
PETERHEAD FLEXPOWER 500 MW BESS

Developed by Peterhead Flexpower Ltd, Peterhead BESS will be a 500 megawatt, two-hour battery energy storage system (BESS). It forms part of the critical infrastructure upgrades required to meet the government’s CP30 clean power targets.

Designed by specialist BESS engineers with extensive experience, the site places safety at the heart of its design, while ensuring reliability and minimal disruption to local communities and wildlife.

Over one hectare of land will be designated for biodiversity, and tailored landscaping measures will help minimise disruption to the surrounding environment.



Introduction

The purpose of this consultation event is to inform you about the emerging proposal by Peterhead Flexpower Ltd for a renewable energy development at AB42 3JP, comprising the installation of a Battery Energy Storage System (BESS) with associated infrastructure and access. We will listen to your feedback and concerns and, where possible, update our proposal accordingly before we present this to the Energy Consents Unit (ECU) and Council.

Site Overview

The site is designed to provide up to **500 MW of power** and store over **1 GWh of energy** using tier 1, UL 9540A tested battery containers. Three super grid transformers step-up the voltage of the electricity to **400 kV**, the voltage of the UK's transmission network, enabling connection into the national grid.

Why Peterhead?



Scotland

The increased number of wind farms requires more energy storage and grid support services close to the generation.



Peterhead

National Grid's new Sea Link undersea cable will connect into a brand-new 400 kV substation, soon to be built near Peterhead.



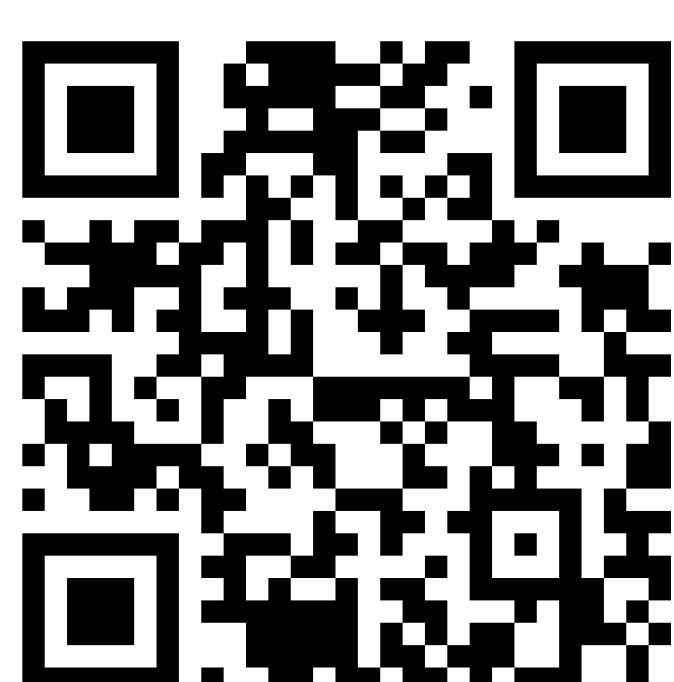
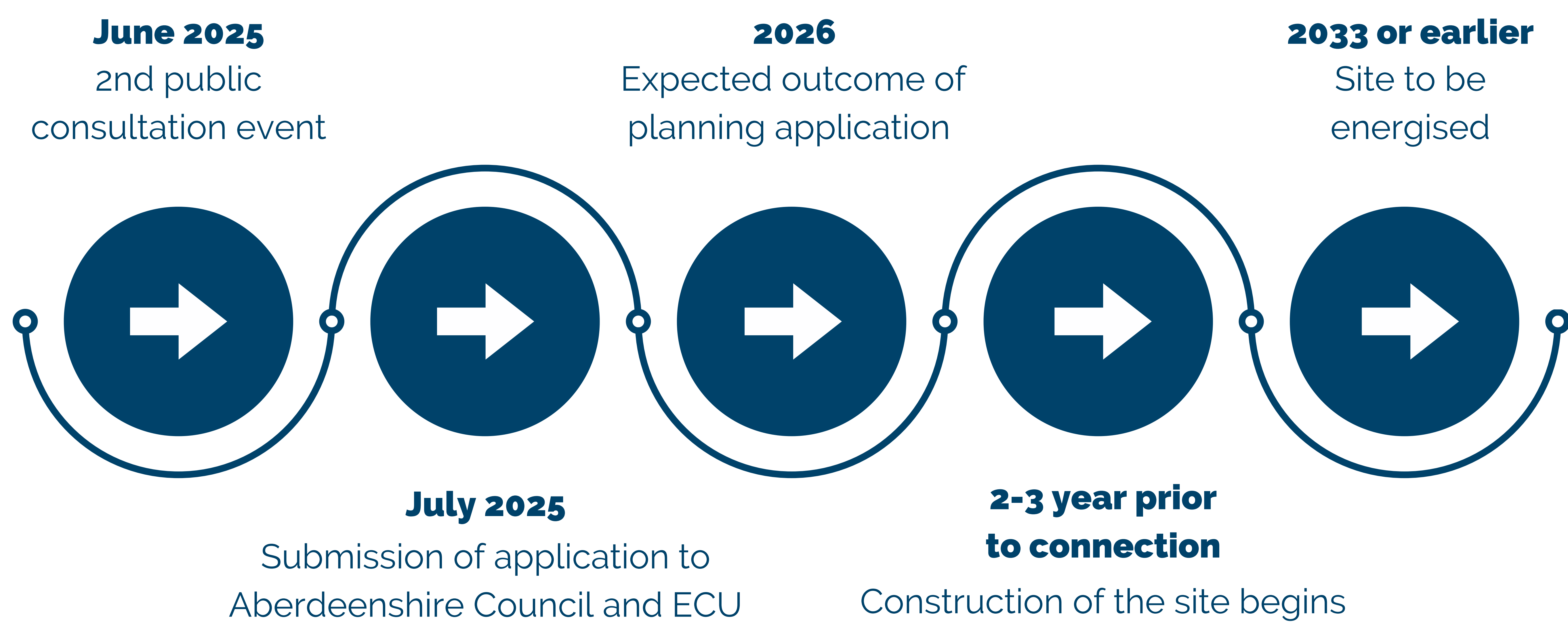
SW Peterhead

