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付属資料1-1 第一次現地調査 日程表

日時			荒津	大村・浅野	外狩・松井	松下・山口	小島	増岡/田所 (コンサルタント 支援)	南村			
14-Oct	Fri	AM		0:40 - 4:50 Haneda - Bangkok (TG 661)	0:30 - 4:30 Nagoya - Bangkok (TG 647)	0:30 - 4:20 Kansai - Bangkok (TG 673)						
		PM		9:10-11:10 Bangkok - Colombo (UL403)	9:10-11:10 Bangkok - Colombo (UL403)	9:10-11:10 Bangkok - Colombo (UL403)						
15-Oct	Sat	AM		Meeting w/ JICA at Office (15:00-16:30)								
		15:00 PM		Participate in Seminar by IESL (8:15~15:00) at Mihilaka Madura, BMICH, Colombo - 7.								
16-Oct	Sun	AM		Documentation								
		PM		Move to Kandy (4h)								
17-Oct	Mon	9:00 AM		Meeting with Mr. Sarath Gamini (Project Director of GKWSP) Site visit(Katugastota WTP) Meeting with Mr.Fujiki (Tesco Asia)								
		PM	Move to Colombo (4h)									
18-Oct	Tue	9:30 AM	Visit to Training Center and Meeting with AGM (HRM) @NWSDB HQs									
		1:30 PM	Coutesy call to Secretary of Ministry of City Planning and Water Supply DGM (ADB), AGM (JPU) - Mr. Umar									
19-Oct	Wed	9:30 AM	11:10 - 17:20 Narita - Singapore (SQ 0637)	Meeting with DGM (Commercial) Mr. G. Rajkumar, AGM(Billing), AGM(Recovery)		11:10 - 17:20 Narita - Singapore (SQ 0637)	[Masuoka ~11/5] 11:10 - 17:20 Narita - Singapore (SQ 0637)	11:10 - 17:20 Narita - Singapore (SQ 0637)				
		0:30 PM	22:40 - 23:55 Singapore - Colombo (SQ0468)	Visit to Kalu Ganga WSP, Kandana WPP & Kethena WPP - Mr. P. Wijerathna, Manager (Kandana WTP)		22:40 - 23:55 Singapore - Colombo (SQ0468)	22:40 - 23:55 Singapore - Colombo (SQ0468)	22:40 - 23:55 Singapore - Colombo (SQ0468)				
20-Oct	Thu	10:00	Internal Discussion for sharing information @Hotel									
		11:00	AFD(Mr. David) @AFD Office									
		13:00	ADB(Mr. Kamal)@ ADB office									
		15:00	Meeting @ NWSDB Head Office Addl.GM (CS), DGM (ADB/Commercial), AGM (JPU/NRW/MD&T), Explanation on this survey with Inception report and Technical Cooperation Project (2-3 h)									
21-Oct	Fri	9:00 -	Issue and Approach Analysis Workshop by Ms.Namura w/ NWSDB board member (Add GM, DGM and AGM level) at JICA									
		14:30	Internal Discussion @ JICA office									
22-Oct	Sat	10:00	Visit to KRB WTP (DANIDA) - Mr. D. Wijekoon, Manager (Biyagama WTP)									
		13:30	Visit to Ambatale WTP									
23-Oct	Sun	AM PM	Internal Discussion, Documentation									
24-Oct	Mon	9:30	Discussion w/ NWSDB (Expected issues to be tackled by T/C) - Addl.GM (P&P), DGM (WS/ADB/Commercial), AGM (NRW/MD&T)									
		2:00 PM	Meeting with World Bank @ WB office									
		4:30 PM	Report to JICA Sri Lanka Office									
25-Oct	Tue	9:00 AM	1:10 - 7:40 Colombo - Singapore (SQ 0469)	1:20 - 6:15 Colombo - Bangkok (TG 308)	0:30 - 8:25 Colombo - Hong Kong (CX 610)	1:20 - 6:15 Colombo - Bangkok (TG 308)	Visit to RSC Western South - DGM Mr. C. Fernando					
		2:00 PM	09:25 - 17:30 Singapore - Narita (SQ 0012)	07:35 - 15:45 Bangkok - Narita (TG 676)	10:10 - 15:00 Hong Kong - Nagoya (CX 536)	11:00 - 18:30 Bangkok - Kansai (TG 672)	Visit to RSC Western Central - DGM Mr. S. Perera					
26-Oct	Wed	10:00 AM PM	Site Visit to RSC Western North - DGM Mr. R.A.B.S. Mendis									
27-Oct	Thu	AM	Move & Visit to Nuwara Eliya									
		PM	2.00 PM Meeting with Mr. Rathis									
28-Oct	Fri	AM PM	Site Visit to Nuwara Eliya WSS									
29-Oct	Sat	AM PM	Internal Discussion and Documentation									
30-Oct	Sun	AM PM										

