



Nature4Networks

→ The Power of Commitment

Scottish and Southern Electricity Networks Distribution (SSEN-D)

Alpha Phase portfolio of proposed NbS designs



Nature4Networks- Introduction

Building on the outcomes of the Discovery Phase of the Nature4Networks (N4N) project, the present Alpha Phase seeks to further advance and develop four Nature-based Solutions (NbS) approaches for application in specific use cases (UCs) for UK electricity Distribution Network Operators (DNOs). Each use case seeks to address specific problems and challenges experienced by Scottish and Southern Electricity Networks Distribution (SSEN-D) across their operational areas in the UK, providing more sustainable and resilient solutions compared to those used currently under business-as-usual scenarios.

The four UCs being advanced in the project are: UC1 – linear woodlands for screening and sheltering of overhead lines (OHLs); UC2 – sustainable drainage systems (SuDS) for flood mitigation at substations; UC3 – bioswales as secondary oil containment mechanisms for oil-filled transformers; and, UC4 – thorny planting around OHL poles on agricultural land to deter cattle access and interference and enhanced visual awareness to reduce collision risk.

This portfolio of proposed NbS designs presents a range of site specific (except for UC4 which is general rather than site specific) outline plans, specifications, and visualisations to demonstrate the development and advancement of the concepts put forward under each UC. The designs presented demonstrate what could potentially be implemented at the sites identified through analysis and assessment of SSEN-D's assets under both phases of the N4N project to date. It is intended that these designs form the basis for advancing the four selected UCs as trial proposals in a future phase(s) of the N4N project.

These designs, in conjunction with report 'D3.2: Trial proposals for NbS use cases' seek to contribute to the ambitions and aims of the N4N project to explore how NbS can be used by electricity distribution and transmission companies (and other relevant infrastructure owners and operators) in the UK as viable alternatives to traditional engineering methods for safeguarding network assets more sustainably whilst delivering greater levels of resilience to climate change impacts and multiple co-benefits.



Nature4Networks- UC1 Bridge of Awe Linear Woodland Plan

Plan 1:2000 @ A3



Key

Existing

- Built form
- Contours
- OHL infrastructure
- Woodland
- Water bodies
- Woodland removal

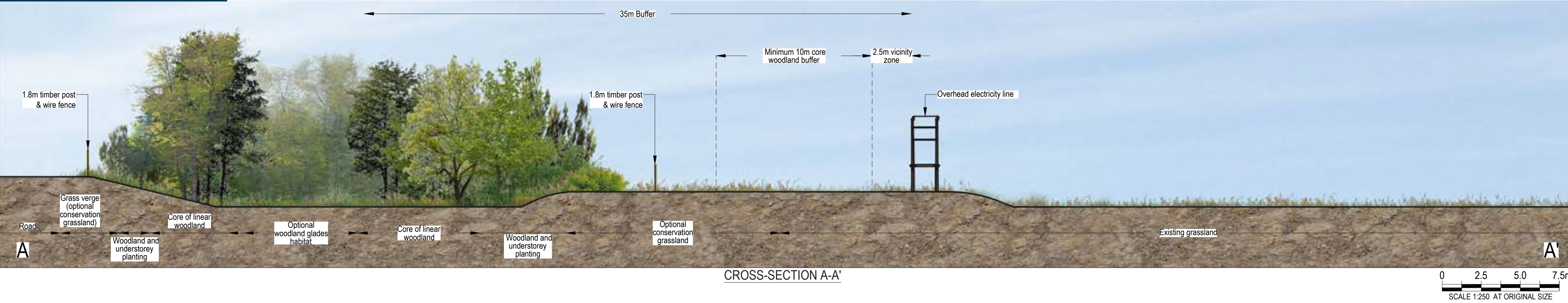
Proposed

- Vegetation extent
- Core native woodland
- Woodland and understorey planting
- Optional woodland glades habitat
- Optional conservation grassland
- 1.8m high deer proof post and wire fencing

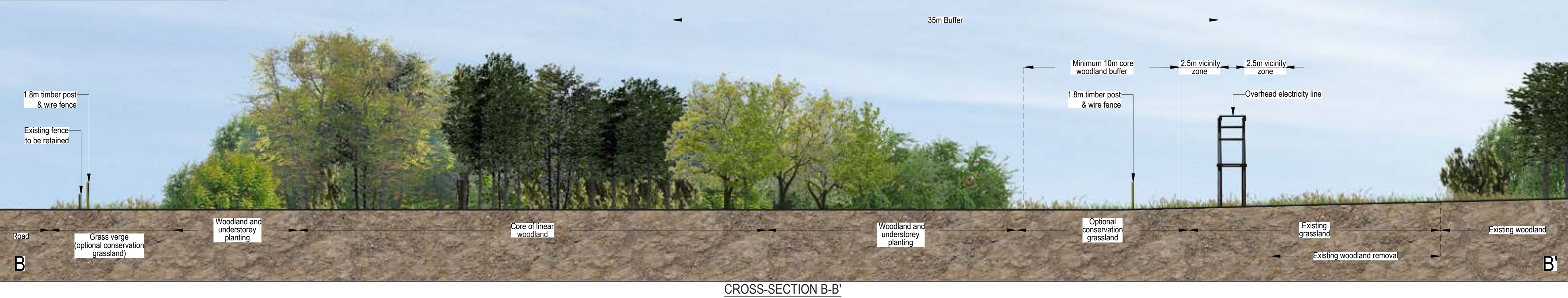


Nature4Networks- UC1 Bridge of Awe Linear Woodland Cross Sections

Cross Section A-A'
1:250 @ A3



Cross Section B-B'
1:250 @ A3



Nature4Networks- UC1 Bridge of Awe Linear Woodland Plan

Optional Phase 2

Plan 1:2000 @ A3



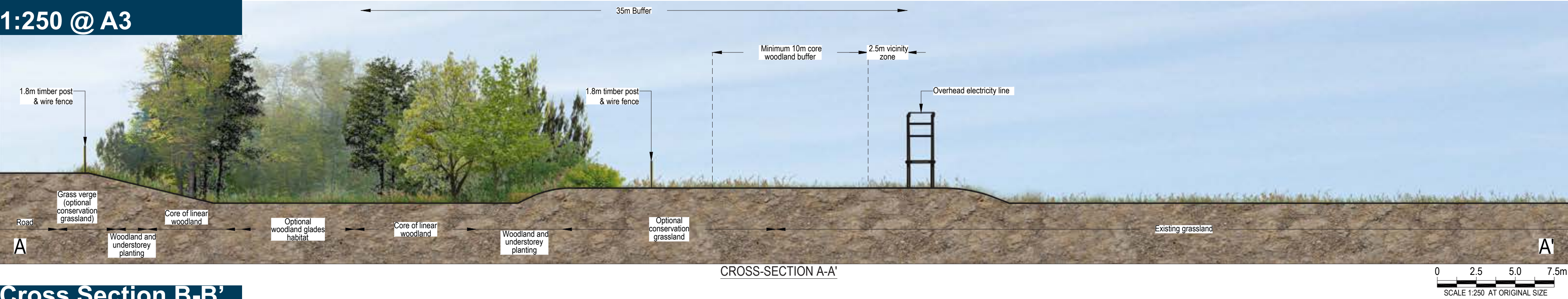
- Key
- Existing
- Built form
 - Contours
 - OHL infrastructure
 - Woodland
 - Water bodies
 - Woodland removal
- Proposed
- Phase 1 vegetation extent
 - Phase 2 vegetation extent
 - Core native woodland
 - Woodland and understorey planting
 - Optional woodland glades habitat
 - Optional conservation grassland
 - 1.8m high deer proof post and wire fencing