This land is a suitable size for a large BESS, 4.5 km from Peterhead, whilst remaining in close proximity to the 400 kV substation.

Timeline

Please see the provisional timeline of events prior to our connection, working towards connecting to the National Grid in 2033* or sooner.

*There is the potential for this date to be brought forward through the ongoing grid reform process. The existing connection date is in 2033



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Site Layout

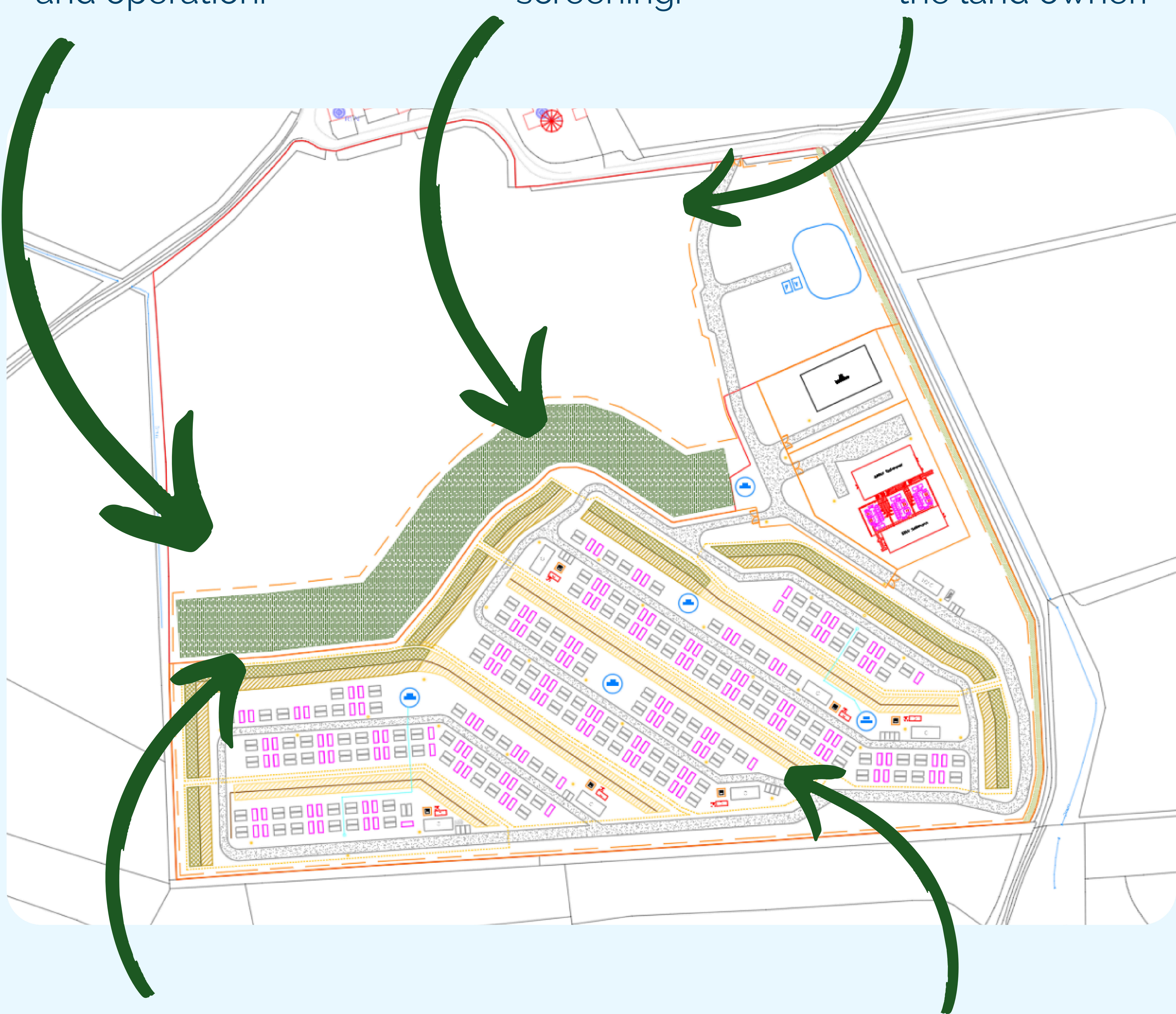
The site will be in a rural location on a hillside. The main equipment includes rows of batteries, inverters, a high-voltage substation, and associated supporting equipment, arranged over several terraces, each being screened by grass earth berms. An acoustic fence will be atop each earth berm, screened by planting and shrubs. The site will be situated to the southern end of the field, distanced away from the road and nearest residents.

