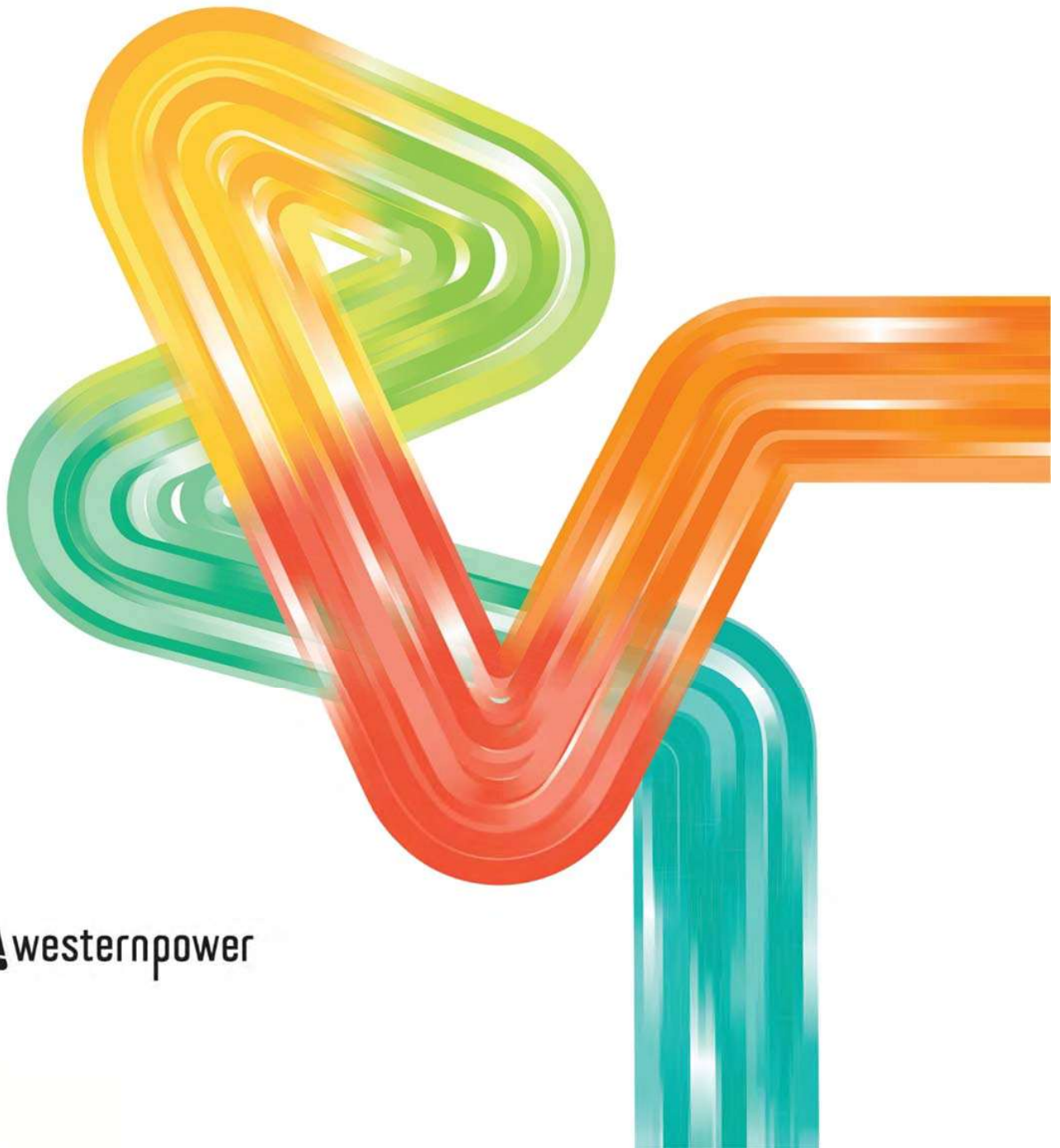


# East Perth Redevelopment (DWA) - Western Power Undergrounding Works

Overview of 132kV Undergrounding works for  
Development Application by DWA

10 September 2021



**An appropriate citation for this paper is:**

East Perth Redevelopment - DWA Undergrounding Works  
Scope overview for Development Application by DWA

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## Appendix A: Scope Sketches

# 1. Purpose and customer responsibility

## 1.1 Purpose

The purpose of this document is to provide an overview of the works associated with the proposed Undergrounding of a section of the existing East Perth to Hay St double circuit steel pole overhead 132kV transmission line (EP-HAY 81&82) located within the East Perth Power Station (EPPS) precinct. This work has been requested by Development WA (DWA, the Customer) to facilitate the planned redevelopment of the EPPS site.