付属資料1-1

日時		荒津	大村・浅野	外狩・松井	松下・山口	小島	増岡/田所 (コンサルタント 支援)	南村			
31-Oct	Mon	10.00 AM				Meeting with DGM RSC (Central) Mr. S. Samarasinghe KMC water Division and site visit to KMC water supply areas					
		PM									
1-Nov	Tue	9.30 AM							Site Visit to Central Province (Kandy) , AM- Meeting with Mr. Sarath Gamini (Project Director of GKWSP) Site visit and move to Colombo		
		PM									
2-Nov	Wed	AM							930: Visit to NWSDB Training Facility, Address - Thelawala, Ratmalana, ADM(MD&T) Mr. Jaliya		
		PM							(1400)2.30pm at Public Utilities Commission of Sri Lanka 6th Floor , BOC Merchant Tower St. Michael' s Road, Colombo 3, Sri Lanka. (1600 Meeting with JICA Office Mr. Manabe for scheduling		
3-Nov	Thu	10.00 AM							Meeting with DGM RSC(Southern) Mr. S. Pathirana Address - Kumarathunga Mawatha, Pabhurana, Matara.	10:00 Meeting with DGM RSC (Southern) Mr. S. Pathirama	
		PM								Coming back to Colombo in the evening.	
4-Nov	Fri	AM							Site Visit to Southern Province RSC (Matara)	November 5 (00:10) Flight: TG307 [Mr. Tadokoro]	11.00 Community water supply project - Mr. Ranatunga, Project Directo, E. W. Perera
		PM							Back to Colombo		2.00 Ministry of city planning and water supply - Ms. L. Mangalika, Addl. Secretary
5-Nov	Sat	AM							Internal Discussion and Documentation	November 5 (1:10) Flight: SQ 0469 [Mr.Masuoka]	Internal Discussion and Documentation
		PM									
6-Nov	Sun	AM							Documentation		Documentation
		PM									
7-Nov	Mon	AM							Shin Nihon Lanka 309/1 Colombo Road, Welisara, Sri Lanka		1:10 - 7:40 Colombo - Singapore (SQ 0469)
		PM							The meeting with Mr. Rasheed in GCWWMIIP Project Office was rescheduled to 2 pm at No. 65 St.Lawrence Road, Colombo 06		09:20 - 17:05 Singapore - Narita (SQ 0012)
8-Nov	Tue	AM							Toda Construction 22, Byrde Place, Colombo06		
		PM				Visit to Moratuwa University,					
9-Nov	Wed	9.30 AM				Site Visit from Water Souces, WTP, to Consumer Taps in Kalu Ganga WSP					
		PM									
10-Nov	Thu	AM				Visit to Distribution Pipe Construction, Leak Detection, Repair, Service Connection Sites in Colombo					
		PM									
11-Nov	Fri	AM				Visit to NWSDB's GIS Center(Terawala), Water Meter Testing Facility, Central Laboratory, Meterial Warehouse (Terawala)					
		PM									
12-Nov	Sat	AM				Documentation					
		PM									
13-Nov	Sun	AM				Documentation					
		PM									
14-Nov	Mon	AM				Squiremech Contractor (Meeting Room C - JICA Office)					
		PM									
15-Nov	Tue	AM				Documentation					
		PM									
16-Nov	Wed	AM				Report to JICA office					
		PM									
17-Nov	Thu	AM				1:10 - 7:40 Colombo - Singapore (SQ 0469)	01:30 TG308				
		PM				09:20 - 17:05 Singapore - Narita (SQ 0012)					

付属資料1-2 第二次現地調査 日程表

日時		荒津	大村	浅野	松井	松下	小島	増岡 (コンサルタント 支援)
15-Jan	Sun					8:00 - 9:20 Itami - Narita (JL3002)	10:45 - 15:00 Haneda - Hong Kong (CX543)	
			11:20 - 17:50 Narita - Colombo (UL455)		名古屋から成田へ移動	11:20 - 17:50 Narita - Colombo (UL455)	20:10 - 23:25 Hong Kong - Colombo (CX611)	
16-Jan	Mon	11:00AM	JICA事務所打合せ			三菱電機ミッション同行(午前中)		JICA事務所打合せ
		3:00PM (2h)	NWSDBに対する調査結果報告		11:20 - 17:50 Narita - Colombo(UL455)	NWSDBに対する調査結果報告		
17-Jan	Tue	10:00AM (1h)	NWSDB Add.GM/AGM of Monpower & Training(M&T部門) discussion プロジェクトの方向性意見交換					NWSDB P&P interview
		2:30PM (3h)	Western Central RSC 面談					
18-Jan	Wed	9:00AM (2h)	Western South RSC 面談					
		1:30PM (1.5h)	Japan Unit 面談 ミニツドラフト協議					
		3:30PM (1h)	GIS mapping center 面談					
		4:30PM (1h)	NWSDB Add.GM/AGM of Monpower & Training(M&T部門) discussion 名古屋市の研修システムの紹介 M&T部門に対する補足調査の実施					
19-Jan	Thu	9:30AM (2h)	①NWSDB DGMs of GIS & Finance & Commercial & Western South discussion 神戸市のアセットマネジメント、GIS活用、顧客管理を紹介のうえ、GISデータの活用方法意見交換(荒津、松下、浅野) 管の敷設替え工事の視察(ボレッラ地区)(大村、松井、小島、増岡)					
		2:00PM (2h)	NWSDBとの協議				MCPWS 面談	
20-Jan	Fri	8:30AM	MCPWS報告					
		2:00 PM	空港移動				資料まとめ 帰国準備	
21-Jan	Sat		19:50 - 7:30 Colombo - Narita (UL454)				0:40 - 8:25 Colombo - Hong Kong (CX610)	
				9:55 - 11:05 Narita - Nagoya (JL3083)	11:30 - 12:40 Haneda - Itami (JL115)	10:15 - 15:15 Hong Kong - Haneda (CX520)		

付属資料2 主要面会者リスト

所属・役職	氏名
Municipality of City Planning and Water Supply	
Secretary	N.D. Hettiarachchi
Additional Secretary	L.Mangalika
National Water Supply and Drainage Board	
Chairman	K.A.Ansar
General Manager	G.A.Kumararathna
Additional General Manager of Corporate Service	W.B.G. Fernando
Additional General Manager of Policy & Planning	R.S.C. George
Deputy General Manager of ADB, Water Supply Projects Division	T.S. Wijetunga
Deputy General Manager of Commercial Division	S.G.G. Rajkumar
Deputy General Manager Finance	M.M.S.Perris
Deputy General Manager Western Central	T.W.S.Perera
Deputy General Manager Western South	C.C.H.S.Fernando
Deputy General Manager Western North	R.A.B.S Medith
Deputy General Manager Central	S. Samarasinghe
Deputy General Manager Southern	J.K. S. Pathirana
Assistant General Planning & Development	A.Munasinghe
Assistant General Manager of Recovery	K. Somasiri
Assistant General Manager of Billing	G.A.P. Pathmanatha
Assistant General Manager of Manpower Development and Training	Jaliya Lalith Seekkuge
Assistant General Manager of NRW in Western Central	K.L. Edirisinghe
Assistant General Manager O&M in Western Central	A.K.Kapuruge
Assistant General Manager of Japanese Projects Unit	M.M. Umarlebbe
Assistant General Manager Laboratory Service	H.A.K. Amarakoon
Area Manager (Colombo North)	R.A.N.Dharmasiri
Area Manager (Colombo South)	A.V.P.Ohammika
Area Manager (Kotte)	H.M.Abeykoon Bandara
Assistant General Manager Western South	P.Ramawickrama
Chief Engineer GIS & Mapping	M.S.M.Rizwan
Engineer GIS & Mapping	Anuruddha Ranasooriya
Mechanical Engineer Meter Testing Section	W.A.D.G Jayaruwan
Project Director of Greater Kandy Water Supply Project	P.H. Srath Gamini
Manager-Production, Greater Kandy Water Treatment Plant	S.M.S. Bandara
Chief Engineer (M&E) of Greater Kandy Water Supply Project	M.R.D Salgado
Manager, Kandana Water Treatment Plant	P. Wijerathna
Manager, Biyagama Water Treatment Plant	D. Wijekoon
NWSDB GCWWII Project Office	
Project Director	S.A. Rasheed
Chief Engineer (GIS/NRW)	B.U.J.Perera
Chief Engineer	P.S. Muthnaghe
Engineer	U.L.M. Artsath

