03.25	Construction Compound and Titles Amended	JC	TP
08	02.04.25	Minor Site Amendments	JC	TP
09	03.04.25	Parking for Operatives Added	JC	TP
10	09.04.25	Revised	MR	TP

LEGEND:

- PLANNING APPLICATION BOUNDARY
- DNO ACCESS
- SITE ACCESS
- INTERNAL ACCESS
- EMERGENCY ACCESS
- PERIMETER FENCELINE
- EXISTING FOOTPATH
- PROPOSED FOOTPATH
- REMOVED FOOTPATH
- EXISTING O/H LV LINE
- PROPOSED KENNOXHEAD O/H LINE
- EXISTING O/H 33KV LINE
- SPT CABLE
- EXISTING ROAD
- REALIGNED ROAD
- EXISTING VEGETATION
- PROPOSED VEGETATION
- ATTENUATION POND
- TEMP. CONSTRUCTION COMPOUND

SITE INFRASTRUCTURE:

- TRIPLE STACKED FLOW BATTERY UNITS
- SINGLE PCS INVERTER
- DOUBLE PCS INVERTER
- STRING CONTROL UNIT
- DC COMBINER
- AC DISTRIBUTION PANEL
- CCTV CAMERA
- SECURITY GATE
- 40ft SPARE PARTS CONTAINER
- 40ft WELFARE CONTAINER
- PARKING FOR OPERATIVES
- CUSTOMER SWITCHGEAR
- ENERGY MANAGEMENT SYSTEM
- 120,000L WATER TANK
- 240,000L WATER TANK
- SUBSTATION

Status:

PLANNING

Project:

Hagshaw LDES

Client:

3R Energy

3R Energy
Lanark Auction Market
Hyndford Road Lanark, ML11 9AX
Tel: 01555 660244
Web:www.3renergy.co.uk

Drawn by:

CADmando
2D , 3D CAD & BIM SERVICES

CADmando Design & Draughting Solutions Ltd
Unit B2, The Courtyard, Severn Drive, Tewkesbury Business Park, GL20 8GD

Tel: +44 (0) 1684 850019
Mobi: +44 (0) 7814436910

Drawing Title:

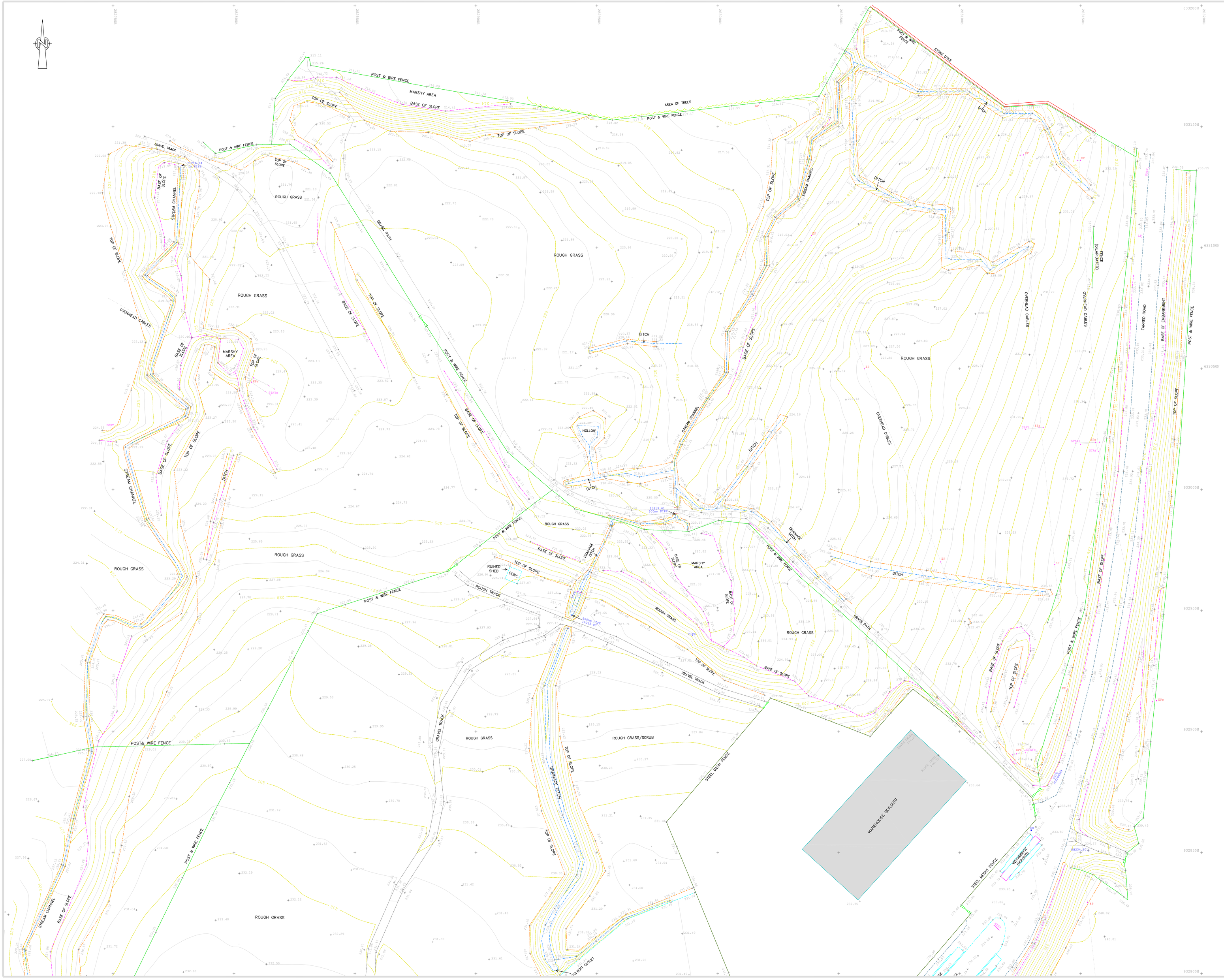
Indicative Site Layout Plan

Drawn:	Checked:	First Issued:
JC	TP	20.02.2025

Project Code:	Drawing Number:
AEM047	**PL-01**

Sheet Size:	Scale:	Revision:
A1	**A:N**	**10**

Appendix B: Topographical Survey



Notes

1. This site survey was carried out by A.Bryce on behalf of Granite City Surveys Ltd. during February 2025.
2. The weather during the survey was mixed.
3. All levels shown on this drawing are related to OS Newlyn datum derived from GPS.
4. Survey data is related to OS National Grid derived from GPS.
5. In general, only the corners of the buildings are identified by the survey. Buildings are not surveyed internally.
6. Some levels may have been removed from this drawing for clarity.
7. There may be features out with the scope of this survey which could have an affect on any proposed development.
8. Service covers are located in position by their centre point - symbol used is not indicative of actual size/orientation of the cover.
9. Whilst Granite City Surveys has made every effort to locate all major service covers (ie,manhole positions) it should be noted that this may not be possible in all cases due to ground conditions or local obstructions.
10. Trees displayed on this plan have been located at the centre of the base of the trunk. Due to the fact that trees do not always grow vertically, the extents of the tree may be out with what has been indicated on the survey.
11. The services on this plan have been derived by the visual ground site survey and are subject to confirmation by further investigation. Before commencement of any construction works, the location of all services must be verified on site by the relevant authorities.