We have outlined the key features of our site:

Designated land for biodiversity will help offset the lost biodiversity due to the projects construction and operation.

Native hedgerow and shrubs will be planted on the outer edges of the berms to provide natural screening.

Optimised site design minimises land take and allows more land to be returned to the land owner.



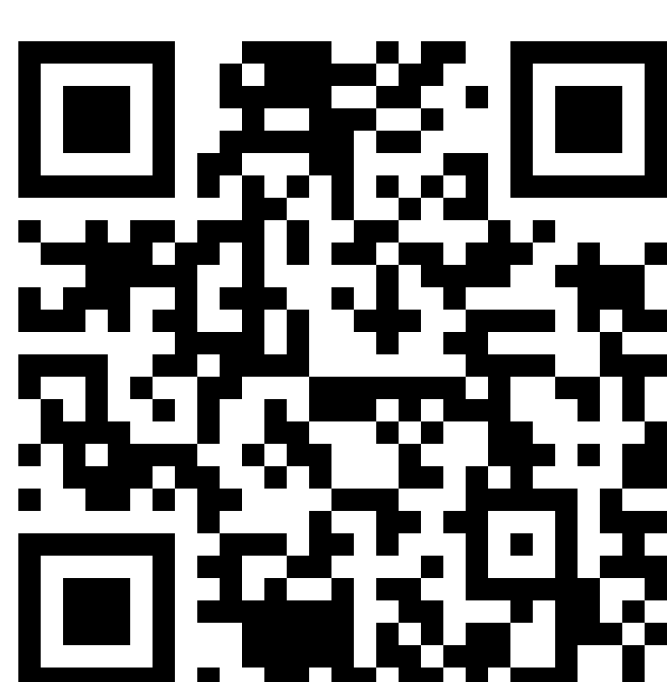
Landscaped berms will provide both visual and noise protection, reducing the impact on local residents.

Our equipment is located on terraces which follow the contours of the land, reducing invasive ground works, shortening construction time, reducing construction traffic, and ultimately reducing public disruption.

Key design criteria

The below criteria are examples of things we consider when designing and optimising our site:

- Reducing visual impact
- Minimising land usage
- Reducing environmental impact
- Fire safety
- Reducing noise pollution
- Optimising construction to reduce public disruption



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Landscaping & Visual Impact

Reducing Visual Impact

As part of the planning application we will be commissioning a full visual impact assessment that will include photo montages showing how the site is expected to look from a range of view points. These will be available once planning is submitted.

The main methods to reduce the visual impact of this site are **natural landscaping**, using both **native planting** and **landscaped and planted berms**.

Several 3m high outer berms will provide significant screening for the lower terrace levels while 2m high berms will be created within the site to screen the upper terrace levels and soften the appearance, with planting also adding significant visual shielding. Where possible, site equipment will be finished in a neutral colour to further blend into the existing landscape.

Landscaping Strategy

A landscaping plan has been commissioned which will include a variety of native plant species to help obscure the site's five terrace levels from the public view.

This will be produced by a specialist landscape architect who will propose distinct planting types throughout the site, such as trees and shrubs, hedgerow, species rich grassland, and amenity grass.

Each different planting type will serve a specific role in both screening the site from the surrounding viewpoints and improving biodiversity.

- **Trees & Shrubs:** Used to visually screen the site.
- **Hedgerow:** Further integrates the site with the natural landscape.
- **Species rich grassland:** Supports native wildlife with wildflowers.
- **Amenity grass:** Fast growing, durable, drought and disease resistant grass mix reduces water runoff and creates a more natural area.