所属・役職	氏名
Nuwara Eliya Waterworks Section	
Municipal Engineers	K. Rathish Kumar
Waterworks Section	B.N. Karunathilaka
C.M.A	M.P.T.P. Daynada
Municipal Accountant	K.A.S. Dharmauardhana
Kandy Municipal Council	
Waterworks Engineer	Gayan Jayasekara
PUCSL	
Director	Siriwardena
Deputy Director	Rathuvithana
Deputy Director	Jayasinghe
ADB	
Project Officer(Infrastructure)	Kamal Dahanayake
Deputy Team Leader of TA Project “ Institutional Development of NWSDB”	Lal Premanath
AFD	
Project Officer	David Bekok
World Bank	
Senior Reginal Water and Sanitation Specialist	Lain Menzies
Water and Sanitation Specialist	Samantha
Water Supply and Sanitation Improvement Project Project Director	N.U.K. Ranatunga
テスコアジア株式会社	
現地事務所 所長	藤木 健次
SHIN NIPPON LANKA, LTD	
Senior Advisor Director	丸山 和秀
Executive Officer Engineering	橋口 佳史
戸田建設株式会社 コロンボ事務所	
所長	木村 淳一
University of Muratuwa Department of Civil Engineering	
Senor Professor	Niranjanie Ratnayake
Senior Lecturer in Environmental Engineering	Jagath Manatung
Squire Mech Engineering (PVT) Ltd.	
Director	I. K. A. Dayananda
Construction Manager	S. Jeevanantham

RSC の現状

本調査では、質問表と「途上国の都市水道セクターおよび水道事業体に対するキャパシティ・アセスメントのためのハンドブック」にある「水道事業体の基礎チェックリスト」をRSCに送付し、以下のように回答を得た。

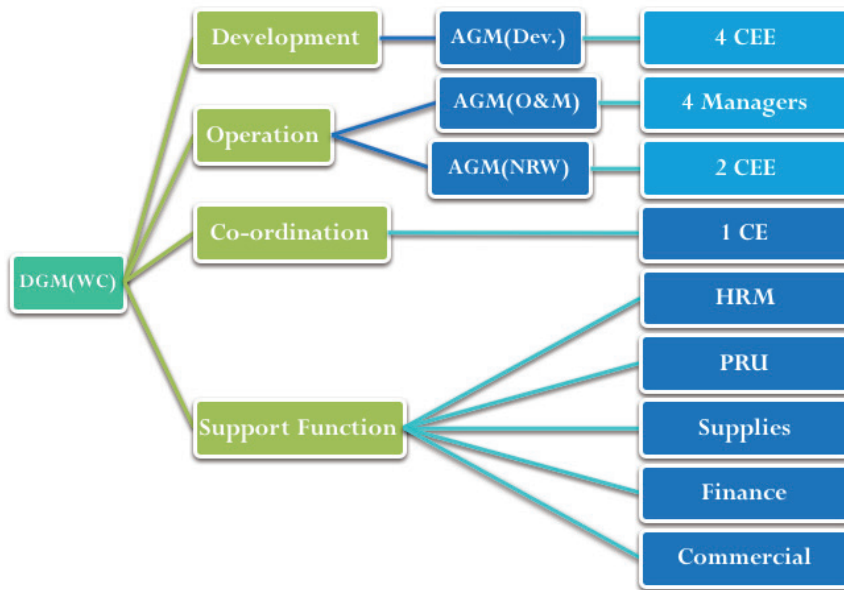
RSC 名		質問表回答	水道事業体の基礎チェックリスト回答
西部州中央	Western Central	○	
西部州北部	Western North	○	○
西部州南部	Western South	○	
中部州	Central	○	
北部州西部	North Western	○	
北部州中央	North Central		
サバラガムワ州	Sabaragamuwa		
南部州	Southern	○	
ウバ州	Uva	○	○
北部州	Northern		○
東部州	Eastern		
西部州浄水部	Western Production		

1. 西部州中央 RSC (Western Central)