Nature4Networks- UC1 Bridge of Awe Linear Woodland Cross Sections

Phase 1 & 2

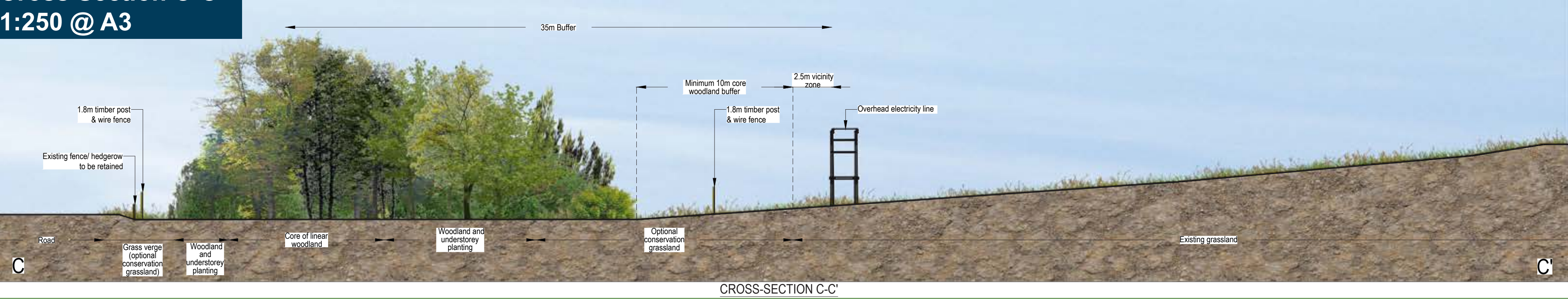
Cross Section A-A'
1:250 @ A3



Cross Section B-B'
1:250 @ A3



Cross Section C-C'
1:250 @ A3



Nature4Networks- UC1 Bridge of Awe Linear Woodland Visual looking South East

Proposed



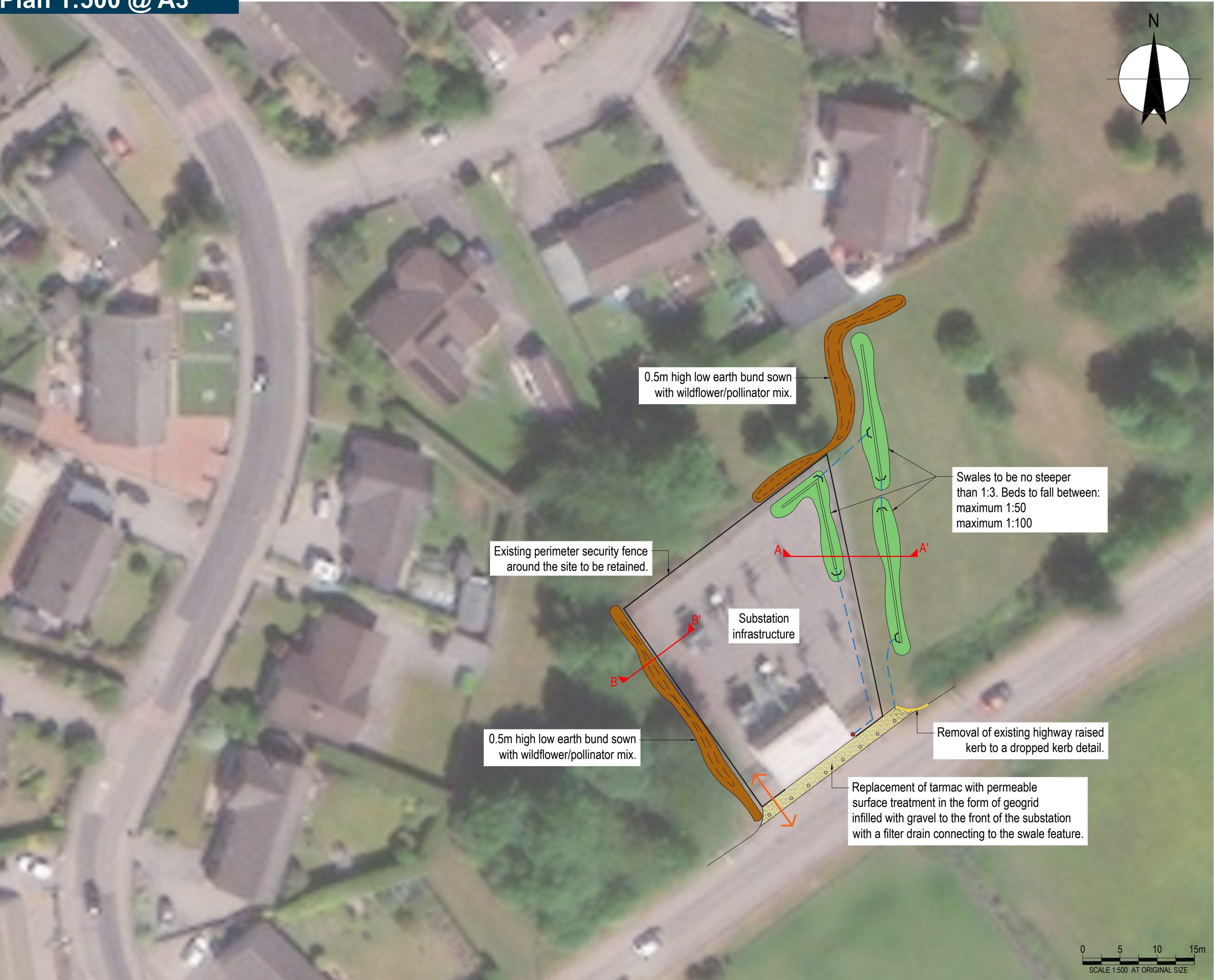
Nature4Networks- UC1 Bridge of Awe Linear Woodland Visual looking North West