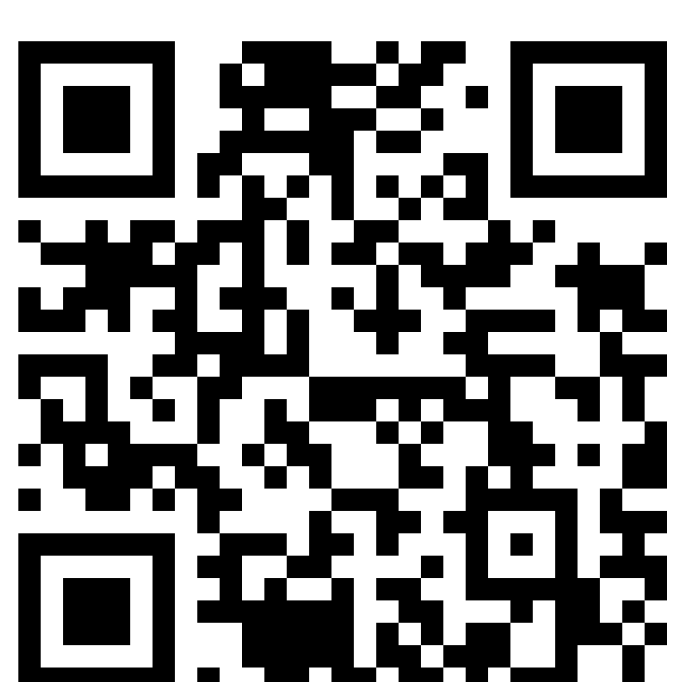
The photo montages show the impact of the landscaping and planting on screening the site, both in year 1 and year 15 of operation. Please see the example photos below:



Above: Year 1



Above: Year 15



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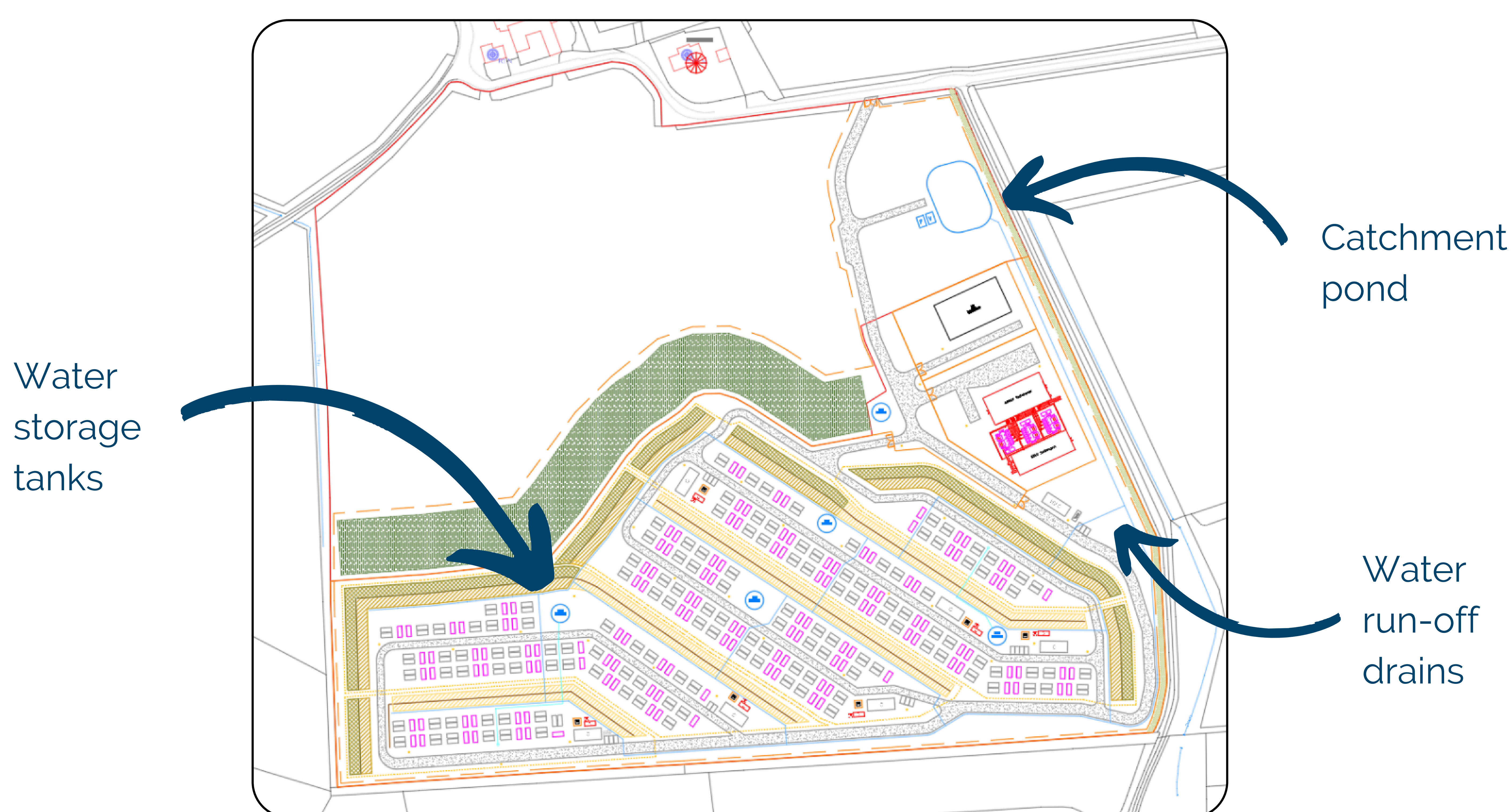
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Site Drainage & Water Supply