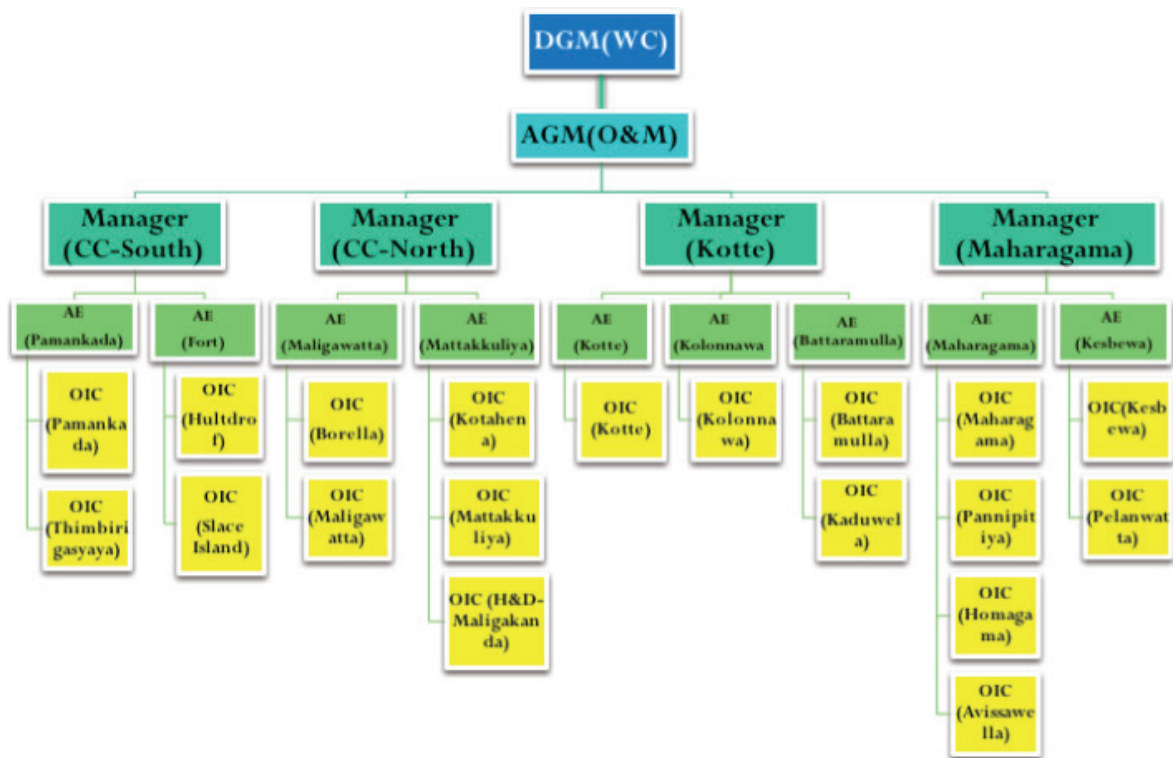
設立年： 1992 年
 所管地区： デヒワラーマウントラビニアとモラトゥワ地区以外のコロンボ県
 所管地区の人口： 2,000,000 (2015)

(1) 組織図

Organization Structure



出所：西部州中央 RSC のプレゼンテーションスライドより



出所：西部州中央 RSC のプレゼンテーションスライドより

(2) 職員数

	Western Central	NWSDB as of December 2015
Engineers	48	633
Accountants	10	92
Science and Technical	02	93

	Western Central	NWSDB as of December 2015
Graduate Trainee	-	-
Administration and Others	21	275
Technical	186	1206
Non-Technical	03	85
Clerical and Allied	238	1485
Skilled	543	3501
Unskilled	369	2902
Total	1,420	10,272

出所：質問表の回答より

(3) 研修実績

<2014年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			In-house	Invited	
PE Technology	60	75%	✓		
Orientation program	72	80%	✓		
NRW Management	137	69%	✓		
Productivity Improvement	114	81%		✓	
Administrative Procedure	43	86%	✓		
Responsibility of office labour.	77	64%	✓		
Computer maintain	75	83%	✓		
Consumer relation	38	63%	✓		
Responsibility of telephone operators	34	85%	✓		
Refresher program of meter reader	33	82%	✓		

出所：質問表の回答より

<2015年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			In-house	Invited	
Awareness program on water safety plan	40	100%	✓		
Supply & Material management	27	90%	✓		
New connection procedure	48	80%	✓		
Computer packages (Office)	144	72%	✓		
Awareness program on corporate plan	32	91%	✓		
PE technology	300	86%	✓		
Orientation program	9	100%	✓		
Awareness program of level monitoring	22	88%		✓	
Consumer relation	24	60%	✓		
Awareness program of Stock verification	14	70%	✓		
Awareness program of Commitment register update	47	78%	✓		
Awareness program of payment procedure	73	81%	✓		

出所：質問表の回答より

<2016年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			In-house	Invited	
Site safety	220	73%		✓	
Use of PE pipes for water connections	10	100%	✓		
Productivity Improvement	207	90%		✓	
Awareness program for non-pay leave	30	85%	✓		
Electrical equipment maintenance	30	50%	✓		
Awareness program of payment procedure	80	61%	✓		
Refresher program for Telephone operators	50	83%	✓		
First Aid program	46	86%		✓	

出所：質問表の回答より

(4) 全体経費と職員研修の費用

(Rs.)

	2013	2014	2015	2016(budget)
Expenditure for staff training	106,394.00	368,549.00	469,353.00	1,776,201.00
Expenditure in total for the RSC	1,805,242,000.00	1,719,309.00	2,157,070,000.00	2,502,788,450.00

出所：質問表の回答より

2. 西部州北部 RSC (Western North)

設立年： na
 所管地区： ガンパハ地区とコロンボ島の北部
 所管地区の人口： 2,300,000 (2015)

(2) 職員数

	Western North	NWSDB as of December 2015
Engineers	28	633
Accountants	5	92
Science and Technical	4	93
Graduate Trainee	-	-
Administration and Others	15	275
Technical	105	1206
Non-Technical	6	85
Clerical and Allied	126	1485
Skilled	279	3501
Unskilled	193	2902
Total	761	10,272

出所：質問表の回答より

(3) 研修実績

<2014年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			In-house	Invited	
<i>Skill Development Programme for fitters</i>	64	80%	✓		
<i>Skill Development Programme for Management Assistance</i>	56	70%		✓	

出所：質問表の回答より

<2015年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			In-house	Invited	
<i>Training Programme on Sustainable Development of Ground water Source</i>	50	86%	✓		
<i>Creating Dynamic Adjustment Sheets using Microsoft Excel for Commercial Staff</i>	36	90%	✓		
<i>Orientation program</i>	70	63%	✓		
<i>Skill Development Programme for fitters</i>	30	100%	✓		
<i>Skill Development Programme for Management Assistance</i>	30	100%		✓	
<i>Awareness programme for Engineer Assistant</i>	42	84%	✓		
<i>Awareness program on Supplies and Material Management</i>	42	84%			

出所：質問表の回答より

<2016年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			In-house	Invited	
<i>Training Programme on Treatment Plant process</i>	37	93%	✓		
<i>Training Programme on PE pipes & Connection details</i>	43	86%	✓		
<i>Training Programme for Meter Reader</i>	117	89%	✓		
<i>Awareness Programme for Consumer Relation Assistant & Management Assistant (CR)</i>	40	80%	✓		
<i>Occupational First Aid</i>	74	82%		✓	
<i>Awareness Programme for Management Assistant (Accounts)</i>	22	73%	✓		
<i>Awareness programme for Engineer Assistant</i>	23	77%	✓		

