2013 Network Path Capability (NPC)

1. Background

Network Path Capability (**NPC**) is a parameter used in the True-Up Test (**TUT**) in Access Holder Agreements (**AHA**s) under the ARTC 2011 Hunter Valley Access Undertaking (**HVAU**). 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). 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 consults with the Hunter Valley Coal Chain Coordinator (**HVCCC**) on the expected capacity of the network for the following year. This includes taking into account infrastructure changes (eg 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.

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[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.

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 (ie the constraint may not be the same line section in the different directions) and also depending on the infrastructure configuration (eg 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 section, 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.

3. NPC for 2013

The NPC values for 2013 are shown in the table below.

2013	Pricing Zone 1	Pricing Zone 2	Pricing Zone 3
Jan	3,348	1,333	1,023
Feb	3,024	1,204	954
Mar	3,348	1,333	1,023
Apr	3,240	1,290	990
May	3,348	1,333	1,023
Jun	3,240	1,290	990
Jul	3,379	1,333	1,023
Aug	3,379	1,333	1,023
Sep	3,270	1,290	990
Oct	3,379	1,333	1,023
Nov	3,270	1,290	990
Dec	3,379	1,333	1,023