OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

DCO Submission

Environmental Statement

Chapter 11: Ground Conditions
Appendix 11.9: Ardley Trackways SSSI Technical Note

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On behalf of
Oxfordshire Railfreight Limited

Prepared by BWB Consulting Ltd
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OxSRFI: Ardley Trackways SSSI Technical Note
October 2026

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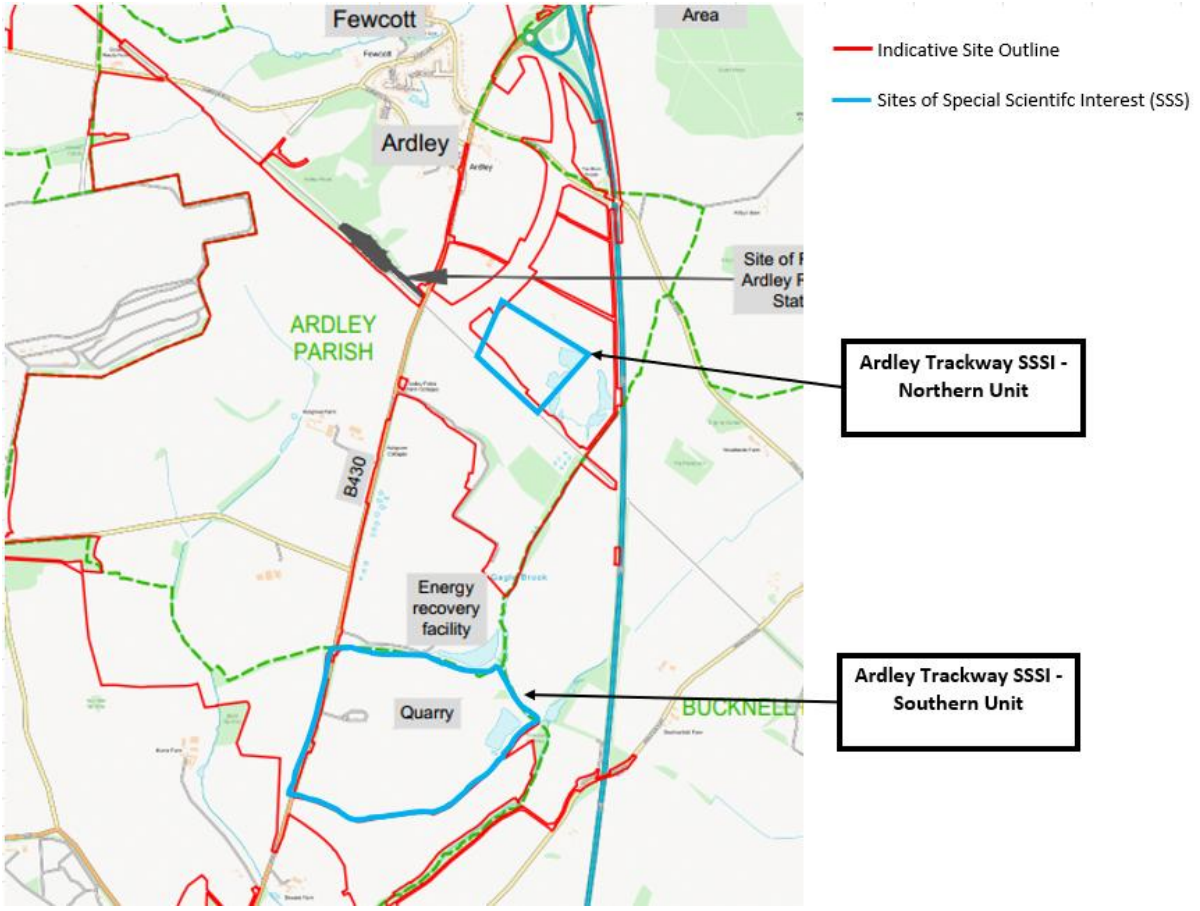
Oxfordshire Railfreight Limited (The Applicant) are promoting a Strategic Rail Freight Interchange (SRFI) on land east of the former Upper Heyford Air Base, south of the Chiltern Main Line, and southwest of Junction 10 of the M40 motorway. The Order Limits for the Development Site is located adjacent to Ardley Trackways. Ardley Trackways is designated as a Site of Special Scientific Interest (SSSI) due to the presence of fossilised dinosaur (sauropod and theropod) footprints, which form trackways. This SSSI is split into:

- The southern unit, located at Dewars Farm Quarry, an operational limestone quarry, to the east and south-east of the site; and
- The northern unit, located at an historical, now restored limestone quarry, to the north of the railway line; to the north-east of the site.