Proposed



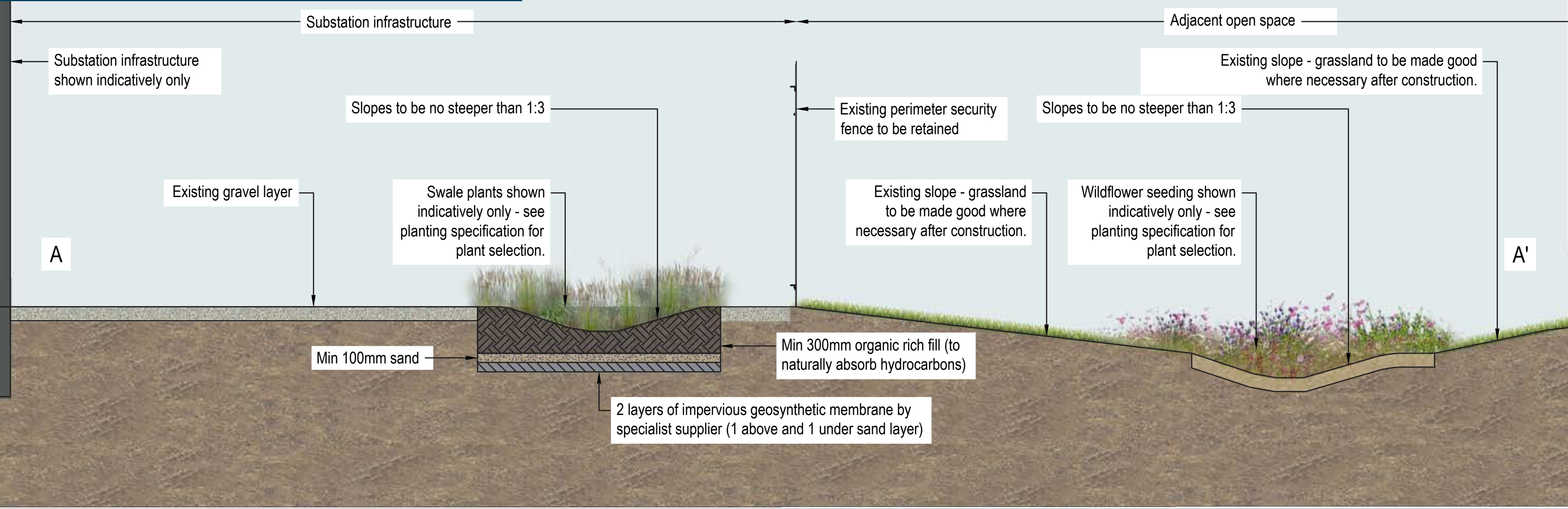
Nature4Networks- UC2 Conon Bridge SuDS Plan

Plan 1:500 @ A3

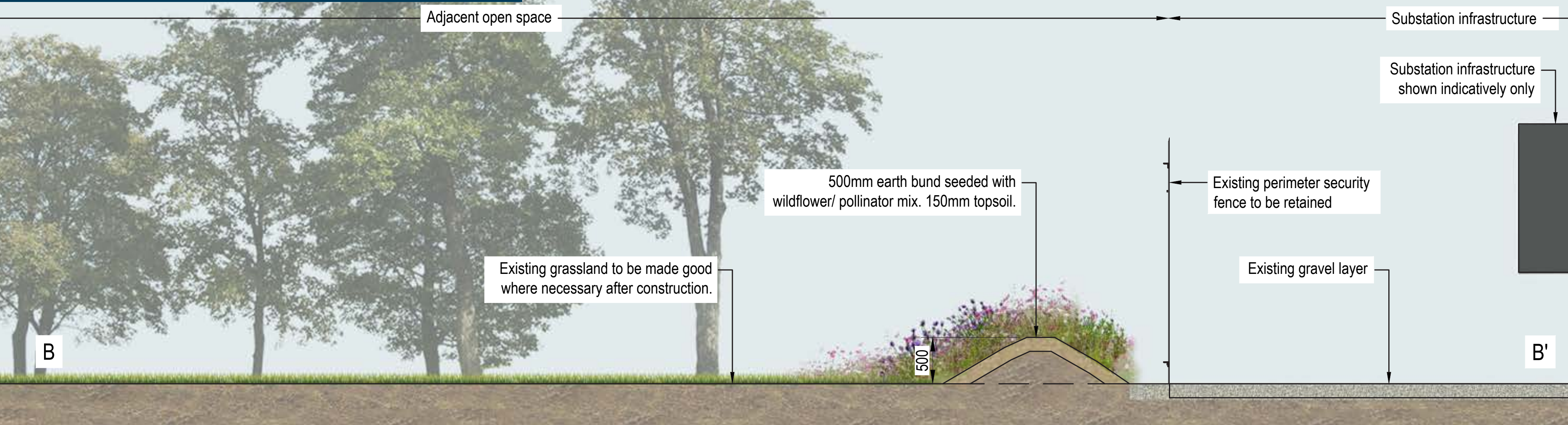


Nature4Networks- UC2 Conon Bridge SuDS Cross Section

Cross Section A-A' 1:50 @ A3



Cross Section B-B' 1:50 @ A3



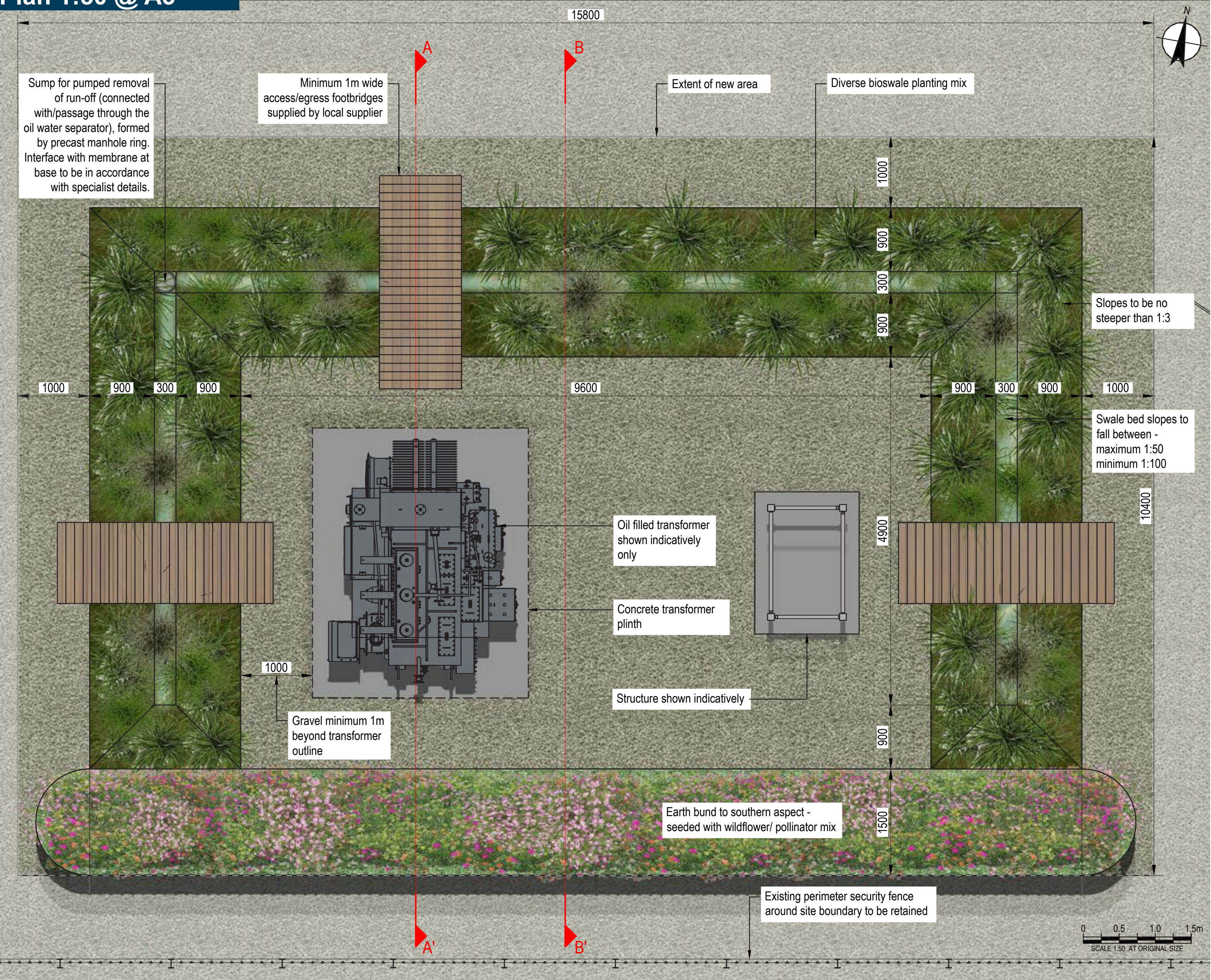
Nature4Networks- UC2 Conon Bridge Visual