## 1.2 Customer responsibility

As the Customer, DWA is responsible for the delivery of all approvals required for the Undergrounding works. This includes, but is not limited to, submitting a Development Application in relation to the works to provide affected stakeholders with the opportunity to formally advise their requirements.

DWA has convened and chaired a Technical Working Group regarding the proposed redevelopment works with participants representing the major impacted stakeholders. It is anticipated that these stakeholders will be the key contributors to the development application process.

**Figure 1: East Perth Power Station Redevelopment Precinct and land ownership**



## 2. Background

The project involves undergrounding an existing double circuit overhead 132kV power line, that runs from the East Perth 132kV switchyard along the foreshore heading south towards the Graham Farmer Freeway. Undergrounding will require the installation to two new underground cable circuits. Both new circuits will start within the existing 132kV substation located on the northern side of Summer St (see Diagram 1) and transition back to overhead powerlines via the installation of 1x double circuit and 2x transition steel poles to be located on the south western portion of Lot 602 (see Diagram 2). The cable will follow a similar route to the existing overhead line along the foreshore, between these points. The work will also include substation works within the 132kV switchyard to enable cable connection and existing overhead crossing of Graham Farmer Freeway will be re-aligned when the new steel poles are connected to the existing double circuit steel pole (pole #5) located on the southern side of the freeway.

**Figure 2: Overview of new underground cable alignment and associated overhead line works**



## 3. Project Scope

### 3.1 Project scope

#### 3.1.1 Western Power Scope

Transmission scope

- Installation of:
  - two 132kV underground cable circuit (approx. 600m) between the EP 132kV switchyard and the two new transition poles
  - three new steel poles within Lot 602 adjacent to Graham Farmer Freeway (one double circuit steel pole and two single circuit steel transition poles)
  - overhead line conductors (wires) from the new steel transition poles, to existing pole 5 located on the southern side of Graham Farmer Freeway, via the new double circuit steel pole.
- Removal of:
  - 2 x wooden poles within the East Perth 132kV Switchyard (to the north eastern end of the switchyard and close to Banks Reserve)
  - 3 x double circuit steel 132kV poles and associated overhead conductor (wires) (one in the East Perth Switchyard and two between the Power Station building and the Swan River).
- Temporary relocation of foot/cycle paths, if required
- Reinstatement works, as required.

#### 3.1.2 Customer Scope

Undertaking the following to facilitate the works by Western Power:

- Obtaining all approval
- Removal of affected vegetation
- Relocation of underground services, if required.

### 3.2 Timeframe

Work is expected to begin on the undergrounding works in Q1 2022 and take between six and ten months to complete.

### 3.3 Vegetation clearing

DWA will be required to undertake some vegetation clearing to enable the Undergrounding works. Western Power will endeavour to minimise the vegetation impact of the final design. The images below indicate areas where some impact upon vegetation is expected to enable construction access, the installation of the underground cables and the associated poles for the overhead lines near Graham Farmer Freeway.