Drainage

A flood risk assessment report has been commissioned to demonstrate the site's ability to withstand the most severe weather conditions, remaining both safe and operational during a once-in-every-200-years weather event. (accounting for climate change)

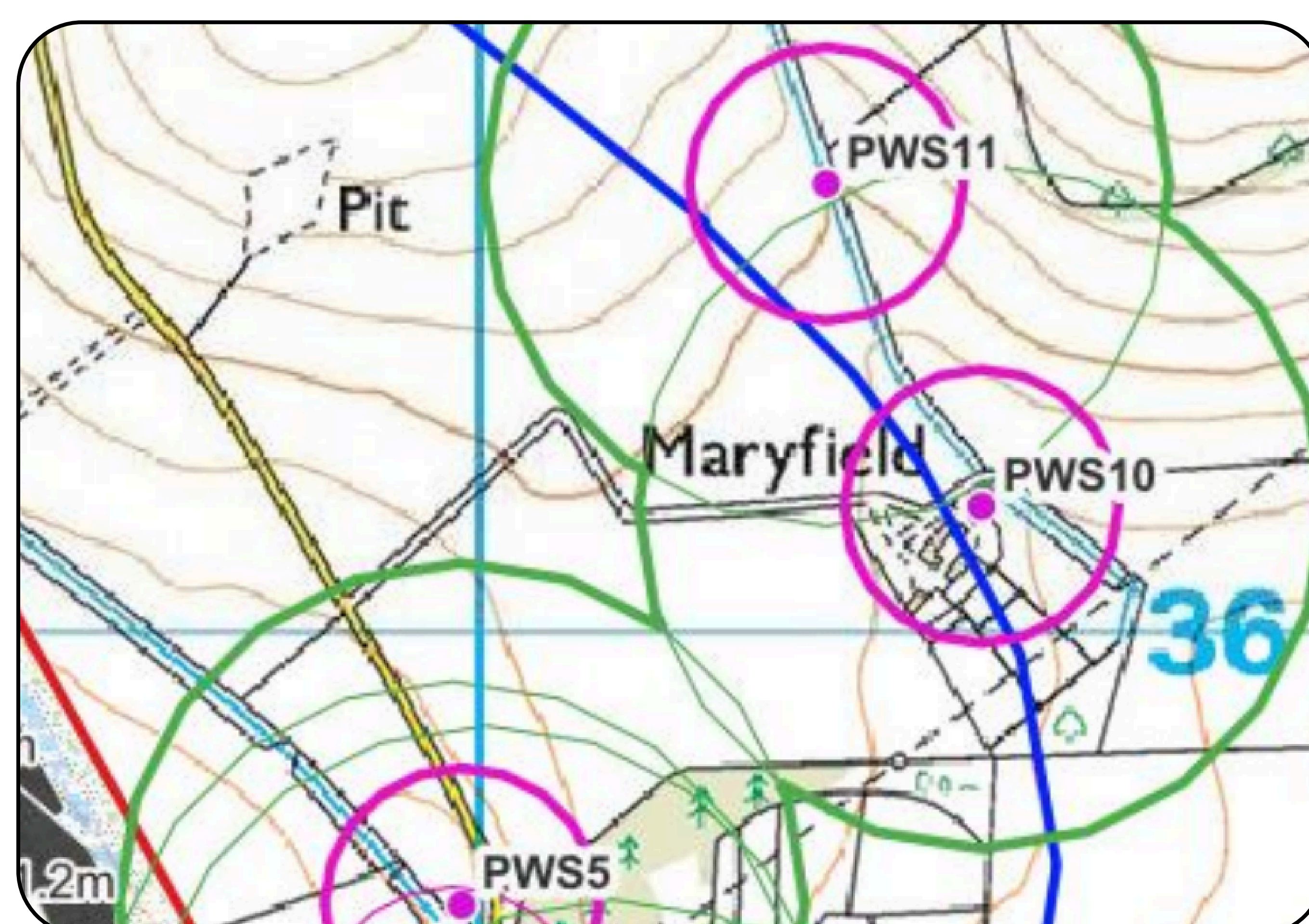
To ensure the site remains safe to operate, and doesn't create local flooding problems, any surface water run-off must be collected and redistributed into the local environment in a controlled manner.



There is a network of run-off drains installed to collect the surface water and channel it into the catchment pond in the north east corner of the site, the lowest point of the hill. Once collected, the **water is discharged at a controlled rate into an identified natural drain**. This ensures the natural drain is not overloaded with water and mitigates the risk of flooding downstream.