出所：質問表の回答より

(4) 全体経費と職員研修の費用

情報なし

(5) キャパシティアセスメント結果

Gampaha 地区の結果

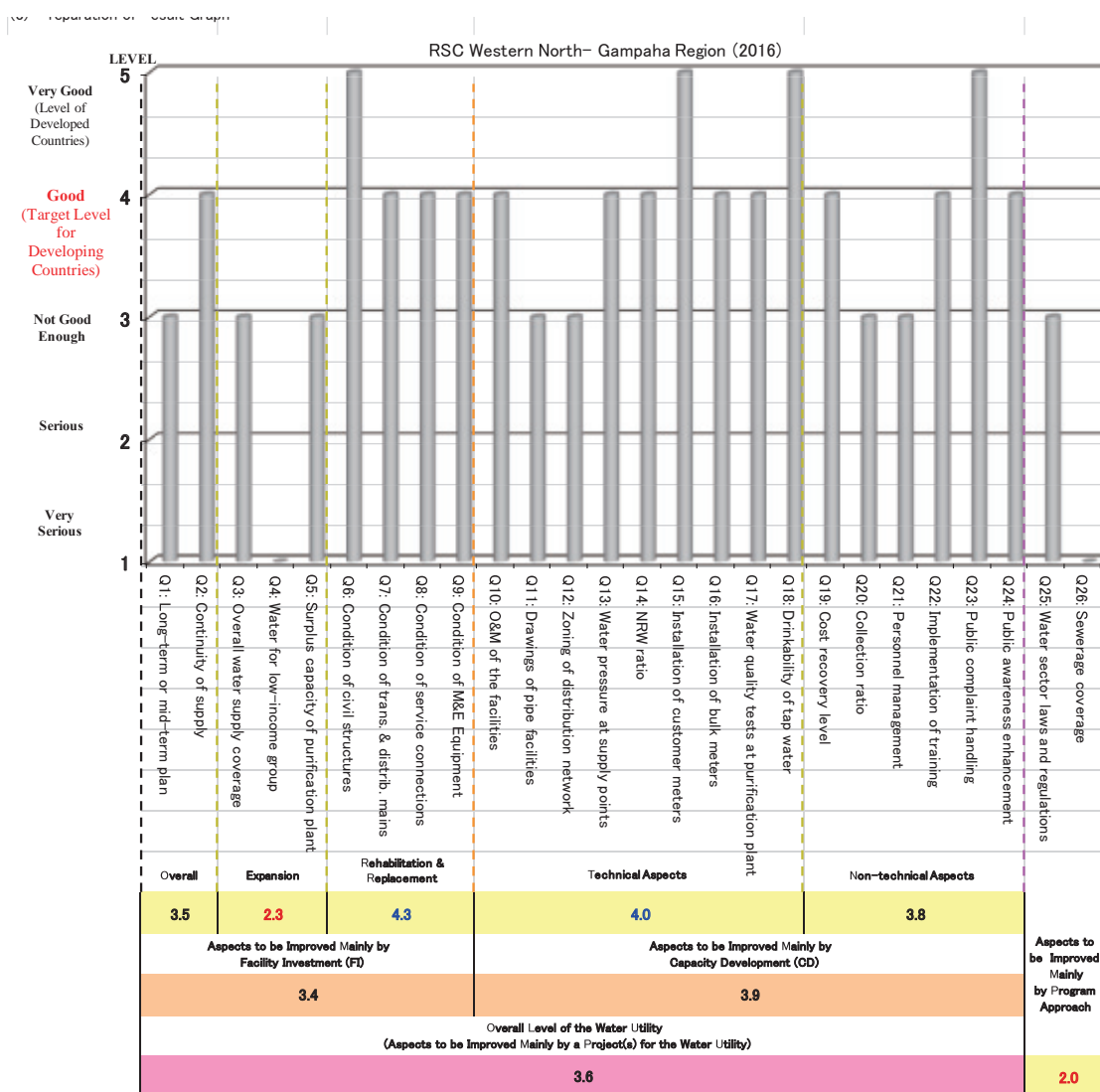


Figure: Results of the Capacity Assessment for RSC Western North (Gampaha Region) using Utility Basic Checklist (Basic Tool ④)