Figure 3: Potentially impacted vegetation near Summer St



Figure 4: Potentially impacted vegetation near Graham Farmer freeway



### 3.4 Cable installation

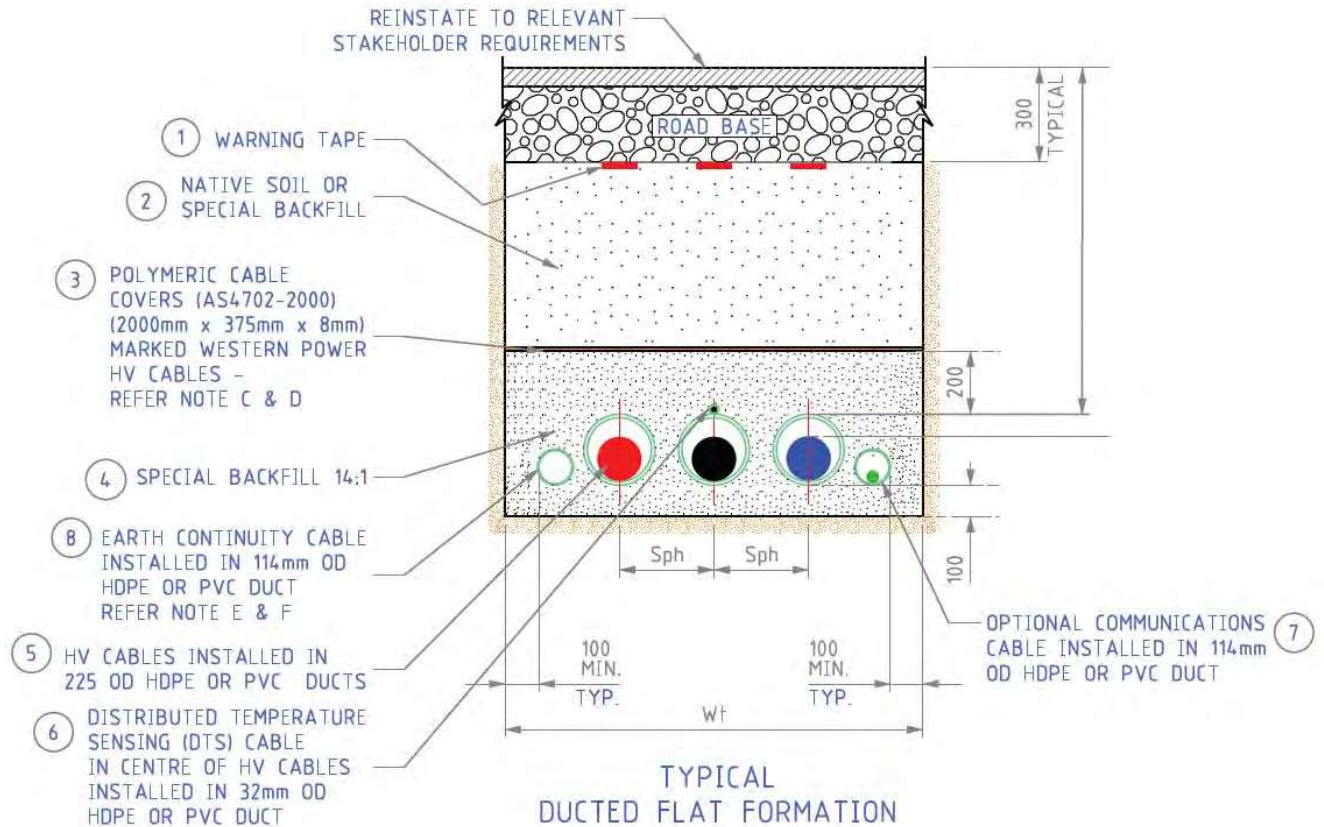
The cable will be installed via a 'cut and cover' methodology to minimise disruption to the community. The cable trench will be opened in discrete lengths and conduit laid prior to the excavation being backfilled.

The trench configuration (depth and width) will vary over the length of the alignment depending upon the constraints present within each section of the route. The final alignment will be determined by detailed design.

To replace the existing double circuit steel pole line located in the foreshore, six large single core cables will be required plus minor cables for earthing and communications. As indicated on the alignment sketches provided in Appendix A, some sections will be excavated as a single circuit trench (containing three major cables) and some will be combined into a double circuit trench. The separation required between each set of cables will vary between two to three meters.