Legend

BH	Borehole	PB	Post Box
BOB	Bottom Of Bank	OSTP	OS Trig Point
BOL	Bollard	OSBM	OS Benchmark
BUS	Bus Stop Sign	POST	Post
CL	Cill Level	RE	Rodding Eye
CTV	Cable TV Cover	SV	Stop Valve
CULV	Culvert Level	TBM	Temporary Benchmark
ELEC	Electricity Cover	TEL	Telecom Cover
EP	Electricity Pole	TL	Traffic Lights
ER	Earthing Rod	TOB	Top Of Bank
FH	Fire Hydrant	TP	Telegraph Pole
FLAG	Flagpole	WH	Wall Head Level
GU	Gully	WL	Water Level
GAS	Gas Cover	WM	Water Meter
STN	Permanent Ground Marker	WO	Washout Cover
IC	Inspection Cover		
IL	Invert Level		Coniferous Tree
KO	Kerb Outlet Cover		
LP	Lamp Post		Deciduous Tree
MH	Manhole		
MKR	Marker		

Granite City Surveys Ltd.

Land Surveying, Setting Out,
Elevational Surveys, Legal Title Surveys

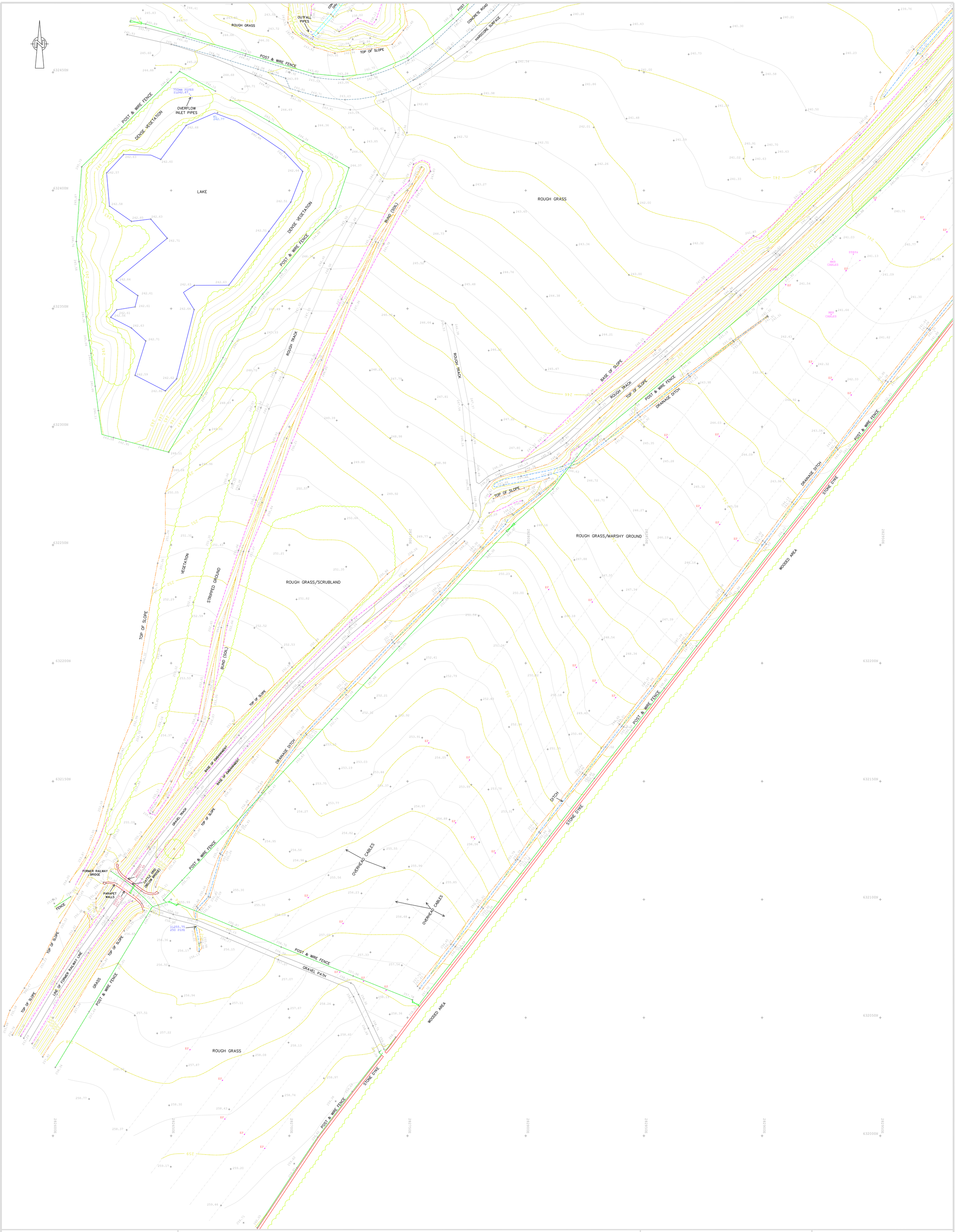
Chattan Mews Offices,
18 Chattan Place,
Aberdeen AB10 6RD

