Arc Infrastructure Requirements for Non Arc Infrastructure Services Crossing Rail Corridor Land

Note: As per AS4799:2000 3.11 Any renewal or replacement of a service, or pipeline, shall be considered as a new installation.

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All requirements of AS4799:2000 (Installation of underground utility services and pipelines within railway boundaries), as a minimum, shall be considered mandatory unless specifically agreed and approved by Arc Infrastructure

Services containing toxic or noxious substances will not be permitted on the Rail Corridor	**Pipeline carrying non-flammable substances or cables**	**Pipeline carrying combustible liquid and flammable fluids**
General Requirements for all services in Rail Corridor Land	Service or pipeline shall cross the tracks at **90°± 10°** Service installations parallel to the rail line are not permitted. Cathodic Protection is not permitted	
Plans/Drawings and Information	Required in accordance with Section 2.3 of AS4799, and in particular compliance with section 2.3.2.1 *"Plans of the proposed services or pipelines **shall** be drawn to scale showing their relation to railway tracks, other services and pipelines (above or below ground level), overhead wiring structures and other facilities, property boundaries …"* Drawings shall provide accurate identification of the positions of proposed services in plan and level with respect to existing Arc Rail Corridor and infrastructure	
Structural Calculations (Pipes, Sleeves and Pipe liners)	For all pipes (including sleeves) which are directly buried under rail track and are within railway loading influence zone shall be designed for required structural loading. The structural loading applied on to the pipes shall be as per AS5100.2. For all Narrow Gauge lines, railway loading of 250LA and for all Standard Gauge lines, railway loading of 300LA within appropriate Dynamic Load Allowance (DLA) shall be applied for structural calculations to determine required pipe strength, class & wall thickness. A Report with summary and all structural calculations shall be provided. For pipes crossing access roads a minimum loading of SM1600 shall be used for structural calculations as per AS5100.2	
Work Methodology statement	The Work Methodology Statement should include, ***as minimum*** the following sections • Work Methodology • Plant and Mechanical detail • Process parameters (e.g. grout pressure, face pressure etc) • Process parameters onsite inspection and testing plan	
Geotechnical Report	A geotechnical **investigative and interpretative** report considering ground conditions and natural water levels is required for works involving ground disturbance in the corridor and outside the corridor if the zone of influence of the works will impact Arc's corridor or infrastructure (Details to be included: proposed mud pressure for pilot hole and back reaming, calculated affects, using geotechnical parameters derived from investigations). Correct access protocols shall be adopted for the geotechnical investigations in complete accordance with Arc requirements, Dial before you Dig, service locations and all other protocol mandated by Utility operators. The intent of the geotechnical investigations shall be adequate to fully and properly characterise the subsurface conditions under the corridor along the alignments of the proposed works that may influence or be influenced by Arc installations.	
Service clearances from railway infrastructure (i.e. Platforms, signalling equipment, masts etc.)	Minimum of **3000mm**, in accordance with AS4799 Section 3.2.6 or diameter of largest encasing pipe whichever is the greatest	
Drainage	Services or pipelines shall not impede the free flow of drainage along the Rail Corridor: Reference AS4799 Section 3.2.7 Draining onto the Rail Corridor is not allowed (Rail Freight System (Corridor Land) Regulations 2000)	
Markers	Markers shall be provided and maintained in accordance with AS4799 Section 3.10 to indicate location of underground services and depth of service	
Worksite Inspections	All works subject to Arc Infrastructure Network Safeworking Rules and Procedures	

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Note: Each application is assessed individually against existing railway assets, existing services in the ground and possible future rail requirements.

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Services containing toxic or noxious substances will not be permitted on the Rail Corridor		**Pipeline carrying non-flammable substances or cables**	**Pipeline carrying combustible liquid and flammable fluids**
Services Crossing under Rail Line	**Size of Encasing Pipe/Sleeve**	Internal diameter of the encasing pipe shall be at least **50mm** greater than the largest external diameter for carrier pipes less than 150mm and shall be at least **100mm** greater for carrier pipes with external diameter equal to or greater than 150mm	
	Minimum depth to top of Encasing Pipe/Sleeve	All services should be encased **2500mm** below natural ground level for full corridor width. Direct buried cables not permitted	
	Minimum depth to top of Encasing Pipe/Sleeve at level crossing or turnout	**3000mm** from top of rail	
	Minimum depth under drains	**1000mm** under drain	**1200mm** under drain
	Minimum length of Encasing Pipe/ Sleeve	The entire corridor width	
Mechanical Protection		N/A	As per AS4799 Figures 5.1 and 5.2 plus centered over service
Minimum distance of pits and access chambers at right angles to the rail		Installation of new pits in rail corridor shall be avoided. Only in exceptional circumstances will new pits be allowed. Should pits be permitted minimum distances set out in AS4799.2000 apply.	Not Permitted
Asbestos Cement Pits within the Rail Corridor		Replacement of existing ACM pits within the Rail Corridor requires a Report to be submitted to Arc Infrastructure for review. The Report needs to include recommendations for Asbestos Management Works and details of qualified persons to perform Asbestos Management Works.	
Separation from other services – Horizontal Plane		Minimum of **600mm** in the horizontal plane or diameter of largest enchasing pipe whichever is the greatest.	
Separation from other services – Vertical Plane		**1000mm** from any service	
Valve locations and Flare Points		Subject to approval from Arc Infrastructure	
Bollards		Minimum requirements are 90 NB MED (101 OD) galvanised steel with galvanised steel cap, at least 1550mm long with 1m above the ground level (deeper in ground if ground conditions deem otherwise). Two 50mm wide reflective tape around the circumference 50mm from top of bollard with a 50mm space between the two strips. Reflective tape colours are: orange for bollards associated with protecting electrical items, blue if delineating water assets (water ways, culverts, valves etc.), white for all other general protection	
Backfilling		Access road or side drains to be reinstated with similar material to that which was removed and the road surface of the access road is to achieve a compaction of not less than 97% of the maximum modified dry density during the test as specified in AS1289.	
Redundant Services		Services/pipes/sleeves not crossing under the rail tracks are to be removed from the rail corridor. Services crossing the railway track, including the formation and within **5000mm** of outer running rail can be left insitu provided it is filled and sealed with grout, the ends back filled and compacted to the satisfaction of Arc. Service Owner to provide details on proposed material and methodology. Completed and signed Inspection Test Plan (ITP) to be provided to Arc with calculated volume to complete fill the sleeve. Sites are to be remediated with all voids backfilled, levelled and compacted to the satisfaction of Arc. The grout slurry must be able to take railway live load of 300LA (Standard Gauge) in accordance with AS5100 in addition to the dead load above the pipe.	
“As Constructed” Drawings		Service Owner shall provide Arc Infrastructure with plans of the work as executed	