出所：RSC の回答より

Kelaniya 地区の結果

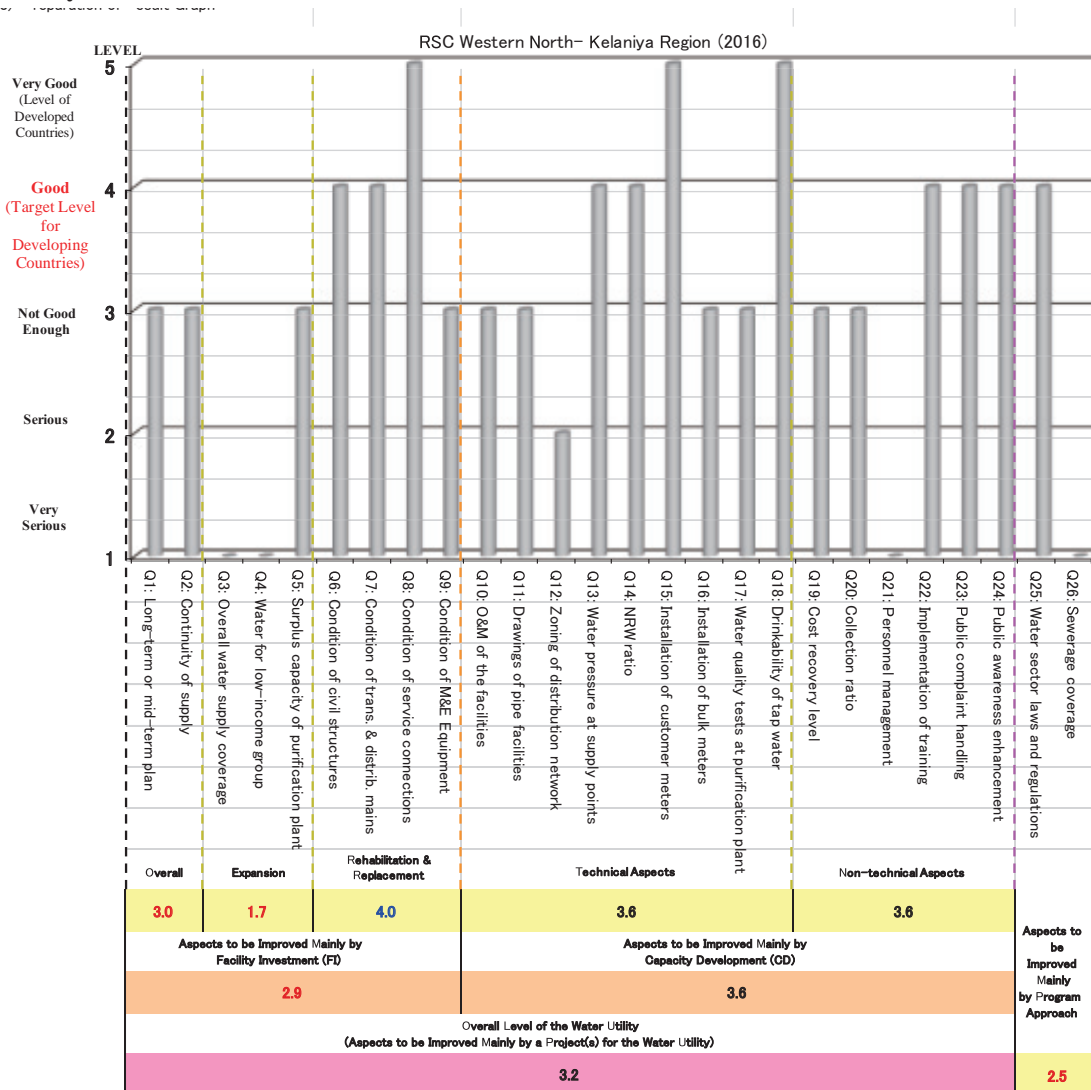


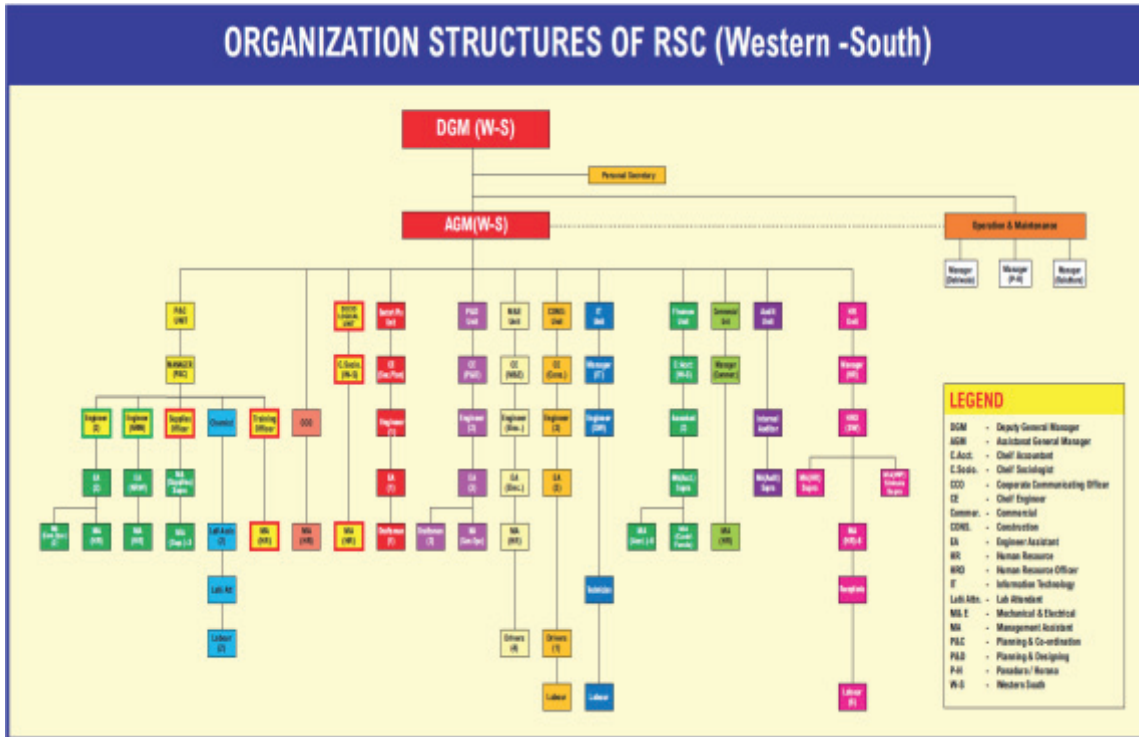
Figure: Results of the Capacity Assessment for RSC Western North (Kelaniya Region) using Utility Basic Checklist (Basic Tool ④)

出所：RSC 表の回答より

3. 西部州南部 RSC (Western South)

設立年： 1992 年
 所管地区： コロンボ県のデヒワラ、モラトゥワ、ラトマラナ地区、カルタラ県、ゴール県のベントータ地区の一部
 所管地区の人口： 1,600,000 (2015)

(1) 組織図



出所：NWSDB の HP より

(2) 職員数

	Western South	NWSDB as of December 2015
Engineers	32	633
Accountants	6	92
Science and Technical	2	93
Graduate Trainee	0	-
Administration and Others	16	275
Technical	84	1206
Non-Technical	13	85
Clerical and Allied	134	1485
Skilled	254	3501
Unskilled	271	2902
Total	812	10,272