Tel: 01224 864263 Fax: 01224 864263

email: info@GraniteCitySurveys.co.uk
www.GraniteCitySurveys.co.uk

Project:	COALBURN LANARK
Drawing Title:	EXISTING SITE SURVEY LAYOUT PLAN
Client:	AARDVARK EM LTD.

Project No:	GCS7226	Drawing No:	T-04
Drawn by:	A.BRYCE		
Scale:	1:500 at A0	Date:	FEB 2025



Granite City Surveys Ltd.

Land Surveying, Setting Out,
Elevational Surveys, Legal Title Surveys

18 Chattan Place
Chattan Mews Offices
Aberdeen AB10 6RD

Tel: 01224 864263 Fax: 01224 864264

email: info@GraniteCitySurveys.co.uk
www.GraniteCitySurveys.co.uk

Notes

1. This site survey was carried out by A.Bryce on behalf of Granite City Surveys Ltd. during February 2025.
2. The weather during the survey was mixed.
3. All levels shown on this drawing are related to OS Newlyn datum derived from GPS.
4. Survey data is related to OS National Grid derived from GPS.
5. In general, only the corners of the buildings are identified by the survey. Buildings are not surveyed internally.
6. Some levels may have been removed from this drawing for clarity.
7. There may be features out with the scope of this survey which could have an affect on any proposed development.
8. Service covers are located in position by their centre point - symbol used is not indicative of actual size/orientation of the cover.
9. Whilst Granite City Surveys has made every effort to locate all major service covers (ie.manhole positions) It should be noted that this may not be possible in all cases due to ground conditions or local obstructions.
10. Trees displayed on this plan have been located at the centre of the base of the trunk. Due to the fact that trees do not always grow vertically, the extents of the tree may be out with what has been indicated on the survey.
11. The services on this plan have been derived by the visual ground site survey and are subject to confirmation by further investigation. Before commencement of any construction works, the location of all services must be verified on site by the relevant authorities.

Legend

BH	Borehole	PB	Post Box
BOB	Bottom Of Bank	OSTP	OS Trig Point
BOL	Bollard	OSBM	OS Benchmark
BUS	Bus Stop Sign	POST	Post
CL	Cill Level	RE	Rodding Eye
CTV	Cable TV Cover	SV	Stop Valve
CULV	Culvert Level	TBM	Temporary Benchmark
ELEC	Electricity Cover	TEL	Telecom Cover
EP	Electricity Pole	TOB	Top of Bank
ER	Earthing Rod	TP	Telegraph Pole
FH	Fire Hydrant	WH	Wall Head Level
FLAG	Flagpole	WL	Water Level
GU	Gully	WM	Water Meter
GAS	Gas Cover	WO	Washout Cover
STN	Permanent Ground Marker		
IC	Inspection Cover		Coniferous Tree
IL	Invert Level		
KO	Kerb Outlet Cover		Deciduous Tree
LP	Lamp Post		
MH	Manhole		
MKR	Marker		

Project: COALBURN LANARK

Drawing Title: EXISTING SITE SURVEY LAYOUT PLAN

Client: AARDVARK EM LTD.

Project No:	GCS7226	Drawing No:	T-01
Drawn by:	A.BRYCE	Checked by:	
Scale:	1:500 at A0	Date:	FEB 2025