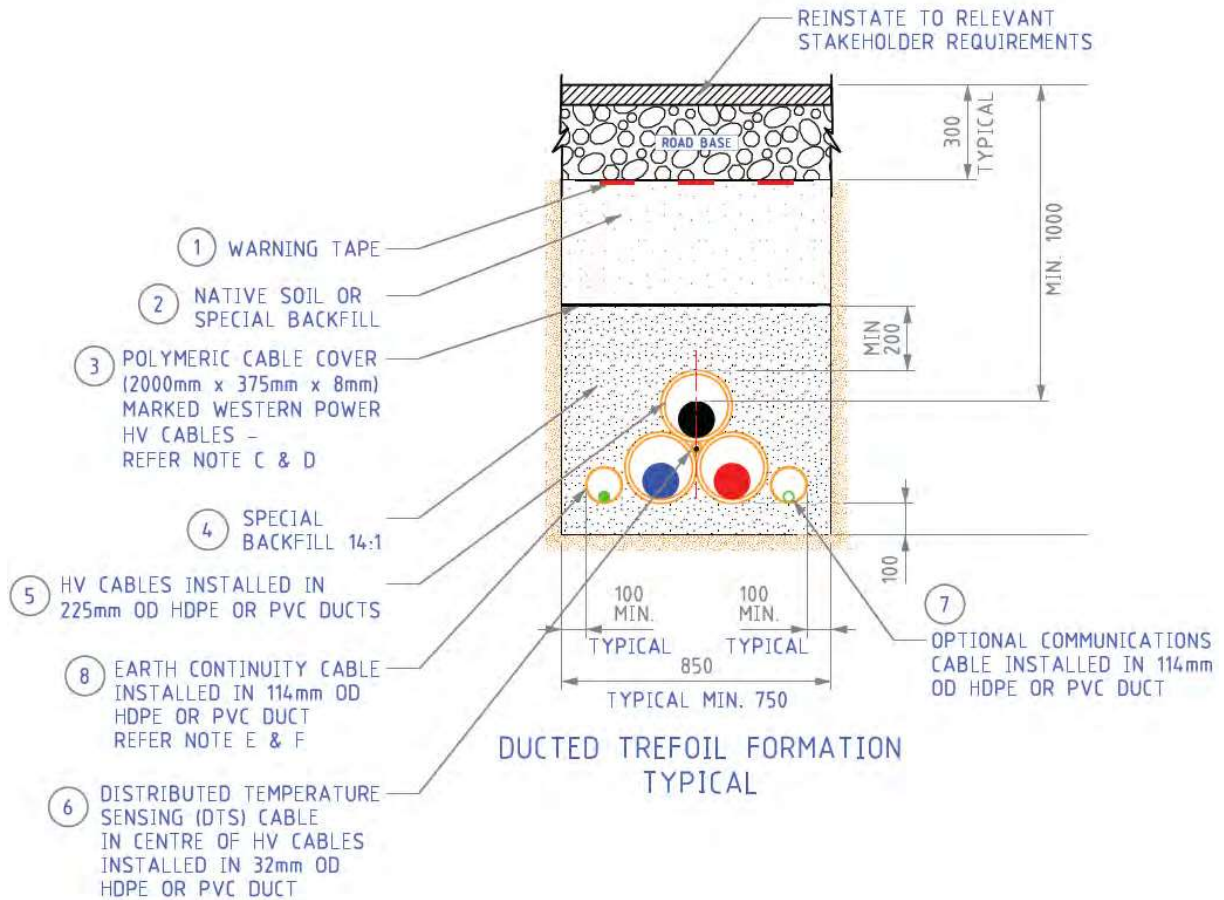
The figures below provided nominal dimensions for single circuit trenches in flat and trefoil configurations.

**Figure 5: Nominal dimension flat configuration**





**Figure 6: Nominal dimensions trefoil configuration**



### 3.5 Dewatering

Some dewatering may be required for the installation of steel poles as the dimensions of the required concrete foundations will be in the order of 6 to 8m deep with a diameter of 2 – 2.5m.

The environmental management plan developed for the installation works will address water management and be submitted to the relevant authorities for review.

### 3.6 New steel poles

The underground section of line will transition to an overhead transmission line via one double circuit steel pole (25 - 30 m high) and two steel transition poles (20 – 25m high) located near Graham farmer Feeway.

The figures below show an example of a double circuit steel pole with two steel transition poles.