Proposed



Nature4Networks- UC3 Inchbare Transformer Bioswale Plan

Plan 1:50 @ A3

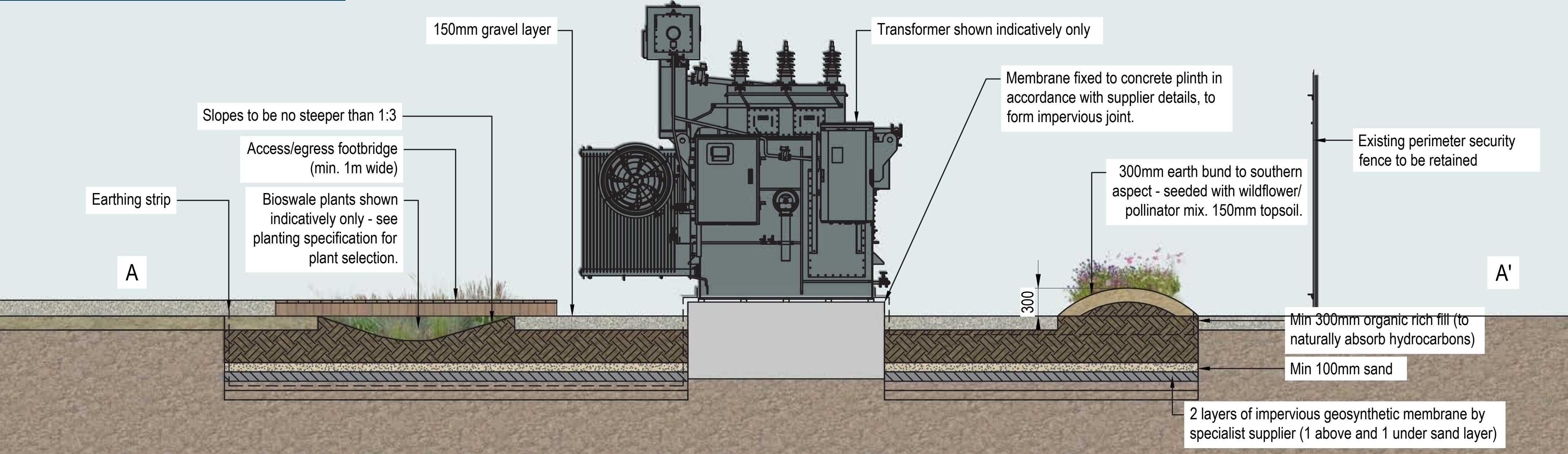


- Key
- Proposed
- Access/ egress footbridge
 - Gravel
 - Earth bund to southern aspect - sown with wildflower/ pollinator mix
 - Wet bioswale with diverse bioswale planting mix