出所：質問表の回答より

(3) 研修実績

情報なし

(4) 全体経費と職員研修の費用

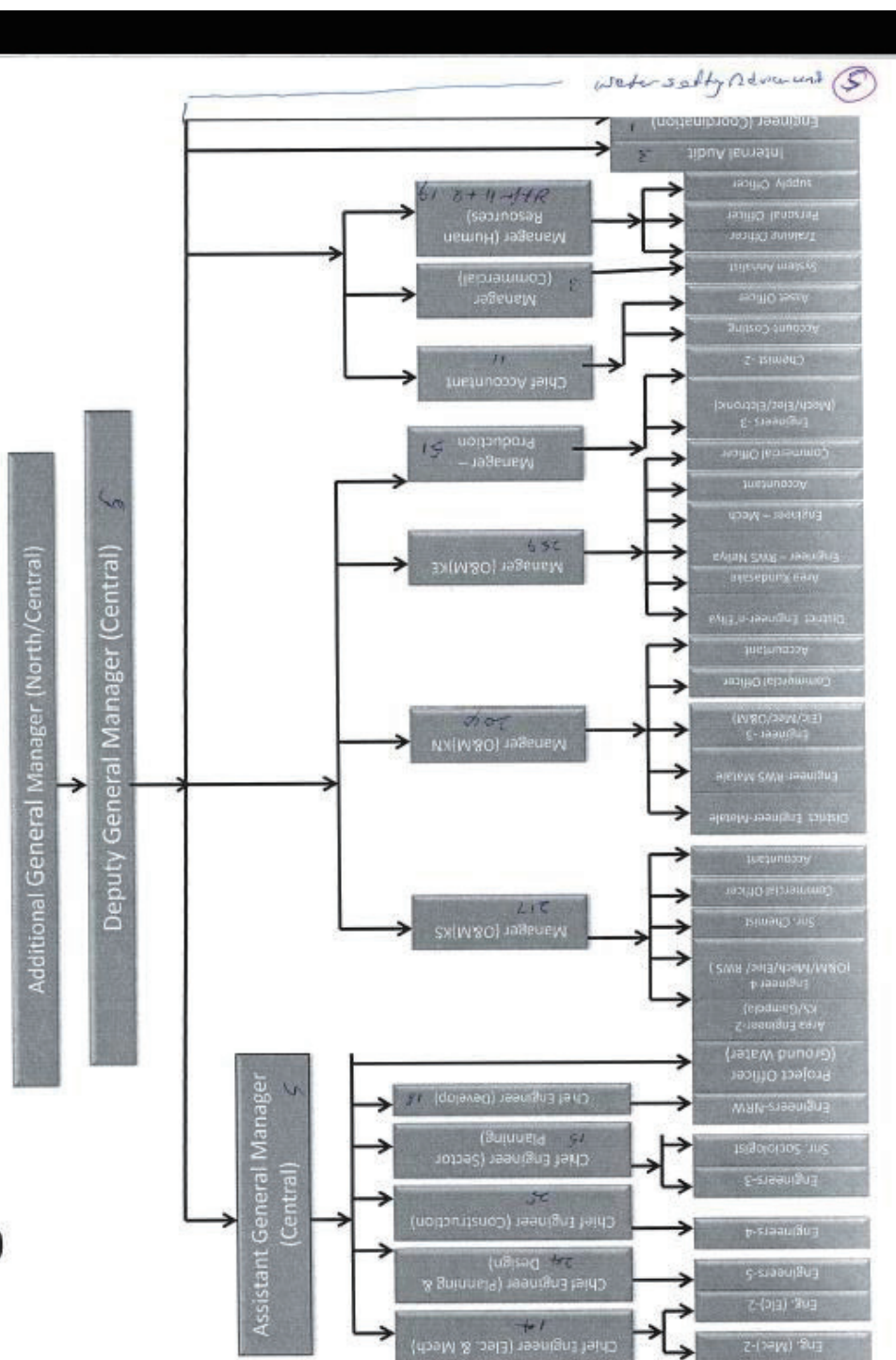
情報なし

4. 中部州 RSC (Central)

設立年： 1987 年
 所管地区： キャンディ県、マタレー県、ヌワラ・エリア県
 所管地区の人口： 2,558,574 (2011)

(1) 組織図

Organization Structure – RSC-Central



出所：中州州 RSC

(2) 職員数

	Central	NWSDB as of December 2015
Engineers	44	633
Accountants	6	92
Science and Technical	11	93
Graduate Trainee	-	-
Administration and Others	11	275
Technical	120	1206
Non-Technical	4	85
Clerical and Allied	85	1485
Skilled	379	3501
Unskilled	216	2902
Total	876	10,272

出所：質問表の回答より

(3) 研修実績

<2015 年>

Name of the Training	No of participants	Rate of attendance %	Trainer		Cost (or supported by)
			In-House	Invited	
Familiarization and Team Building	37	50	√		0.5m O&M Budget
Water Bill Adjustments through system	15	50	√		
Productivity Awareness	46	50	√		
Plumber Technician training programme	38	50	√		
Induction	70	50	√		
GIS training programme	24	50	√		
Water Safety Plan	46	50	√		
RWS water safety plan	18	50	√		
Water safety plan assessment training workshop	18	50	√		
Capacity development for management of water supply pipe laying	20	50	√		
Meter readers awareness programme	65	50	√		
Introduction new commercial billing system and updating NWSDB web page	26	50	√		
Workshop of corporate plan (2016-2019)	53	50	√		

出所：質問表の回答より

<2016 年>

Name of the Training	No of participants	Rate of attendance %	Trainer		Cost (or supported by)
			In-House	Invited	
Advanced Bid Evaluation	60	50	√		0.5m O&M Budget
Awareness programme on productivity	62	50	√		
Financial literacy	126	50	√		
Introduction to computers	13	50	√		
Meter Readers Awareness training programme	40	50	√		

Supplies and Materials Management Training Programme	27	50	√		
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出所：質問表の回答より

(4) 全体経費と職員研修の費用

(Rs.)

