




Excavation and Ground Penetration Engineering Instruction

Rail Commissioner

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TABLE OF CONTENTS

1. Purpose	4
2. Related Documents.....	4
3. References.....	4
4. Requirements for EGP activity.....	5

1. Purpose

This Engineering Instruction outlines the requirements for Excavation and Ground Penetration (EGP) activity that may be required within the AMPRN, including but not limited to:

- Excavating;
- Trenching;
- Under-boring;
- Driving foreign objects into the ground e.g. piles, columns, etc.;
- Installing survey pegs, sign posts, star pickets, stakes, etc.;
- and
- Gardening or similar activities.

Any EGP within the train / tram corridor has the potential to cause damage to the buried infrastructure and cause harm to staff and / or contractors. This Engineering Instruction outlines the precautions that to be taken to reduce the risk of damage to cables, conduits and / or third party services.

This Engineering Instruction must also be read in conjunction with the following related documents:

2. Related Documents

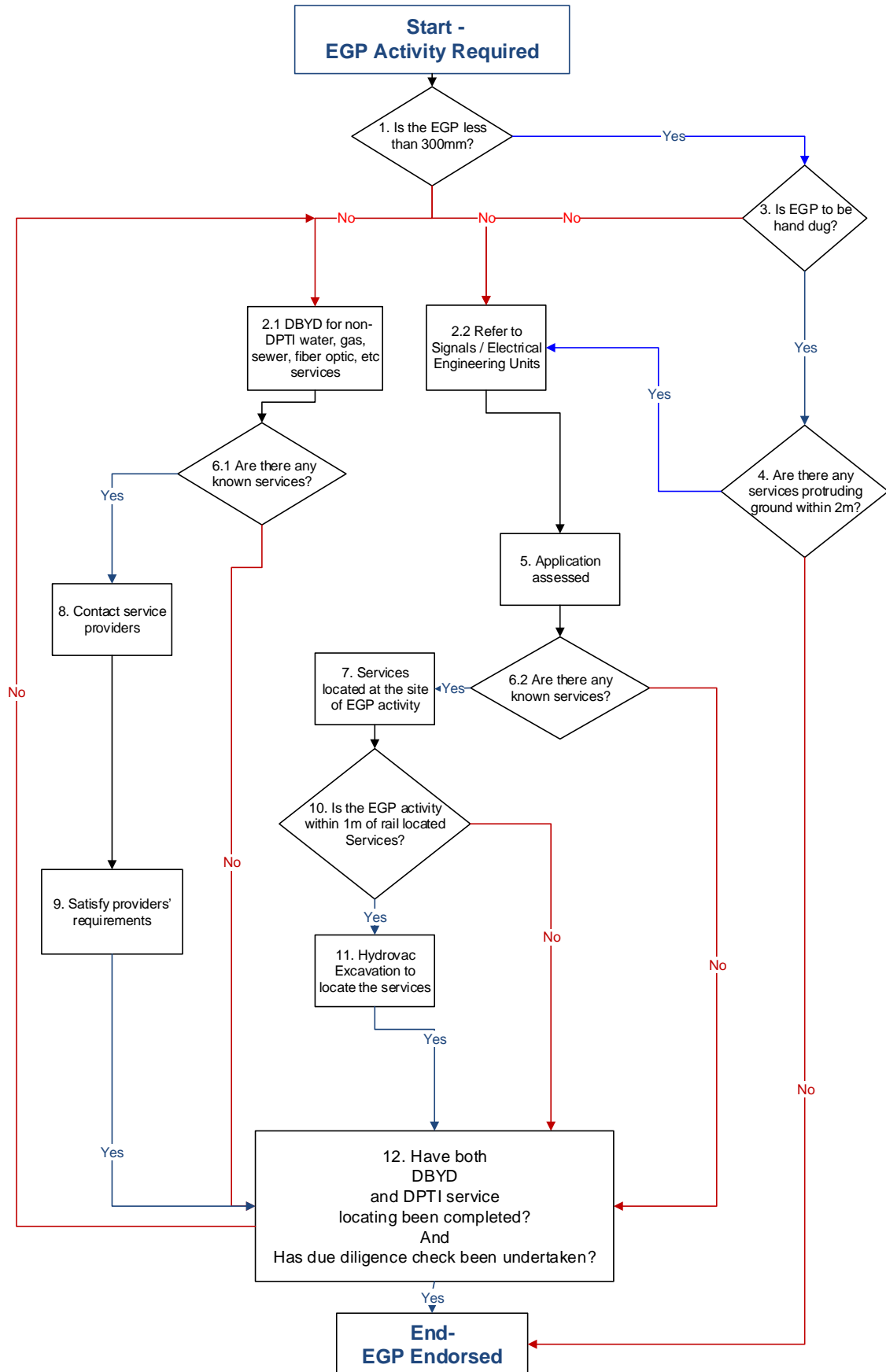
DOCUMENT NAME	DOCUMENT NUMBER
25kV Electrical Safety Instructions - Trains	PR-EM-EE-112
600v DC Electrical Safety Instructions - Tram	PR-EM-EE-1140
AMPRN Access Application	MN-OS-GN-288
AMPRN Access Manual	MN-OS-NA-267
Pre-work Safety Assessment and Safeworking Protection Plan	FR-RO-WTR-001
Authority to Work	FR-RO-WTR-100
Recycled fill materials for transport infrastructure, Environmental instruction 21.6	Knet# 1003752

3. References

- AMPRN Rules and Procedures Volumes 1-4
- Rail Safety National Law (South Australia) Act 2012
- Rail Safety National Law National Regulations 2012
- Rail Safety National Law (South Australia) (Drug and Alcohol Testing) Regulations 2012
- Rail Commissioner Act 2009
- Railways (Operations and Access) Act 1997
- Work Health and Safety Act 2012
- South Australian Work Health and Safety Regulations 2012
- AS 4292: Rail Safety Management
- AS 4602: High Visibility Safety Garments - Garments for high risk applications
- DPTI Track and Civil Codes of Practice

4. Requirements for EGP activity

The following flowchart and Table shows the process required to undertake an EGP activity.



