

Project Factsheet #5



Component 2 - Access Road

The TRHDP will consist of 4 components: (i) Hydropower Facility (HPF); (ii) Access Road; (iii) Transmission Line; (iv) Technical Assistance (TA). This fact sheet will detail component 2 – Access Road.



Component 2 - Access Road - US \$26.0 million.

The estimated cost of US \$26.0 million is based on the detailed design being executed by SIG's international consulting firm and ongoing negotiations with the sponsors.

- The access road to facilitate HPF construction and operations includes two lots:
 - Lot 1 involving the upgrade of the existing 13.2 km road from Black Post Junction to Managikiki Village; and
 - Lot 2 involving a 5.5 km “greenfield” road through steep heavily forested terrain from Managikiki Village to the dam and power station.
- Upon commissioning of the Hydro Power Facility, Lot 1 will become the responsibility of SIG and Lot 2 will remain the responsibility of Tina Hydro Limited for the duration of the PPA, after which it will be handed over to SIG together with the Hydro Power Facility.

The features of the Access Road are detailed in the table below and are accurate as of April 2020.

Classification	Lot 1	Lot 2-1, 2-2 and 2-3 Lot 3-1 and 3-2
Section and Approximate Length	13.4 km	Lot 2 consists of 3 sections: <ol style="list-style-type: none"> 1) Lot 2-1: Managikiki Village to Mountain Crest = 2.6km 2) Lot 2-2 : Mountain Crest to Intake Dam = 3.0km 3) Lot 2-3 : Intake Dam crest to Dam Base = 0.6km Lot 3 consists of 2 sections : <ol style="list-style-type: none"> 1) Lot 3-1: Managikiki Village to Surge shaft and Power House = 1.6km 2) Lot 3-2 : the end point of Lot 3- 1 to Tunnel Outlet = 0.3km
Road Standard	Austrroads & MID Specification Design Life: Structure – 50 years Pavement – 20 years Inaccessible elements – 50 years	Austrroads & MID Specification, US standards Design Life : Pavement – 20 years Structure – 50 years Inaccessible elements – 50 years
Design speed (Mountains)	50km/h (Reduced down to 30km/h in local areas to suit site restrictions)	20km/h
Design Vehicle Checking Vehicle	Single unit truck(12.5m) Prime mover and low bed semi- trailer(19.0m) to transport Generator – Diameter 5.3m & Height 3.5m	Single unit truck(12.5m) Prime mover and low bed semi- trailer(19.0m) to transport Generator – Diameter 5.3m & Height 3.5m

Design Equivalent Standard Axles	100 trips per day, 24 ton, 4axles (2x9t, 2x11t) truck for 3 years Equivalent to 4.09×10^5	100 trips per day, 24 ton, 4axles (2x9t, 2x11t) truck for 3 years Equivalent to 4.09×10^5
Road Width - Pavement	6.0 (2lanes, 3.0m each)	Lot 2-1 : 6.0m (2 lane, 3.0m each) Lot 2-2, 2-3, 3-1, 3-2 : 3.5m (1 lane only)
Road Width - Formation	7.0 Pavement width +0.5m shoulder each side	Lot 2-1 : 7.0m (pavement width + 0.5m shoulder each side) Lot 2-2, 2-3, 3-1, 3-2 : 4.5m (pavement width + 0.5m shoulder each side)
Crossfall	4% (crown crossfall)	Lot 2-1 : 4% (crown crossfall) Lot 2-2, 2-3, 3-1, 3-2 : 4% (one way crossfall)
Superelevation	N/A due to low speed limit but may be applied to improve movement at tight curves	N/A due to low speed limit but may be applied to improve movement at tight curves
Fill Slopes	Heights \leq 0.5m: 4H:1V Heights $>$ 1.0m: 1H:1V	To be determined after conducting ground survey and slope stability evaluation
Cut Slopes (Residual soils)	1H:1V Bench height 6m max. Bench width 3m min with 1m table drain	
Cut Slopes (Extremely Weathered Mudstone)	0.75H:1V Bench height 6m max. Bench width 3m min with 1m table drain	
Cut Slopes (Extremely Weathered Sandstone Conglomerate)	0.50H:1V Bench height 6m max. Bench width 3m min with 1m table drain	
Pavement structure	Gravel - likely crushed river gravel	Crushed aggregate Cement stabilized pavement Option
Pavement Surface	Unsealed	Cement stabilized
Pavement Thickness	Ch. 0+000 to 7+500 : 320mm to 420mm sub base course (MID Type 3.2) Ch. 7+500 to 10+000 : 250mm sub base course (MID Type 3.2) Ch. 10+000 to 13+293.551 : 520mm sub base course (MID Type 3.2) Ch. 13+293.551 to End : 520mm sub base course (MID Type 3.2)	To be determined after conducting pavement design
Alternate Pavement	N/A	Cement stabilized pavement
Minimum Horizontal Curve Radius	35.0m	15.0m
Pavement widening on horizontal curves	R30 to R60 -1.2m R61 to R90 -0.9m R91 to R120-0.6m $>$ than R121 - 0m	R30 to R60 -1.2m R61 to R90 -0.9m R91 to R120-0.6m $>$ than R121 - 0m May be varied due to vehicle turning movement paths
Maximum Gradient	Desired maximum of 12% 12% for max. distance of 600m, 15% for max. distance of 200m	Desired maximum of 12% with the exception of Lot 3 where 15% is permissible Absolute maximum 17% at 150m lengths in localized areas
Minimum Gradient	0.5%	0.5%
Stopping Sight Distance	55m (Reduced down to 26.5m in local areas to suit site restrictions)	20m
Auxiliary Lanes	N/A	1 every 500m, Approximately 10m x 2.5m
Flood Immunity – Average Recurrence Interval (ARI)	5 years	5 years
Recurrence Interval for culverts	25 years	25 years
Lining of Drains	Unlined unless grade are $>$ 6%	Unlined unless grade are $>$ 6%
Minimum culvert size	DN900	DN900