Business case for Tarago passing loop extension project

Executive Summary

The proposed enhancement to the Country Regional Network (CRN) at Tarago will enable businesses in the Goulburn – Mulwaree region to utilise the NSW rail network more efficiently to boost productivity and facilitate growth.

The lengthening of the existing passing loop between Joppa Junction and the Canberra Terminus from 526 metres to 1,000 metres will improve network operations and enhance access to Veolia's Crisps Creek Intermodal Terminal (IMT) by allowing trains using the IMT to be stored off the mainline when required on arrival and departure and cater for the rail industry best practices of:

- longer trains for optimal asset utilisation of locomotives and rolling stock,
- elimination of inefficient splitting, building and shunting operations, and
- efficient crewing.

The current network limitations necessitate splitting and building trains at Goulburn and running shorter rakes to and from the IMT.

The benefits that will be gained from delivering this network enhancement project are:

- Operational benefits for the CRN by reducing the number of train paths needed on the mainline between Goulburn and Tarago. This will have a flow on effect up and down the line and through the wider NSW network including regional freight services using the SSFL/MFN, importantly those regional IMEX services accessing Port Botany. It will allow additional passenger and freight services to operate in the region, in particular passenger services between Sydney and Canberra and additional freight paths for Canberra and regional businesses.
- Eliminating the shuttle services between Goulburn and Tarago will enhance safer interaction between freight & passenger trains.
- The network enhancement will support growth on the rail network for future customers by minimising cost and operational hurdles for new businesses looking to mode shift from road to rail.

Project name:

Tarago Passing Loop Extension

Project description:

The proposed enhancement to the CRN at Tarago will enable businesses in the Goulburn – Mulwaree region to utilise the NSW rail network more efficiently to boost productivity and facilitate growth.

Project Purpose:

The lengthening of the existing passing loop between Joppa Junction and the Canberra Terminus from 526 metres to 1,000 metres will improve network operations and enhance access to Veolia's Crisps Creek Intermodal Terminal (IMT) by allowing trains using the IMT to be stored off the mainline when required on arrival and departure and cater for the rail industry best practices of:

- longer trains for optimal asset utilisation of train paths, locomotives and rolling stock,
- elimination of inefficient train splitting, building and shunting operations, and
- efficient crewing.

Project Outcomes:

The overall outcomes sought from this project are:

- elimination of inefficient operational practices,
- commensurate reduction in operating costs and an improved safe work environment on rail and on road at the railway interfaces including the level crossing at Tarago.

Scope of works:

The works are categorised as Enhancement Works to the CRN. The scope is to lengthen the existing passing loop at Tarago NSW, located between Joppa Junction and the Canberra terminus from 526 metres to 1,000 metres towards the Joppa Junction (Goulburn) end.

This work will provide a multi user siding with 1,000 metres of standing room for a train without fouling the mainline. This passing loop can be used by all trains using the mainline including passenger services and freight services serving Canberra, Marulan and Crisps Creek. The passing loop will be 'drive in – drive out' capable of 21 tonne axle loads and use of the loop by a standing train on arrival or departure from the IMT will not impact on mainline speeds or foul the Goulburn Street level crossing.

In addition to the track work the modernising of the CRN has included enhanced signalling and motorising of the points. The benefits from this component of the work accrue to the CRN and the above rail operators.

Location:

The site location is shown in Figure 2. There are no other related or complementary CRN infrastructure works required.

Funding for design:

As part of the Pilot Round of Fixing Country Rail Pilot Round funding was allocated to TfNSW Country Rail Contracts (CRC) for planning and design work for this project.

This work was undertaken John Holland Rail (JHR) as the Rail Infrastructure Manager. The primary consultant used was BG&E Pty Ltd. The Tarago Siding Extensions – Options Report and the Functional Specification report, Tarago Loop Extension – Signalling and Functional Operational Specification track designs are attached to this.

Preferred option:

Option 3. A concept diagram is shown in Figure 3.

Range of Options Considered:

Eight options were considered by JHR as the RIM on behalf of CRC. The summary comparison of the options is shown in Figure 4.

Design Aspect	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8
Length of Train Reversing Over Public Level Crossing (Length of Veolia Train is 900m train)	323m	900m	0m	0m	0m	0m	230m	0m
Drive in Drive Out	No	No	Yes	Yes	Yes	Yes	No	Yes
New turnouts required	0	0	1 (flex)	0	1 (flex)	0	0	0
Turnouts being refurbished insitu[1]	2	1	2	2	1	1	0	0
Turnout refurbished, relocated and straight railed	0	1	0	1	1	2	1	1
New catchpoints required	0	1	1	1	2	2	0	0
Catchpoints refurbished, relocated and straight railed	0	0	0	0	0	0	1 (removed only)	1
Loop available while 1 train is being stored	No	Yes	No	No	Yes	Yes	No	No
Length of New Track Required	0m	0m	0m	0m	0m	0m	470m	470m
Length of Woodlawn Siding being utilised (refurbishment)	450m	All of siding	450m	450m	All of siding	All of siding	0m	0m
Impact on Cutting	No	No	Yes	Yes	Yes	Yes	No	Yes
Impact on existing Woodlawn Pit Structure	No	Yes	No	No	Yes	Yes	No	No
Track slew onto new formation	Nil	Country End	City End	City End	City and Country End	City and Country End	Nil	Nil

Details of the Options:

Option 1:

This option utilises both the Woodlawn siding and the loop to achieve the functional requirement of 1000m standing room. No new track or turnouts. The final storage location of consist would not allow the Loop to be used by another consist. Once the consist was stowed mainline points at 262.285km and 263.020km would need to be reset for mainline use.