Figure 7: Double Circuit Steel pole



Figure 8: Underground cable to overhead line Transition pole



Figure 9: Double Circuit Steel pole with two transition poles

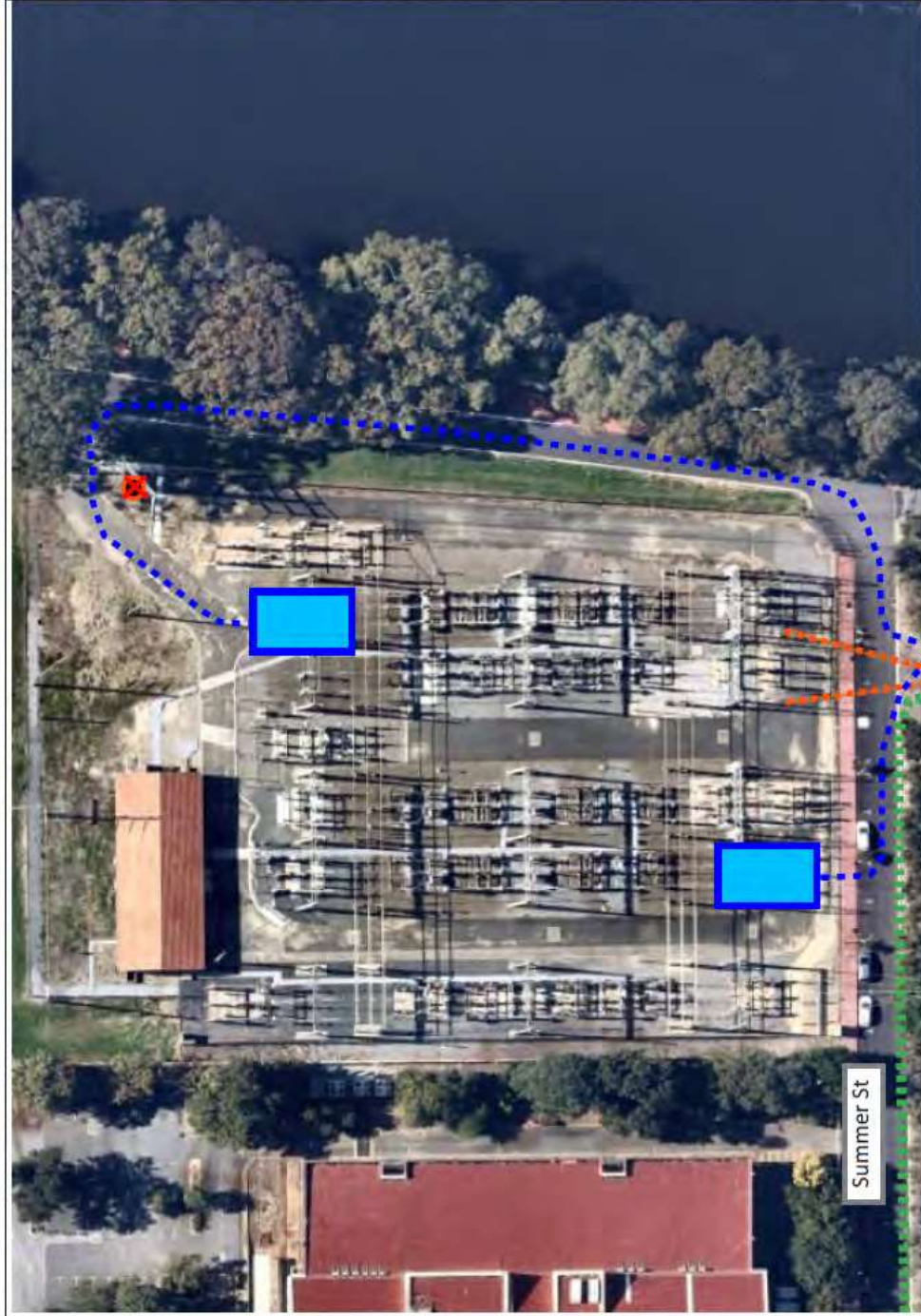


# Appendix A: Scope Sketches











# Overview of 132kV Undergrounding works for Development Application

Note - all cable alignments are indicative



## Legend

-  New 132kV Underground cable (single trench)
-  New 132kV Underground cable (double trench)
-  New Underground cable termination structure
-  New double circuit steel pole
-  New underground cable to overhead line steel transition pole
-  Existing double circuit steel pole to be removed
-  Existing 132kV Underground cable (single trench)
-  Existing Distribution Duct Bank (Forrest Ave Decommissioning)

0.1 0.03 0.1 Kilometers

1: 1,000

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## Notes:

Final cable alignment (particularly at Summer St and adjacent to Graham Farmer Freeway) to be confirmed by detailed design

User:

Date: 01-Sep-2021

Note - all cable alignments are indicative



**Legend**

- New 132kV Underground cable (single trench)
- New 132kV Underground cable (double trench)
- New Underground cable termination structure
- New double circuit steel pole
- New underground cable to overhead line steel transition pole
- Existing double circuit steel pole
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- Existing 132kV Underground cable (single trench)
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0.2 0 0.08 0.2 Kilometers