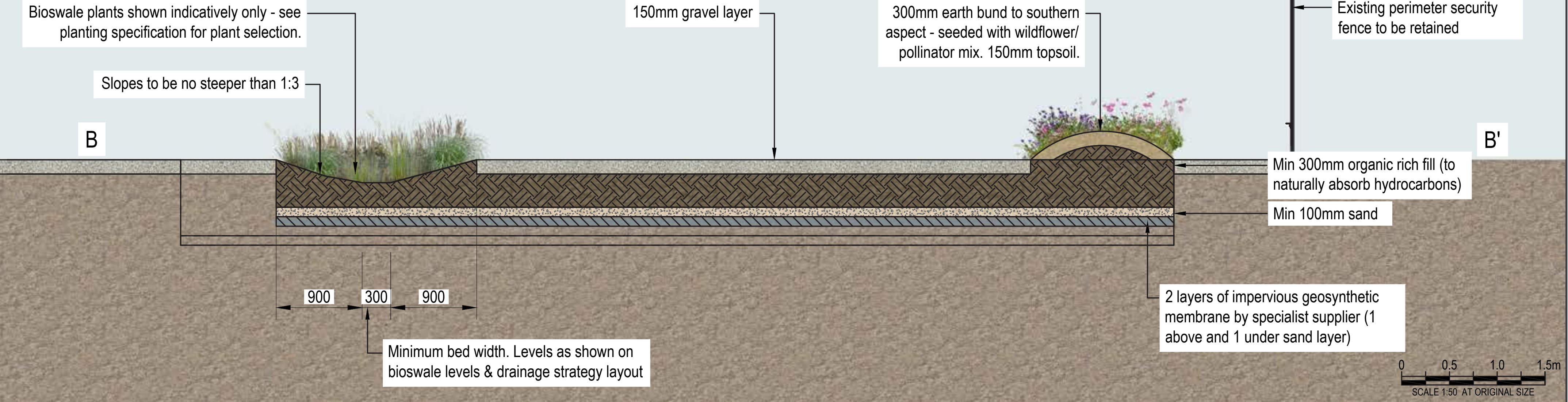


Nature4Networks- UC3 Inchbare Transfomer Bioswale Cross Sections

Cross Section A-A' 1:50 @ A3



Cross Section B-B' 1:50 @ A3



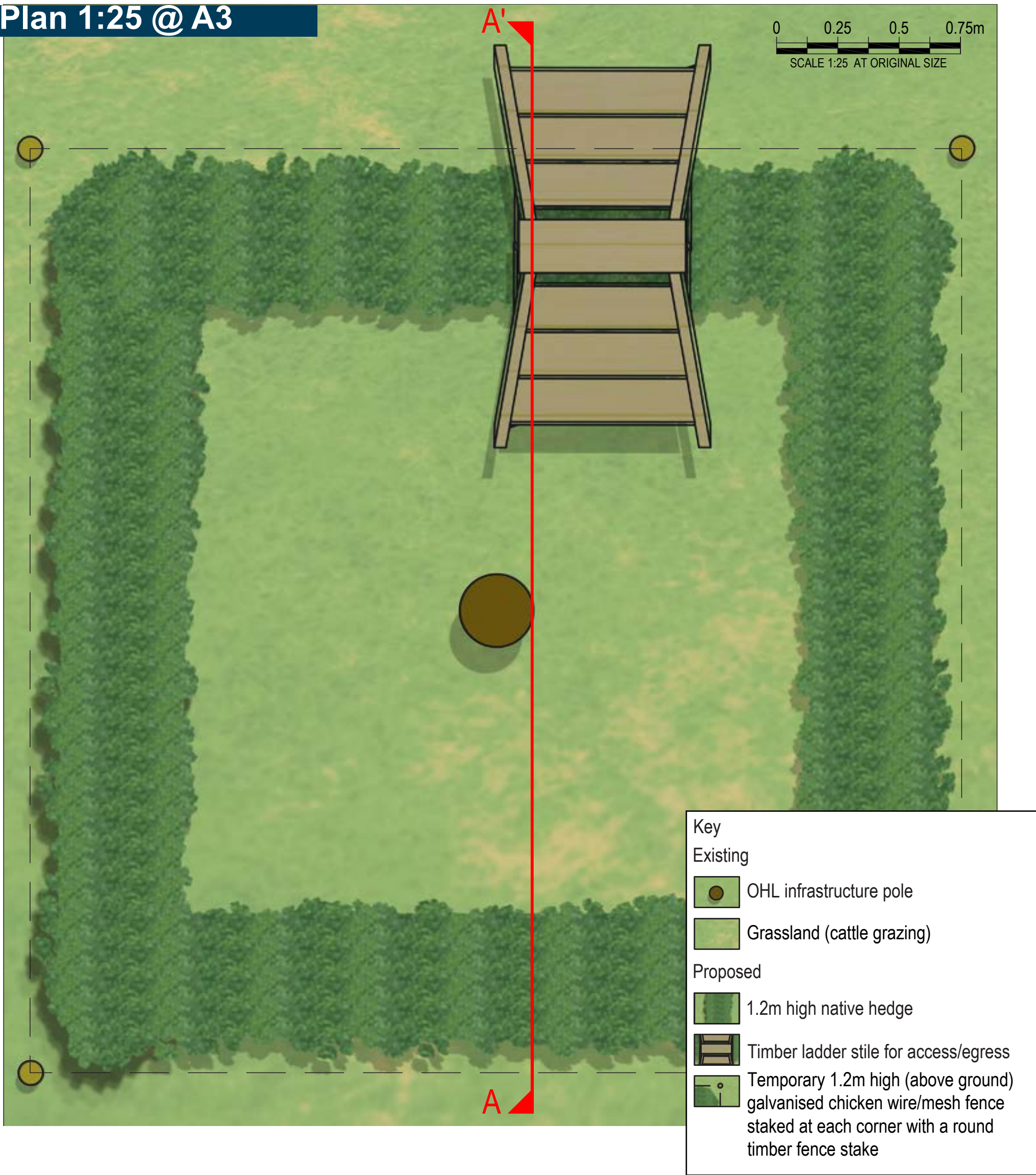
Nature4Networks- UC3 Inchbare Transformer Bioswale Visual

Proposed

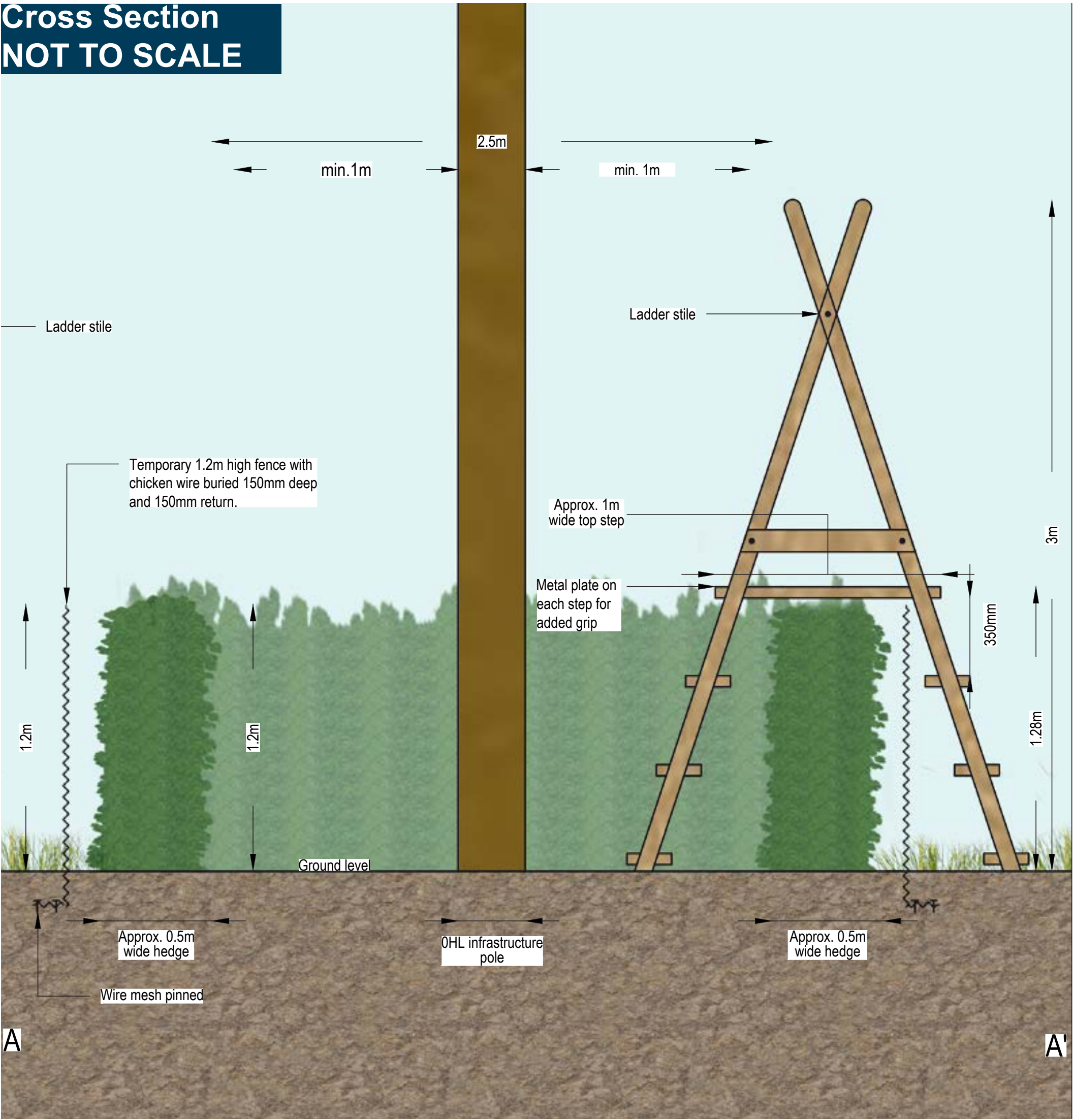


Nature4Networks- UC4 Thorny Planting Plan and Cross Section

Plan 1:25 @ A3



Cross Section NOT TO SCALE



Nature4Networks- UC4 Thorny Planting Visual

Proposed





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Scottish and Southern Electricity Networks Distribution (SSEN-D)
Technical Annex



