

#### (4) Reservoir

##### a. Proposed Reservoirs

To supply treated water to the expanded service area, seven reservoirs (as listed in Table 53.42) will need to be constructed. Locations and volumes of the proposed reservoirs are shown in Figure 53.34.

**Table 53.42 List of Proposed Reservoirs for the Canacona WSS**

Location	Capacity (m <sup>3</sup> )	Remarks
Cola	400	with P/S (3 pump units of 5.9 kW and 100 m <sup>3</sup> sump)
Gadongrem	100	with P/S (3 pump units of 3.0 kW and 50 m <sup>3</sup> sump)
Thalan	150	pumped up from the existing Hottipal Pumping Station
Shisheval	100	
Poinguinim	300	with P/S (3 pump units of 6.7 kW and 100 m <sup>3</sup> sump)
Cotigao	100	Gravity fed from the proposed Poinguinim Reservoir
Loliem	100	with P/S (2 pump units of 2.4 kW and 50 m <sup>3</sup> sump)

##### b. Rehabilitation of the Existing Reservoirs

The Canacona WSS has 12 reservoirs, as summarized in Table 53.43. A detailed list of the reservoirs is attached in Volume IV Appendix M31 Existing Water Supply System. Table 53.43 also identifies the reservoirs that need to be rehabilitated.

**Table 53.43 Number of Existing Reservoirs**

Reservoir Volume (m <sup>3</sup> )	Number of Reservoirs	
	Existing	to be rehabilitated
500	1	0
400	2	0
100	3	2
50 and less	6	1
Total	12	3

Note: not include the reservoirs at Canacona WTP

#### (5) Pumping Stations

##### a. Proposed Pumping Stations

It is planned to construct three pumping stations associated with the proposed reservoirs listed in Table 53.42.

##### b. Rehabilitation of the Existing Pumping Stations

The design life of the pumping equipment is assumed to be 15 years. Therefore, the pumping

equipment in all the existing pumping stations should be replaced by 2025. Details are shown in Table 53.44.

**Table 53.44 Pumping Equipment Replacement Details**

Name of Station	Pumping Unit (pump and motor)	
	Rated Output (kW)	No. of Units
Canacona WTP	3.3	3
Shisthal BP	1.2	2
Hottipal	4.7	3

**(6) Distribution Pipeline and House Connections**

a. Proposed Distribution Pipeline and House Connections

The proposed length of distribution pipelines was calculated by multiplying the number of house connections to be installed (which reflects the increase in population served) by the unit pipeline length per connection (which is 14.26m as mentioned in section 5.1.2). Table 53.45 shows the proposed number of house connections and length of distribution pipelines.

**Table 53.45 Proposed Number of House Connections and Length of Distribution Pipelines in the Canacona WSS (incremental basis)**

Year	2007	2008	2009	2010	2011	2012	2013
Distribution Pipeline (m)	3,756	3,780	3,808	3,829	3,856	3,877	3,901
Number of House Connection	263	265	267	269	270	272	274
Year	2014	2015	2016	2017	2018	2019	2020
Distribution Pipeline (m)	3,928	3,942	3,878	3,908	3,938	3,978	4,005
Number of House Connection	275	276	272	274	276	279	281
Year	2021	2022	2023	2024	2025	Total	
Distribution Pipeline (m)	4,040	4,072	4,095	4,139	4,165	74,894	
Number of House Connection	283	286	287	290	292	5,252	

b. Rehabilitation of the Existing Distribution Pipeline and House Connection

Life span of the distribution pipeline is assumed to be 50 years, and it is planned that 2 % of the existing distribution pipeline of about 48 km will be replaced every year, which will be

38 % from 2007 to 2025. As a result the existing distribution pipelines of about 18.3 km will be replaced with new pipelines for 19 years from 2007 to 2025.

Life span of the water meter of the house connection is assumed to be 10 years, and it is planned that all the existing water meters of 5,440 will be replaced within 10 years. As a result about 12,800 water meters will be replaced for 19 years from 2007 to 2025.

**(7) Summary of the Planning**

In conclusion, the components of the master plan for the Canacona WSS are summarised in Table 53.46 and Figure 53.35 illustrates the Canacona WSS in 2025.