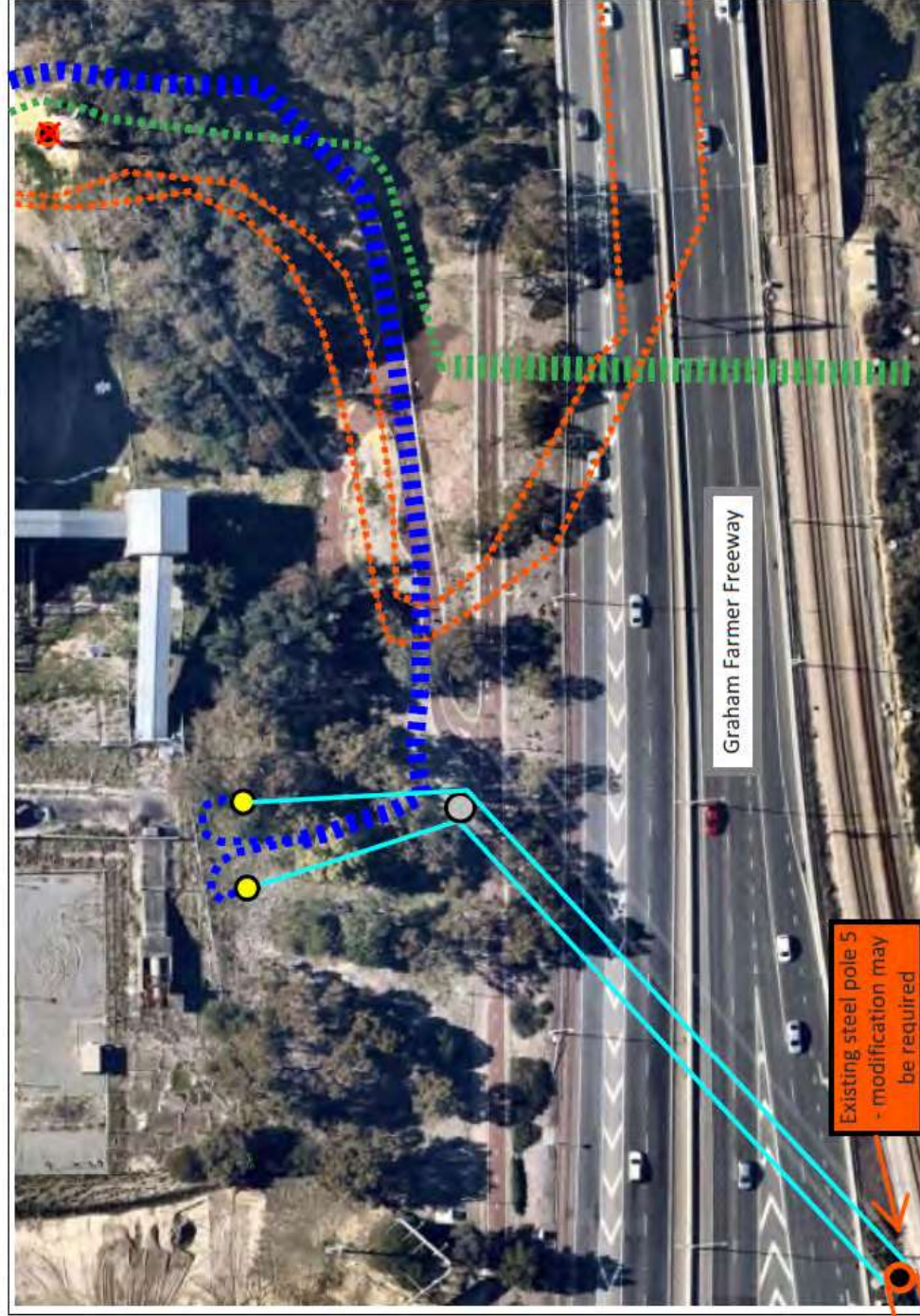
1: 2,500  
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**Notes:**

1. All cable alignments are indicative
2. Final pole locations and cable alignment, particularly at Summer St. and adjacent to Graham Farmer Freeway, to be confirmed by detailed design