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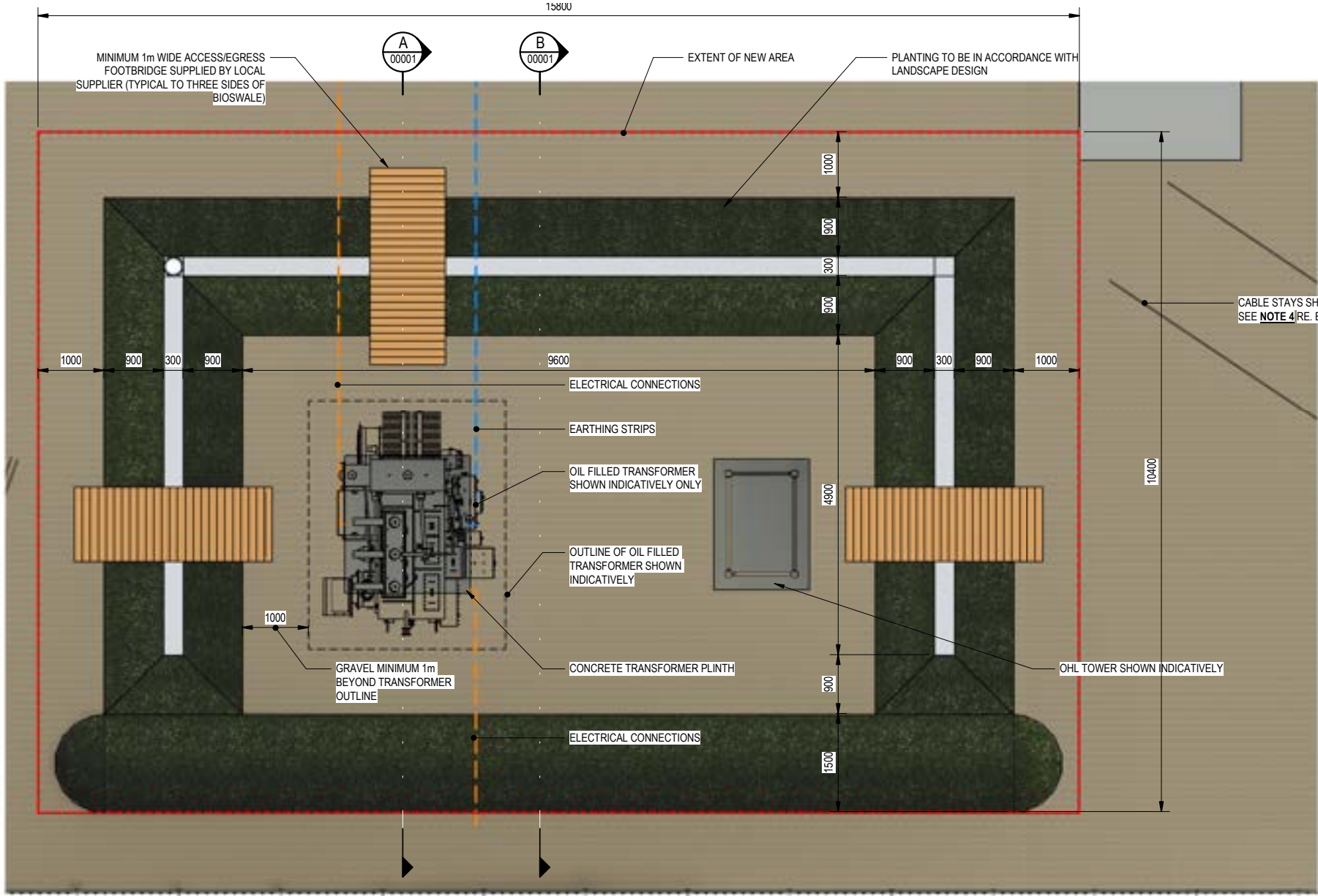


Scottish & Southern
Electricity Networks

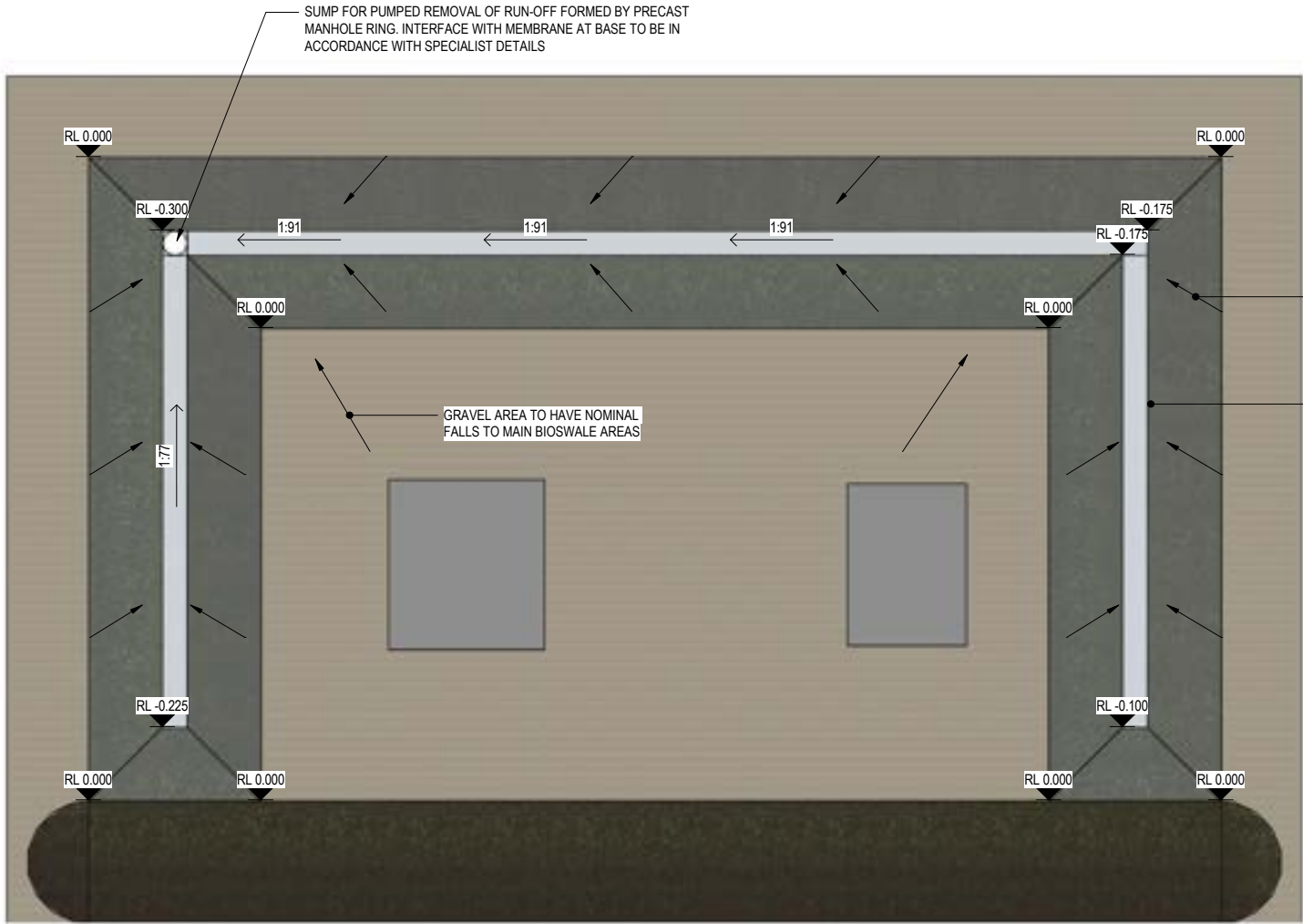
Nature4Networks- UC3 Inchbare Substation Bioswale

