NETWORK PATH CAPABILITY (NPC) NOTIFICATION 2018

As per clause 3.2(c) and Schedule 2.3 of the Access Holder Agreement (**AHA**), ARTC provides the following Network Path Capability information in respect of the 2018 Contract Year:

1. Background

NPC is a parameter used in the True-Up Test (TUT) in Access Holder Agreements (AHA) under the ARTC 2011 Hunter Valley Access Undertaking (HVAU) (as amended). The TUT is a mechanism used to determine whether ARTC has met its contractual obligations to the group of Access Holders as a whole within a Pricing Zone and if not, to provide compensation in the form of an accrued rebate to individual Access Holders which is then taken into account in the annual reconciliation process.

NPC is intended to represent the theoretical maximum capacity of a Pricing Zone for functional coal paths (a functional coal path being one which is capable of being used by a coal train which complies with certain Relevant System Assumptions[1]) within the Hunter Valley Network over a period (either a month or a quarter, depending on the Access Holder's allocation period). NPC is necessarily an artificial measure as capacity is a function of the infrastructure capability within the zone at various locations, and as such, a Pricing Zone does not have a single definitive amount of capacity.

Once NPC has been determined, the various demands for train paths are deducted to determine whether there is a shortfall of capacity.

2. Calculation of NPC

The calculation of NPC is as follows:

1) ARTC reviews the expected capacity of the network for the following year. This includes consultation with HVCCC and taking into account infrastructure changes (e.g. the commissioning of new infrastructure). Once the consultation is complete, ARTC builds into its NPC calculation model the relevant infrastructure constraints.
2) The NPC calculation model allows the determination of the maximum line section traverse time (in either direction) for a group of line sections representing a relatively uniform group of load/discharge points. This line section determines the maximum number of trains that can be programmed for that group of line sections.
3) The traffic volumes for each group of line sections within the Pricing Zone are then applied to determine the weighting of each group within the Pricing Zone. These are expressed in the model as the number of train paths for contracted volumes in each quarter over the year. This weighting is used to overcome the bias that would otherwise arise in the final value.
4) The maximum value does not take into account the potential impact of the signalling system and infrastructure configuration in place. On duplicated line sections, the impact is negligible as trains going in opposite directions do not need to slow down and stop when they cross each other as typically, they are on different lines and any queuing for a following train that arises due to the constraining line section is on the main line and any loss arising from stopping is mitigated due to traversing a shorter line section behind the constraining line section. However, on single line sections (in Pricing Zones 2 and 3), there is both a "transaction time" involved in one train interacting with another at a crossing loop (no matter how perfectly timed the cross is) and the impact of

queuing at refuge sidings on either side of the constraining line section. The queuing impact is complex depending on the relative locations of the constraining line sections in each direction (i.e. the constraint may not be the same line section in the different directions) and also depending on the infrastructure configuration (e.g. the availability of refuge sidings to allow for the holding of trains in the queue and their proximity to one or both of the constraining line sections). To account for this complexity, a factor is applied to each group of line sections. For groups of line sections with more than one line (typically duplicated but in some instances more lines run in parallel) the factor is 100%. For groups of single line sections, the factor is 65%. This value may vary over time depending on the infrastructure configuration.

5) The adjusted maximum value for each group is then divided into 1,440 (the number of minutes in a day) to derive the number of paths per day.

6) The number of paths for each group is then combined into a weighted average for the Pricing Zone.

7) Finally, the daily NPC is factored up for the number of days in the month – the result is the value of NPC for the Pricing Zone for each month.

Table 1 below lists the Network Path Capability values for 2018.

Table 1 Network Path Capability

Network Path Capability	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
Pricing Zone 1	3,565	3,220	3,565	3,450	3,565	3,450	3,565	3,565	3,450	3,565	3,450	3,565
Pricing Zone 2	806	728	806	780	806	780	806	806	780	806	780	806
Pricing Zone 3	620	560	620	600	620	600	620	620	600	620	600	620

Enquiries regarding this Network Path Capability for 2018 should be directed to customercontracts@artc.com.au

Note: 1. Relevant System Assumptions include section running times, maximum train length, maximum train axle load, and maximum train speed as defined in clause 1.1 of the Access Holder Agreement section.