Option 2:

This option utilises the Woodlawn siding to achieve the functional requirement of 1000m standing room. No new turnouts are required in order to utilise the proposed storage the entire consist, 900m, would need to pass the public level crossing and then reverse over the public level crossing to access the proposed storage location. The final storage location of consist would allow the existing Loop to be used by another consist. Once the consist was stowed mainline points at 263.020km would need to be reset for mainline use.

Option 4:

This option utilises both the Woodlawn siding and the loop to achieve the functional requirement of 1000m standing room. This option is per Option 3 except that instead of using a flex turnout it would require the turnout 262.557km to be straight railed, refurbished and relocated to the mainline. The final storage location would not allow the Loop to be used by another consist. Once the consist was stowed mainline points of the reused straight turnout would need to be reset for mainline use. This option would not impede the level crossing and would allow a drive-in drive out operation for the train operator.

Option 5:

This option utilises the Woodlawn siding to achieve the functional requirement of 1000m standing room. This option is as per Option 2 plus the construction of a new flex turnout in the mainline at approximately 261.870km and track slew on new formation to connect the flex turnout to the existing Woodlawn siding. This option would not impede the level crossing and would allow a drive-in drive out storage facility for the train operator.

Option 6:

This option utilises the Woodlawn siding to achieve the functional requirement of 1000m standing room. This option is as per Option 5 except that instead of using a flex turnout it would require the

turnout 262.450km to be straight railed, refurbished and relocated to the mainline. This option would not impede the level crossing and would allow a drive-in drive out storage facility for the train operator.

Option 7:

This option utilises the loop and additional new track to achieve the functional requirement of 1000m standing room. To achieve the 1000m of standing room the right-hand turnout at 262.450km would need to be straight railed and refurbished and relocated to replace the existing catchpoints and provide connection to the mainline.

In order to utilise the proposed storage a consist would need to pass the public level crossing by a length of 230m, based on a 900m consist, and then reverse back over the public level crossing to access the location of the proposed storage. The final storage location of consist would not allow the Loop to be used by another consist. Once the consist was stowed mainline points at 262.285km and 263.020km would need to be reset for mainline use. The final storage location of the consist does not use the Woodlawn siding.

Option 8:

This option utilises the existing loop to achieve the functional requirement of 1000m standing room. This option would require the turnout 262.285km to be relocated to the mainline. The horizontal geometry of the mainline would need to be realigned to accommodate the existing straight turnout which would include tighter radius curvature on the mainline. This may impact the operating speed of the mainline. New track would need to be constructed from the location of the relocated turnout to the existing loop at 262.336km on new formation. The location of the new track may impact on the existing cutting. The final storage location of consist would not allow the Loop to be used by another consist. The final storage location of the consist does not use the Woodlawn siding.

Preferred Option – Option 3:

This option utilises both the Woodlawn siding and the loop to achieve the functional requirement of 1000m standing room. This option is as per Option 1 plus the construction of a new flex turnout in the mainline at approximately 261.870km and track slew on new formation to connect the flex turnout to the existing Woodlawn siding. The consist would pass via the flex turnout to store on both the Woodlawn siding and the loop. It should be noted that the condition of the existing Woodlawn siding would suggest part if not all of the existing timber sleepers in the plain track and the timbers in the two turnouts and catchpoints located between them would need to be replaced.

Operation:

A train from Joppa Junction, travelling in the Down direction would enter the Woodlawn siding through the proposed flex turnout once the points had been correctly set. The consist would continue along the siding and pass through the turnouts at 262.336km and 262.440km, which would need to be correctly set, before reaching its final storage location. The final storage location would not allow the Loop to be used by another consist. Once the consist was stowed mainline points of the new flex turnout would need to be reset for mainline use. This option would not impede the level crossing and would allow a drive-in drive out operation for the train operator.

An assessment would need to be completed to determine any potential impact on mainline speed associated with the installation of the flex turnout.

Signalling:

This option would require the relocation of existing. MLI signal and maybe the relocation of the Up side Yard limit, Shunt limit and Landmark signal notice boards. It's possible that there could be issues with the sighting of the relocated C MLI) signal due to the track curvature on the approach possibly

requiring the provision of a C MLI Repeater signal, although sighting looks adequate from the aerial photos. If the remainder of the Woodlawn siding was brought into use, than the Crossover 262.450km would have to feature a Ground Frame or motorised points and a Siding cut back between the two existing Woodlawn crossovers) so as to protect the new Loop line from stabled trains within the remaining Woodlawn siding if brought back into use.

Option 3 Decision Summary:

Option 3 was chosen for the business case based on:

- Constructability – simplest of the options in terms of civil works and signalling requirements.
- Construction Cost – lowest cost, largely utilising existing track and signalling equipment.
- Network enhancement – most significant enhancement option with capacity to be lengthened further as required.
- Maintainability – use of retained track and existing signalling infrastructure.