General Arrangement Sections and Details

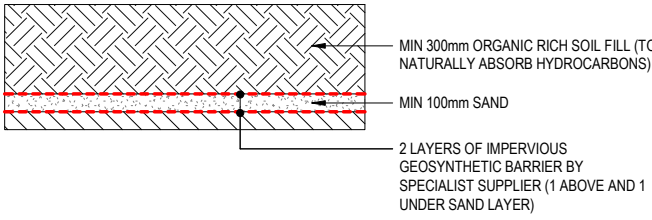
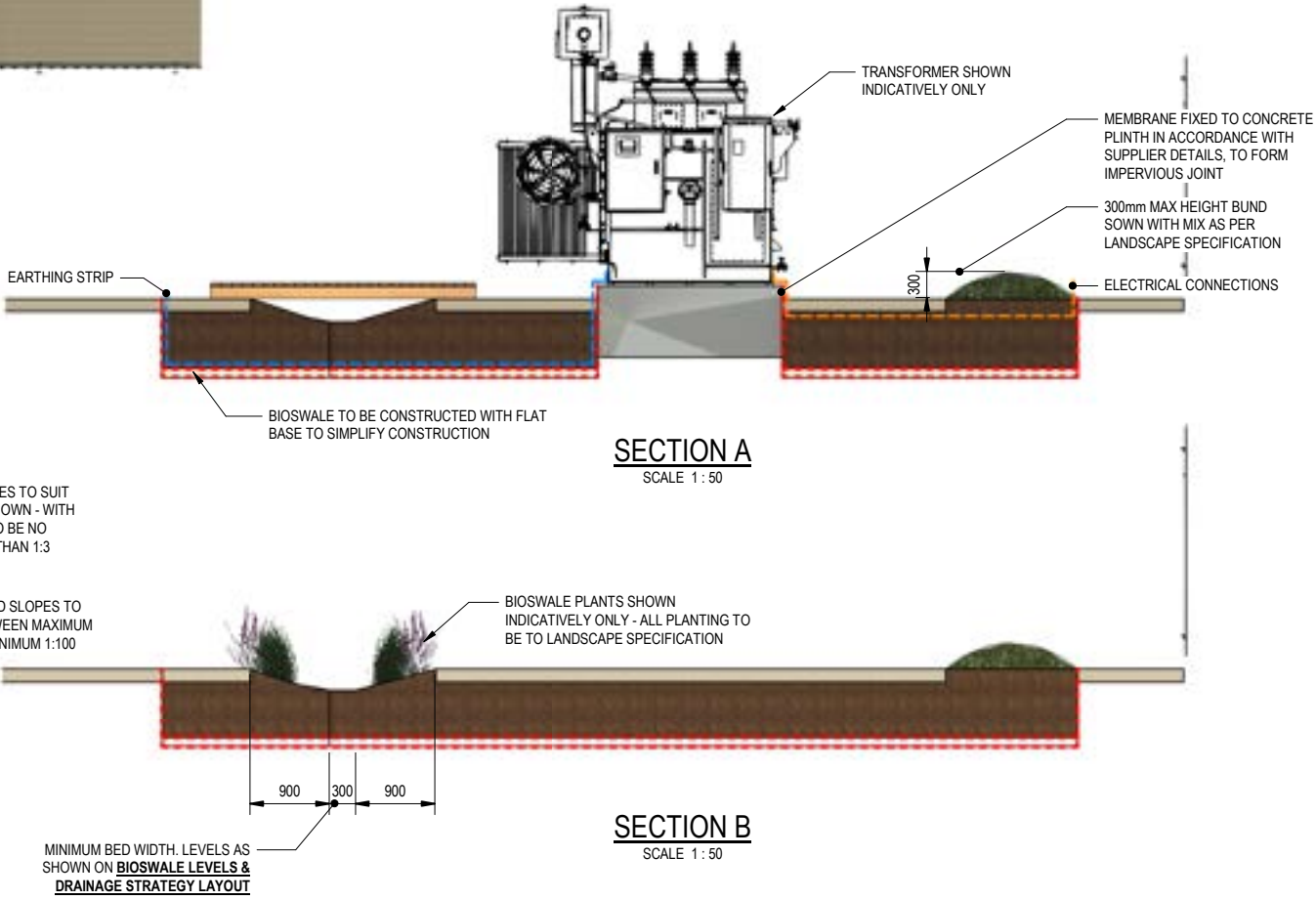
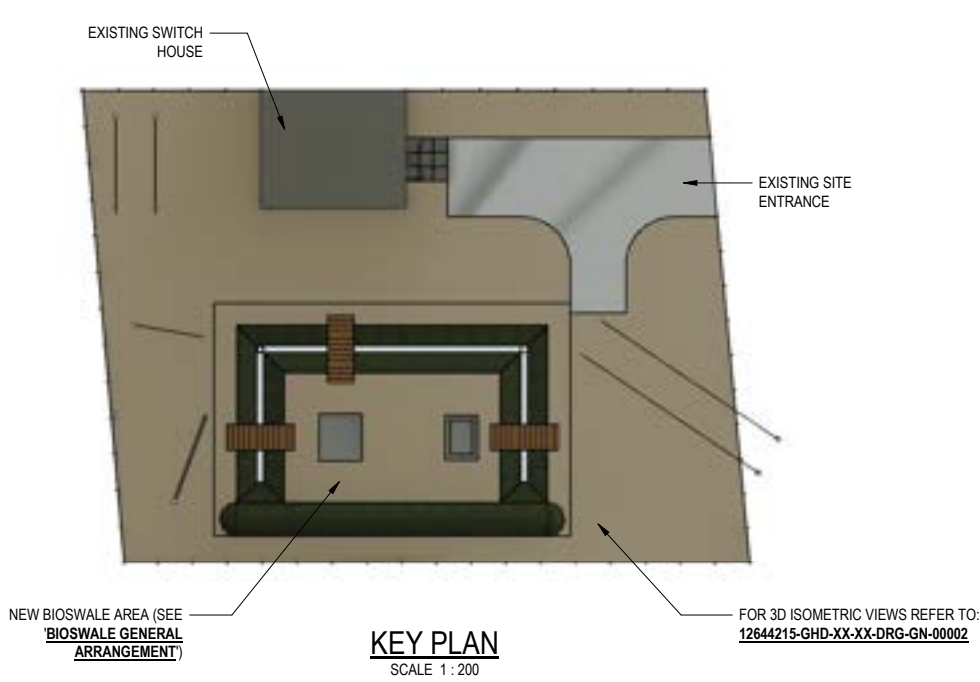
Scales as shown
@ A1