The locations of the above two SSSI units are indicated on the below plan. The Southern Unit is Ardley / Dewars Quarry adjacent to the Main Development Site of the Order Limits, with the northern unit being north east of the Chiltern Main Line railway, adjacent to the Order Limits.



Ground Conditions

British Geological Survey (BGS) mapping for the OxSRFI Site indicates that the site is predominantly underlain by White Limestone Formation (comprising limestone, wackestone, packstone, grainstone and mudstone), with superficial deposits absent. The entire site area is underlain by Sedimentary Bedrock formed during the Jurassic Period. The White Limestone Formation is sub-divided into the Bladon Member, the Ardley Member and the Shipton Member:

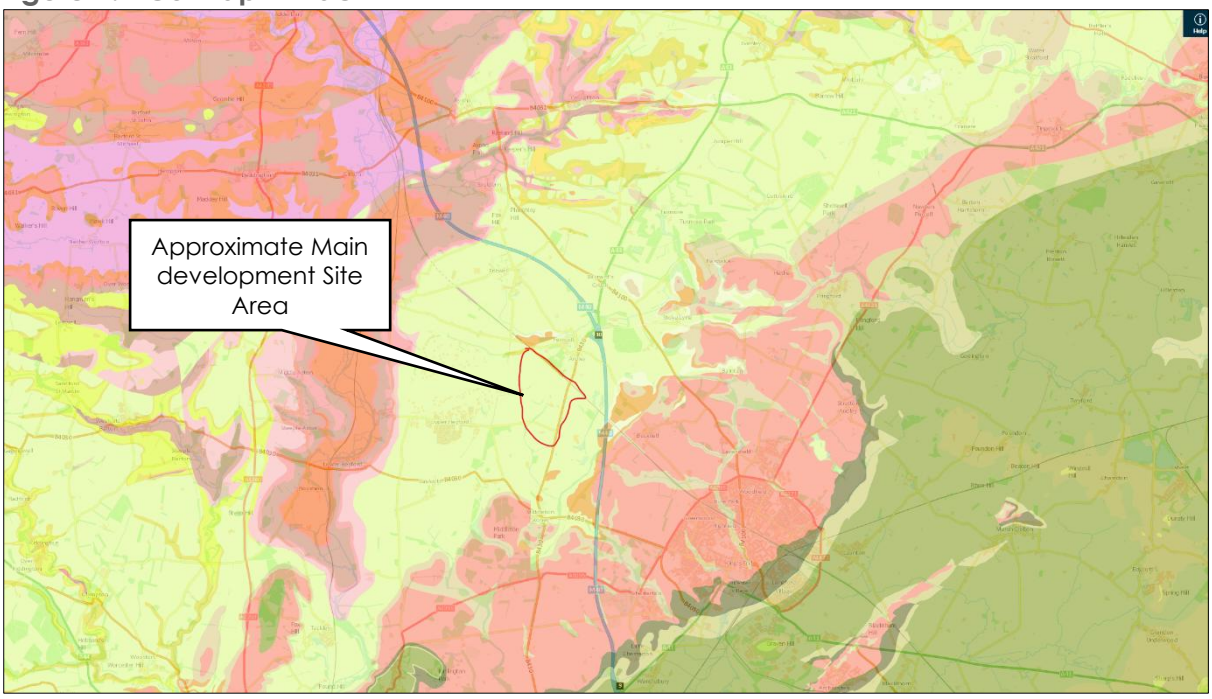
- The Bladon Member (typically up to 4m thick): comprises a green and grey clay/mudstone, which is commonly lignitic.
- The Ardley Member (typically 6-10m thick, known to be around 7m thick near the site): comprising a pale grey to off-white or yellowish limestone, peloidal wackestones and packstones with common ooidal and shell fragmental grainstones, and recrystallised limestone with beds of argillaceous limestone, sandy limestone, marl and mudstone or clay at some levels.
- The Shipton Member (around 4m thick): comprising pale grey to off-white or yellowish limestone, peloidal wackestone and packstone with subordinate ooidal and shell fragmental grainstone, and recrystallised limestone with beds of argillaceous limestone, marl and mudstone or clay.