User:  
Date: 01-Sep-2021

Note - all cable alignments are indicative



**Legend**

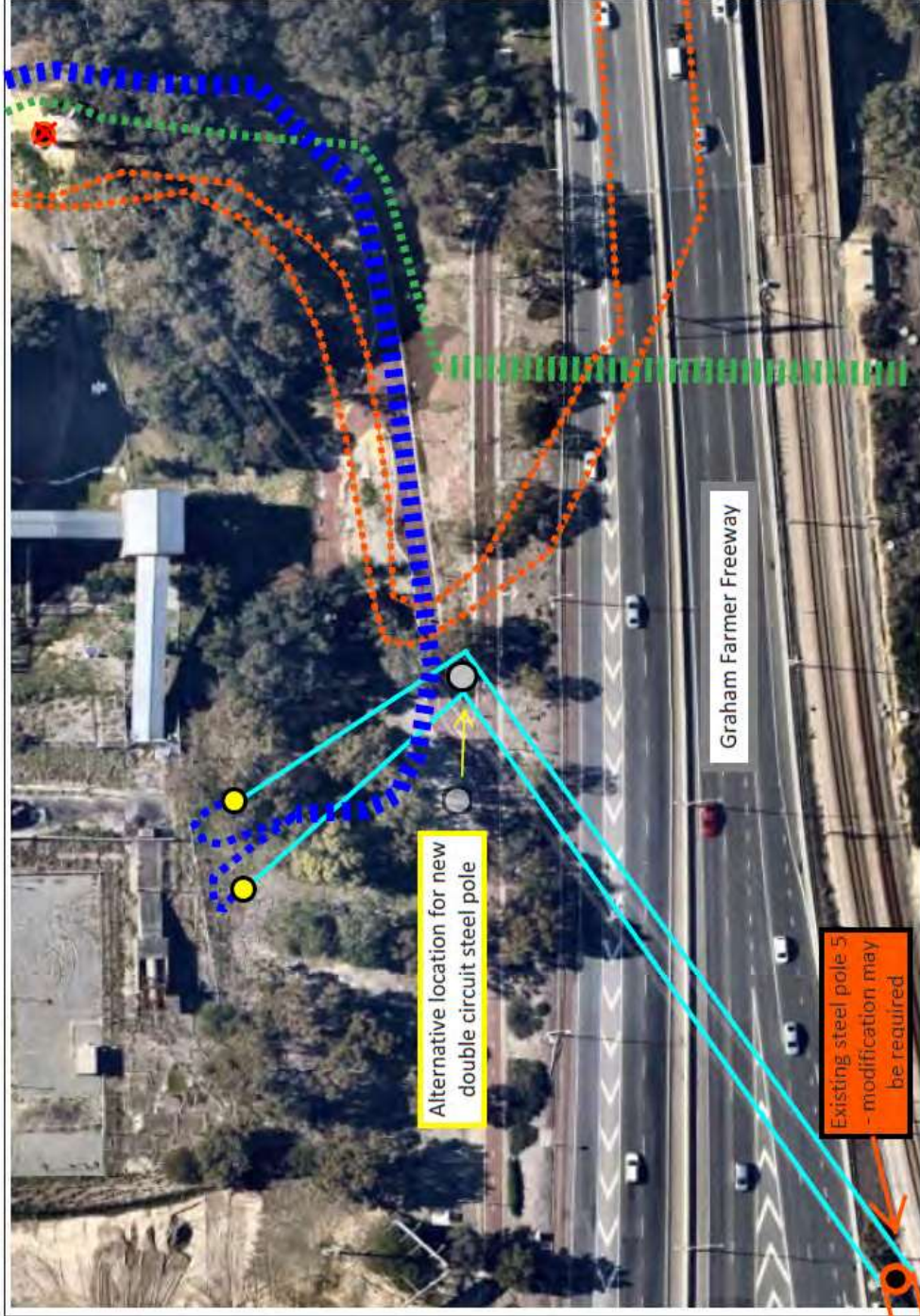
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Notes: Final pole locations and cable alignment (particularly at Summer St and adjacent to Graham Farmer Freeway) to be confirmed by detailed design

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**Legend**

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Notes: Final pole locations and cable alignment (particularly at Summer St and adjacent to Graham Farmer Freeway) to be confirmed by detailed design

0.1 Kilometers

0.05 0 0.1

1: 1,000

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