BIOSWALE GENERAL ARRANGEMENT
SCALE 1:50



BIOSWALE LEVEL & DRAINAGE STRATEGY
SCALE 1:50



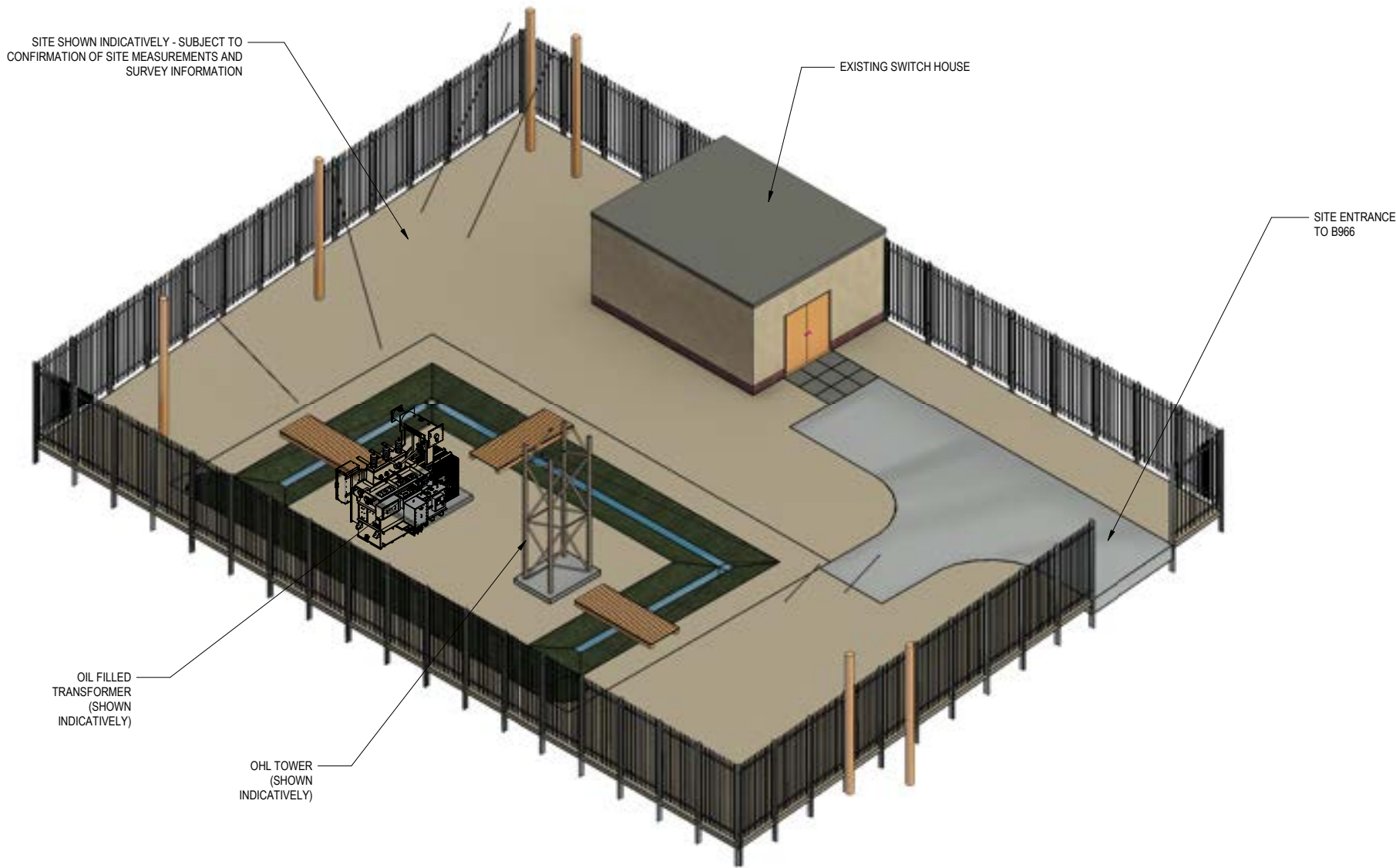
TYPICAL BUILDUP MATERIAL DETAIL
SCALE 1:25



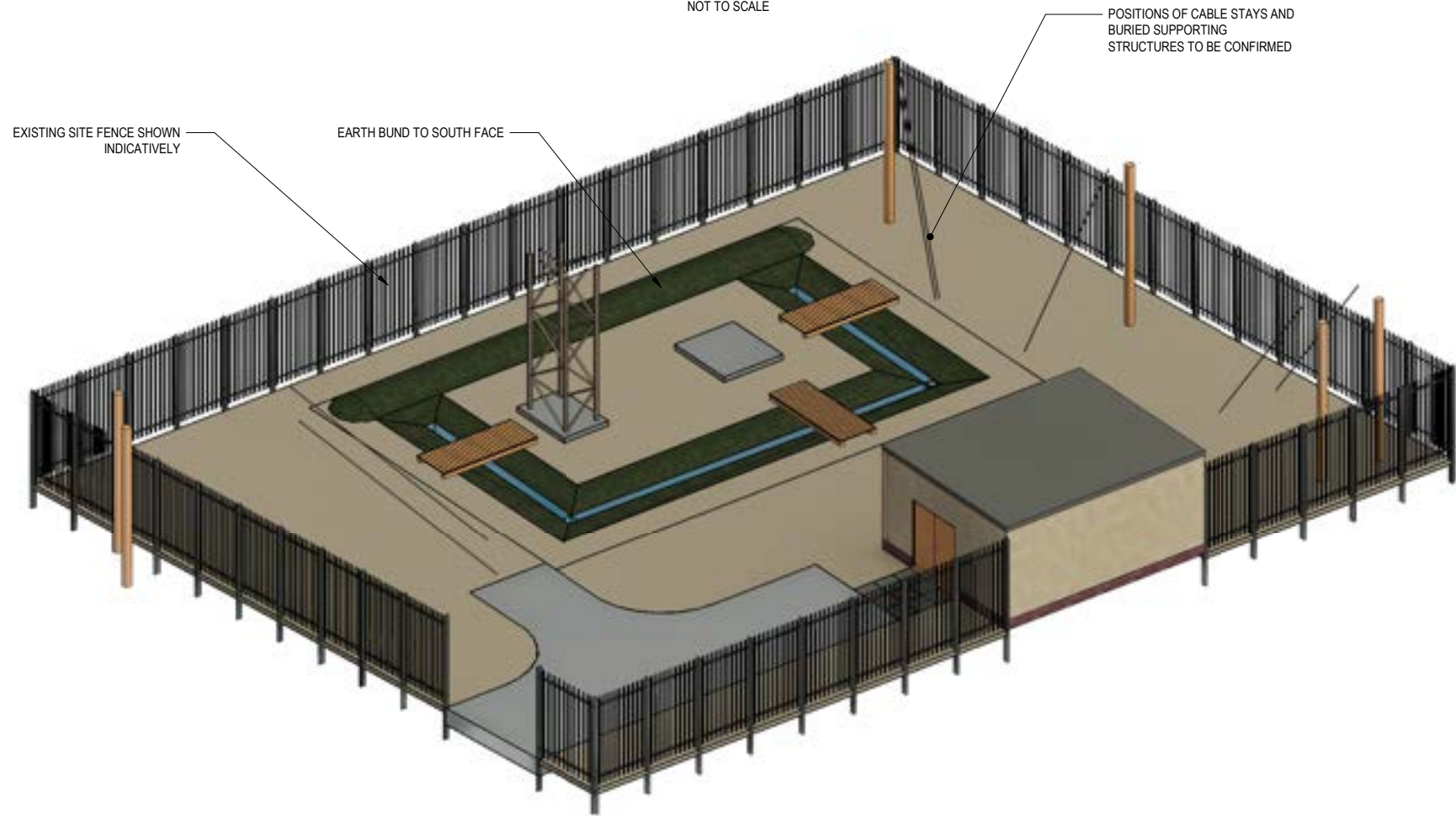
Nature4Networks- UC3 Inchbare Substation Bioswale

3D Isometric Views

Scales as shown
@ A1



3D ISOMETRIC - NORTHWEST FACING (INDICATIVE ONLY)
NOT TO SCALE



3D ISOMETRIC - SOUTHWEST FACING (INDICATIVE ONLY)
NOT TO SCALE