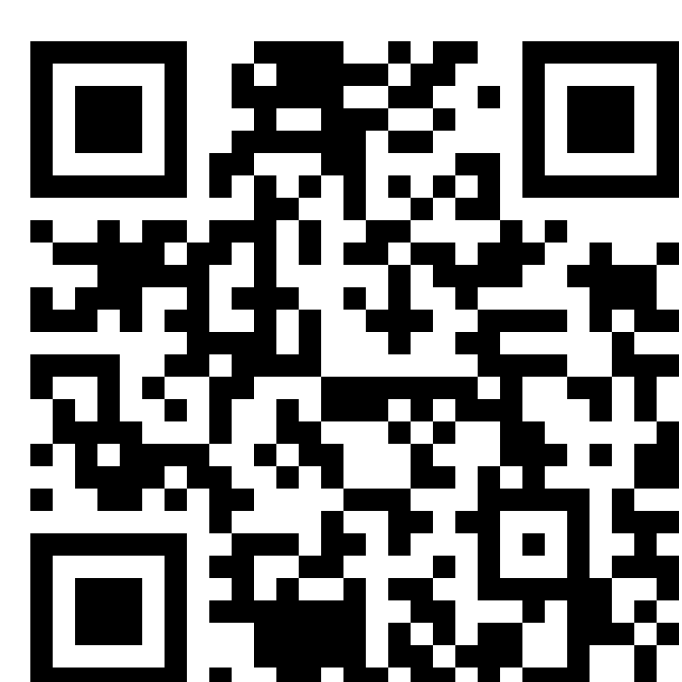
Water supply

Due to the presence of private water supplies within 250 m of the site boundary, we are **commissioning a private water supply assessment** to identify any risk to the respective water supplies caused by both site construction and operational activities.



Survey letters have been sent to the owners of each respective water supply to collect further information, including the below:

- Exact location
- Type of water supply
- Source of water supply



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Acoustics

Reducing Noise

The majority of noise emitted from BESS sites come from the cooling units in the batteries and the inverters on site. We use the following mitigation techniques to reduce this:

- Landscaping
- Acoustic barriers
- Equipment attenuation
- Equipment positioning

Landscaping: The planted berms provide significant noise reduction, both absorbing and redirecting the noise away from nearby residents.

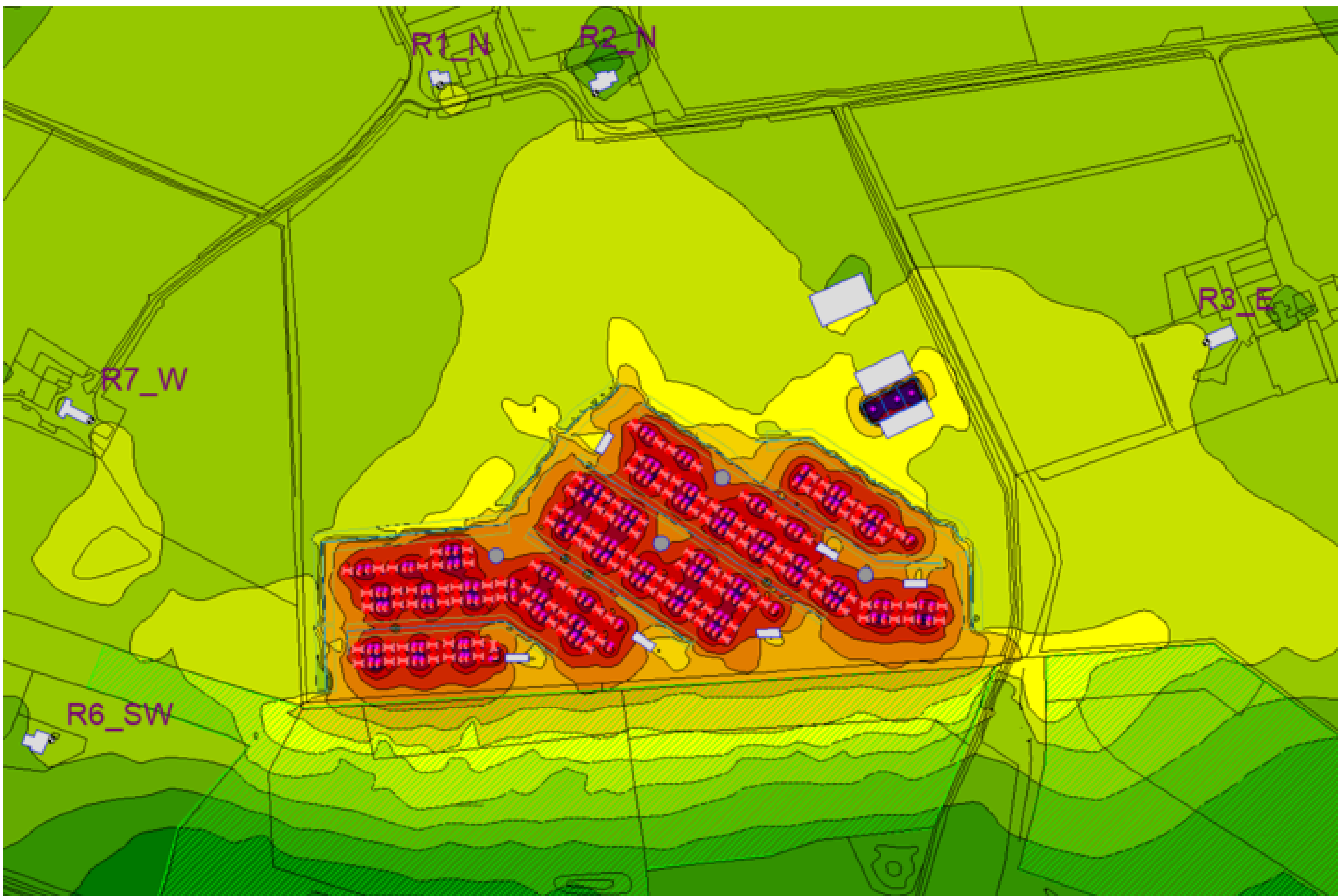
Acoustic barriers: Fencing will both block and absorb the noise, as well as scattering any reflected sound, reducing its intensity.