**Table 53.46 Components of Master Plan for Canacona WSS**

Facility	Proposed	Rehabilitation/ Replacement
Treatment Plant	10,000 m <sup>3</sup> /day	5,000 m <sup>3</sup> /day
Transmission Main	36.7 km	1.85 km
Reservoir	7	3
Pumping Station	4	3
Distribution Pipeline	74.9 km	18.3 km
House Connection	5,252	12,800



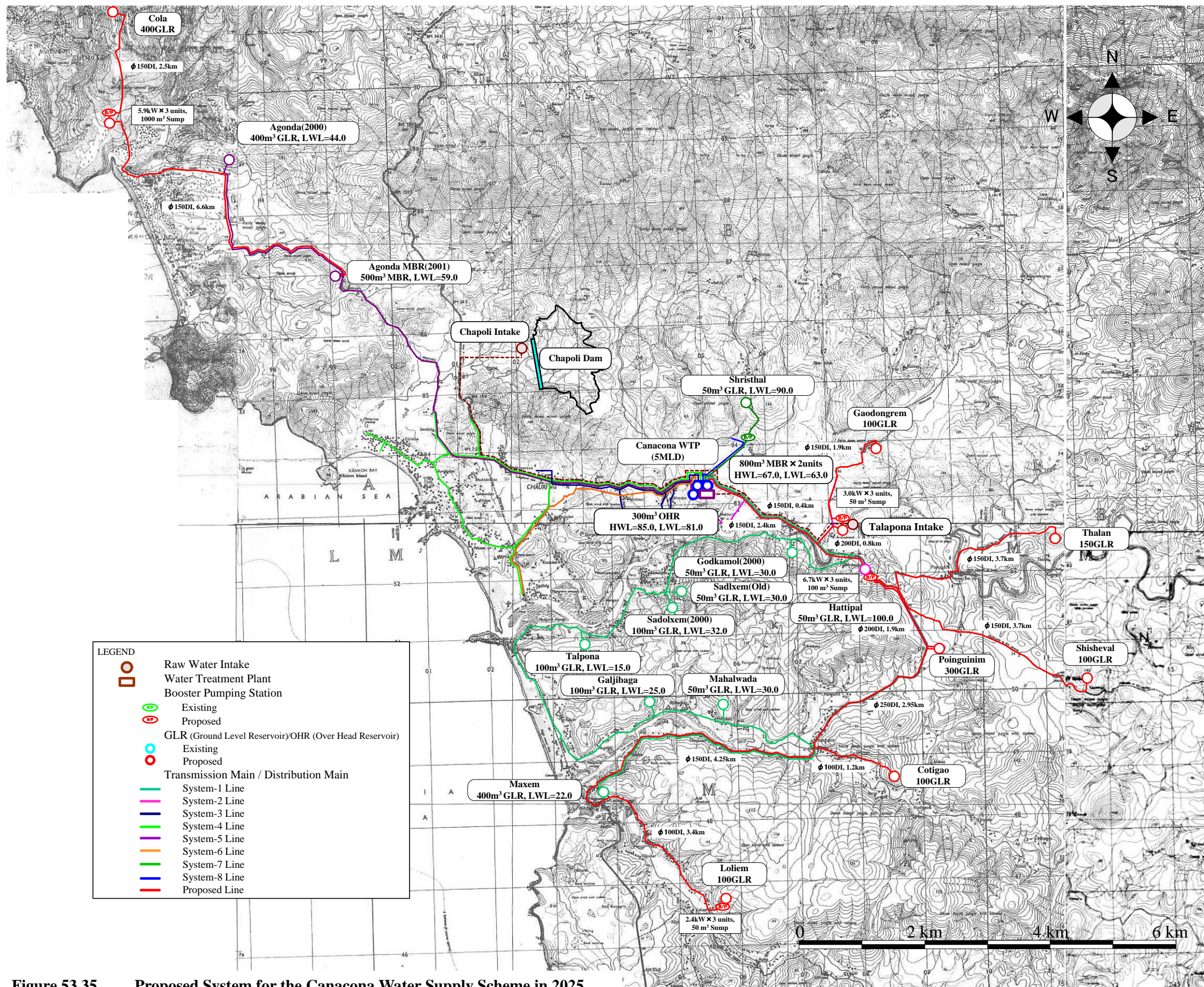


Figure 53.35 Proposed System for the Canacona Water Supply Scheme in 2025