Definitions to each step

Step	Title	Description
1	Is the EGP less than 300mm?	<i>This step together with steps 3 and 4 will define whether further investigations are required or not. The 300mm depth is considered from the existing ground level or surface.</i>
2.1	DBYD for non-DPTI water, gas, sewer, fiber optic, etc services	<p><i>This step should be considered and undertaken in parallel, together with step 2.2.</i></p> <p><i>Dial before you dig (DBYD) is a free referral service for information on underground pipes and cables (Ph 1100 or refer to website www.1100.com.au). This includes water, gas, sewer, fiber optic, etc which are separate from DPTI services.</i></p> <p><i>Any EGP activity in excess of 300mm being dug by machine must have a DBYD service undertaken.</i></p>
2.2	Refer to Signal / Electrical Engineering Units	<p><i>The DPTI Signal / Electrical Engineering Units will verify if there are any Signal / Electrical services in the area.</i></p> <p><i>Details to be submitted to Signal / Electrical Engineering Units includes but not limited to;</i></p> <ul style="list-style-type: none"> - <i>Plans (drawings) and aerial imagery including marked points and detailed information related to the requested EGP activity</i> - <i>Construction methodology</i> - <i>Any additional details and description that could be relevant to the EGP application</i> <p><i>Contact / enquiries should be made to the following emails and numbers:</i></p> <p><i><u>Signal Engineering Unit:</u></i> <i>Mr. Nilesh Patel: Ph (08) 71098134, Email: Nilesh.Patel@sa.gov.au</i></p> <p><i><u>Electrical Engineering Unit:</u></i> <i>Mr. Abul Hasnat: Ph (08) 71098029, Email: Abul.Hasnat@sa.gov.au</i></p>
3	Is EGP to be hand dug?	<i>This consideration refers to the nature of the EGP activity. A manual or hand dug EGP is considered as lower risk whereas an EGP using any machinery will require more investigation before construction.</i>
4	Are there any services protruding ground within 2m?	<p><i>All the visible services within the 2m horizontal radius of the EGP shall be fully inspected. These services include but are not limited to;</i></p> <ul style="list-style-type: none"> - <i>Any cable marker monuments, e.g. plates fixed to the monuments provide cable running offset and depth data.</i> - <i>Boot legs, cable termination / location boxes, etc.</i> - <i>OH poles where underground feeder cables enter</i> - <i>Adjacent to booster transformers or near viaducts</i> - <i>Feeder cables (25 kV and 600 VDC), return conductors, and earth wires (OPGW)</i> - <i>Any visible asset with / without marker</i> - <i>Services pit</i> <p><i>This check should also include obvious fresh trenching or earth works in the vicinity.</i></p>
5	Application assessed	<i>Submitted documents will be reviewed and accessed by DPTI Signal / Electrical Engineering Units to determine if there are services in the vicinity of the EGP activity.</i>
6.1	Are there any	<i>DBYD will specify the information of known asset owners and owners'</i>

	known services?	<p><i>contact details to ensure all the services are going to consider before any EGP activity.</i></p> <p><i>If DBYD specify any other services at the site of EGP activity and issue the contact details of the asset owners, go to step 8.</i></p>
6.2		<p><i>DPTI Signal / Electrical Engineering units will separately specify if any known services exist at the site of EGP activity.</i></p> <p><i>If DPTI Signal / Electrical Engineering units specify any existing DPTI services at the site of EGP activity, service locating should be done as per step 7.</i></p>
7	Services located at the site of EGP activity	<i>A DPTI representative will be attending the site to physically detect the services and mark it on the ground.</i>
8	Contact service providers	<i>Service providers must be contacted and all plans submitted for full investigation, prior to any EGP activity. This data shall be shared with DPTI and inform them before going to next steps.</i>
9	Satisfy providers' requirements	<i>All the requirements of other service owners (non-DPTI) should be met before commencement of any EGP activity.</i>
10	Is the excavation within 1m of rail services?	<i>If the EGP activity is within the 1m horizontal radius of rail services asset owners, hydrovac excavation is required a per item 11.</i>
11	Hydrovac Excavation to locate the services	<i>Hydro excavation shall be used either to physically / visually locate the services or to determine its absence in agreed method with Signal / Electrical Engineering Units.</i>
12	<p>Have both DBYD and DPTI service locating been completed? And Has due diligence check been undertaken?</p>	<p><i>At this stage all DBYD, Signal, Electrical services should have been identified.</i></p> <p><i>The person / organisation undertaking the works should still undertake checks to ensure the area is clear of services. This may be by means of independent service locator, direct consultation of utilities service providers, physical site checks and inspections.</i></p>