In review of exploratory hole records including BGS records for the site and surrounding areas and inferring the geology beneath the OxSRFI Site, it is apparent that the Bladon member is absent at the OxSRFI site and directly overlies the Ardley Member, overlying the Shipton Member.

It is understood that the footprints were found in the lower sections of the White Limestone Formation geological bedrock, probably within The Shipton Member. This is one of the basal members of the formation in the Oxfordshire area, named after the Shipton-on-Cherwell Quarry. The White Limestone formation was laid down during the Jurassic era between 165 and 168 million years ago and is a sedimentary rock that forms from the accumulation of the remains of marine organisms, such as coral and shells, and the precipitation of calcium carbonate from water. Limestone is known for its fossil content with such exposures of limestone often designated as SSSIs, such as rock exposures along the Chiltern Main Line running along the north east boundary of the Main Site of the Order Limits.

The presence of limestone is not rare; indeed, vast areas of the surrounding region are directly underlain by limestone bedrock of the White Limestone Formation. However, the fossil footprints discovered on the adjacent quarry are very rare, hence its designation as a SSSI. While dinosaur bones and the "hard parts" of prehistoric creatures can (in the right conditions) end up preserved as fossils, the likelihood of transient features such as creature footprints in fine soils being preserved/fossilised is a much lower possibility. The pale yellow/green on the below image taken from the BGS mapping viewing portal shows the extents of the White Limestone Formation. As can be seen from the below image, this formation extends across a much greater area than either the site (roughly outlined in red) or the adjoining SSSI.

Figure 1: BGS Map Extract



SSSI Designation

The unique circumstances surrounding the discovery of the dinosaur footprints on the adjacent quarry stemmed from the extensive exposure of a limestone bedding surface. Jurassic rock face exposures (i.e. that cross the bedding planes) created in the local areas have been designated as SSSIs such as along the Chiltern Main Line rock exposures.

The primary issue for palaeontological management pertains to the potential for exposing significant bedding surfaces during enabling works, and the possibility for this to expose dinosaur (or other rare) fossils which could theoretically be contained within those surfaces.

It is important to note that the occurrence of such fossil footprints is exceptionally rare. While similar features have been identified and exposed on the adjacent site, the probability of encountering or exposing comparable features at the subject site is considered very low, though not entirely negligible.

The majority of the proposed Main Site has limited cut (<3m) which are mainly in more weathered deposits and so would not contain fossils. The main areas where excavation will be deeper into more competent rock are in western areas to form unit plateaus, and in the north west where the rail freight terminal is proposed, and excavation is locally >7m (albeit over a relatively small part of the overall site).

Neither of the existing Trackway SSSIs will be affected by the Proposed Development.

Contingency

In reality, even if further palaeontological features of interest are present it is highly unlikely that they would be disturbed or uncovered by works to deliver the OxSRFI scheme. Any such features are considered very unlikely to be present at formation depth (i.e. at the excavation

levels required for the development scheme). If footprints were to be discovered further excavation would be a necessity to achieve the final formation levels.

It is proposed that a watching brief by a palaeontologist will be undertaken where deeper excavations are undertaken into the lower portion of the White Limestone Formation, known as the Shipton Member, which is the strata which contained dinosaur footprints on the adjacent site. The areas for this is presented on the plan appended to the back of this Technical Note.

Should potential footprints, or similar geology/fossils or high interest be identified, the palaeontologist would examine the features to determine the species, age, significance and condition to help inform decisions about an appropriate approach to mitigation. Depending on the significance of any discovery, appropriate measures may include controlled excavation, detailed examination and possibly removal of any fossils. This process should include detailed documentation potentially incorporating high-resolution photography and/or 3D laser scanning.