Equipment attenuation: Louder equipment will be fitted with baffles to reduce the noise emitted at source.

Equipment positioning: By placing the equipment at the southern end of our site, the noise sources are distanced from local residents which helps minimise their impact.

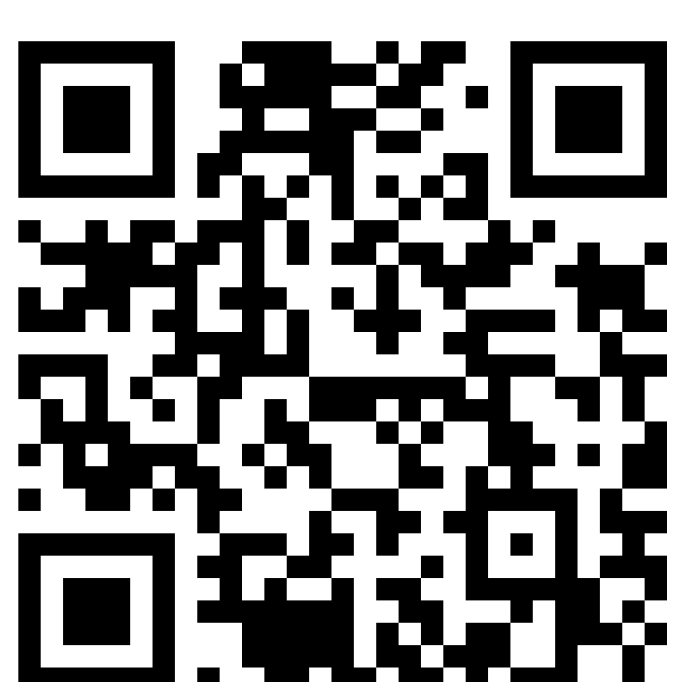
We have optimised our design and layout to reduce any noise from the site. This includes careful equipment selection and orientation, site layout and distancing from the public.

Our site is designed to meet both **NR20 noise restrictions and British Standard BS 4142**, which limit sound levels inside and outside residential buildings respectively, as recommended by Aberdeenshire Council.



Above: Images taken from the noise modelling software

An NR20 compliant environment is of a comparable indoor noise to that of a library.



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Environmental Impact

We have commissioned a **Preliminary Ecological Assessment (PEA)**, that assesses the impact of the proposal on the wildlife, and suggests suitable mitigation or compensation.

This assessment judges whether a Protected species report, which focuses on species habitats, breeding, and foraging environments, and a Tree protection plan focusing on native species and their conservation, are required depending on the equipment proposed for the site.

These reports, where required, often recommend actions to further protect the habitats or species in the area.

The activities listed below are some examples of potential requests, which can influence our design from an earlier date:



Above: Sheep grazing on the site

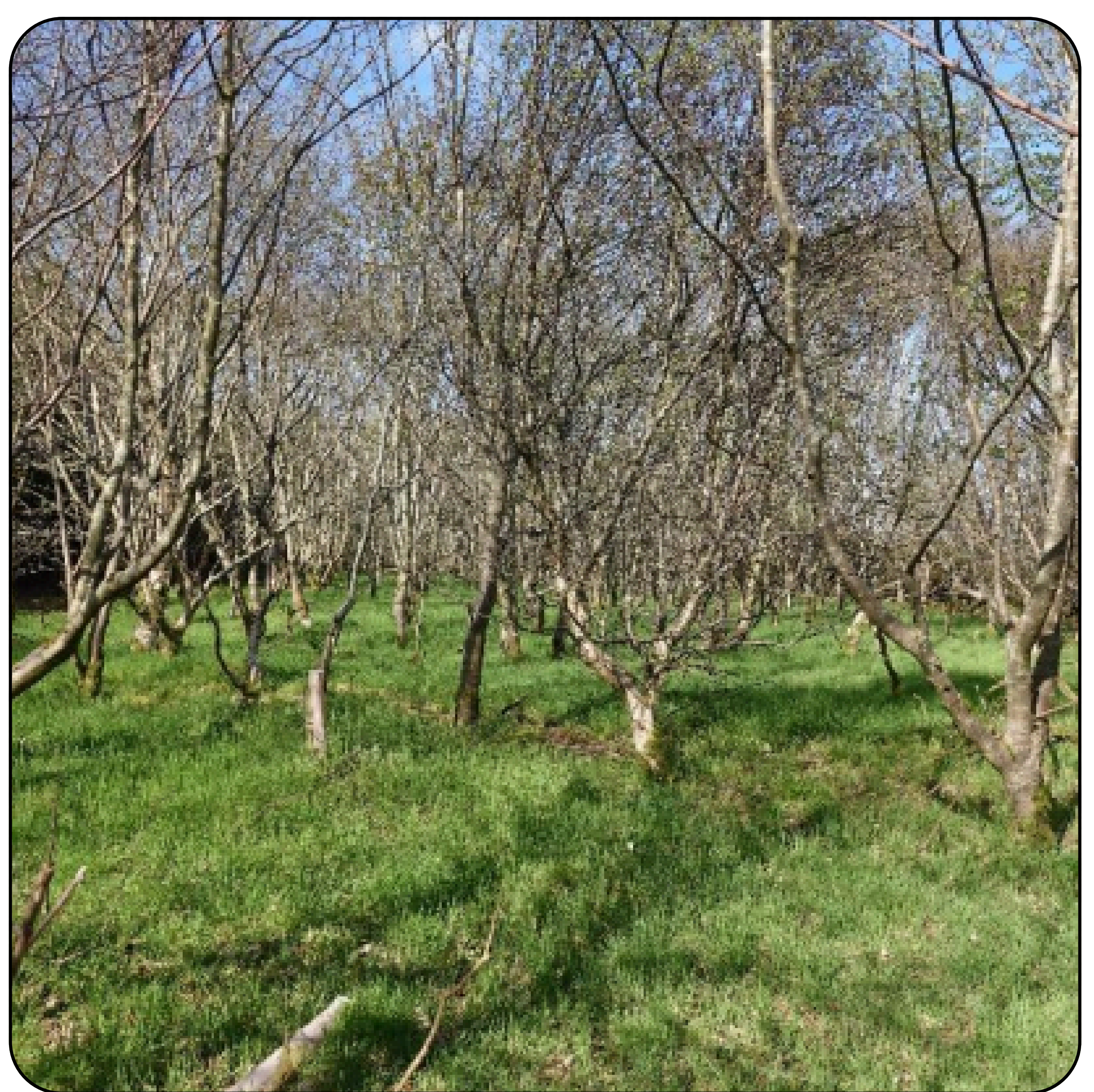
- Timing of construction works
- Environmental Management Plan
- Survey for nesting birds prior to work
- Phased vegetation clearing
- Amenity grassland creation
- Trench escape paths for amphibians

Preliminary habitat report

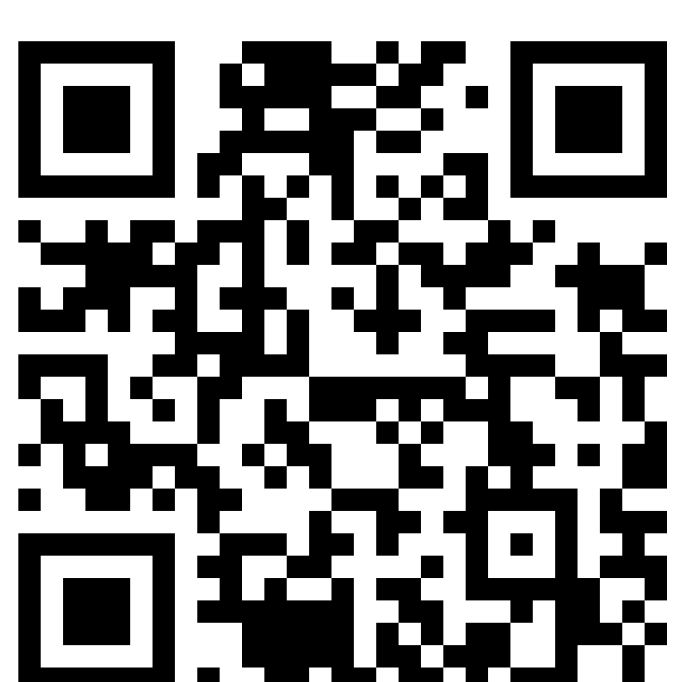
Our **Preliminary habitat report** has outlined that there could be low long-term impacts on the species identified on the land. These impacts will be mitigated by creating amenity/natural grassland with wildflower meadows and various insect hotels, beetle banks, and scrub piles.

It also recommended that further studies are not necessary as the suggested mitigation would be suitable in not only offsetting the site's impact, but improving it.

Of the 7 species assessed in the report, only 2 species were shown as being impacted as a result of the development, with the rest having a negligible impact. The species effected were bats and ground-breeding birds, whos habitat is included in the recommended mitigation plan.



Above: Woodlands to the south of the site



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