	2013	2014	2015	2016 (budget)
Expenditure for staff training	469,860.97	418,019.46	341,415.00	905,000.00
Total Expenditure of RSC	na	na	na	na

出所：質問表の回答より

5. 北部州西部 RSC (North Western)

設立年： 2008 年
 所管地区： プッタラム県、クルネガラ県
 所管地区の人口： 2,372,185 (2012)

(1) 組織図

情報なし

(2) 職員数

	North Western	NWSDB as of December 2015
Engineers	24	633
Accountants	4	92
Science and Technical	6	93
Graduate Trainee	-	-
Administration and Others	5	275
Technical	54	1206
Non-Technical	2	85
Clerical and Allied	47	1485
Skilled	154	3501
Unskilled	107	2902
Total	403	10,272

出所：質問表の回答より

(3) 研修実績

<2014 年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			Un-house	Invited	
5S & Productivity Training	48			√	
Computer Software Training	43		√		
Inauguration Training for new employees	31		√		
Administration Process	34			√	
Inauguration Training for new employees	39		√		
RO Plant Programme	43		√		
Computer Literacy Training Program	49		√		
Productivity Program	60			√	

<2015 年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			Un-house	Invited	
Training Program on Pump Design & Maintenance	34		√		
Training Program for ISO Certificate for Water Treatment plants	36			√	
GIS Mapping	12			√	
Productivity Development program	35			√	

<2016 年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)
			Un-house	Invited	
Productive Financial Management Program	133			√	
Customer Relation Program	41		√		
Maintenance Work Program	44		√		
Productivity Improvement Workshop	25			√	
Plant Technicians Program	33		√		
Water Safety Plan Program	54			√	

(4) 全体経費と職員研修の費用

	2013	2014	2015	2016(budget)
Budget (or expenditure) for staff training	Rs 351,930/=	Rs 135,707/=	Rs 416,392/=	Rs 296,425/=
Budget (or expenditure) in total for the RSC	na	na	na	na

6. 北部州中央 RSC (North Central)

設立年： na
 所管地区： アヌラダプラ県、ポロナルラ県
 所管地区の人口： 1,266,663 (2012)

(1) 組織図

情報なし

(2) 職員数

情報なし

(3) 研修実績

情報なし

(4) 全体経費と職員研修の費用

情報なし

7. サバラガムワ州 RSC (Sabaragamuwa)

設立年： 2008 年
所管地区： ラトナプラ県、ケッガーラ県
所管地区の人口： 1,919,487 (2012)

(1) 組織図

情報なし

(2) 職員数

情報なし

(3) 研修実績

情報なし

(4) 全体経費と職員研修の費用

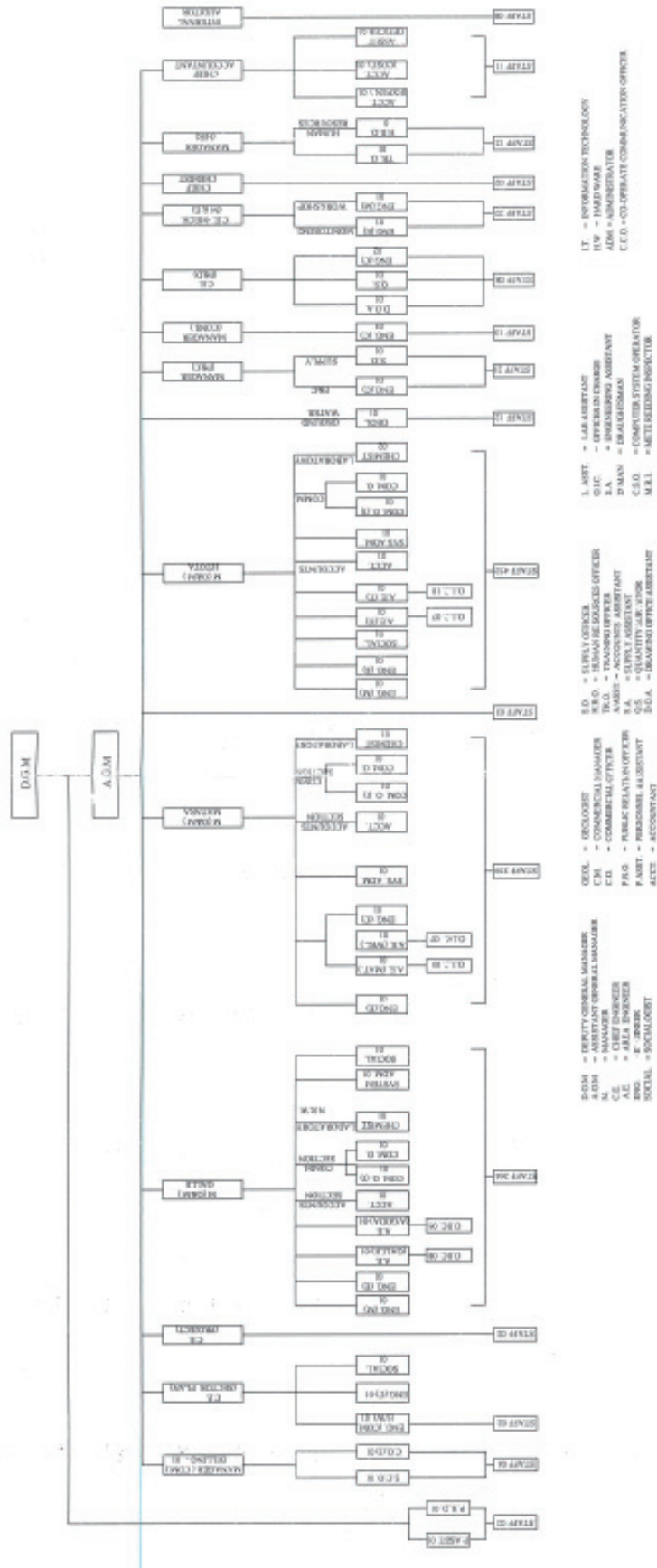
情報なし

8. 南部州 RSC (Southern)

設立年： na
所管地区： ゴール地区、マータラ地区、ハンバントタ地区
所管地区の人口： 2,502,296 (2015)

(1) 組織図

ORGANIZATION STRUCTURE - 2016
(SOUTHERN REGION)



出所：南部 RSC より

(2) 職員数

	Southern	NWSDB as of December 2015
Engineers	33	633
Accountants	7	92
Science and Technical	8	93
Graduate Trainee	0	-
Administration and Others	18	275
Technical	145	1206
Non-Technical	11	85
Clerical and Allied	165	1485
Skilled	516	3501
Unskilled	418	2902
Total	1,321	10,272

出所：質問表の回答より

(3) 研修実績

<2014年>

No.	Name of Training	No. of Participants	Rate of attendance	trainer		Cost (or supported by)
				In house	Invited	
01.	Training Programme on using Chlorinator cylinder and safety	44	97%	√		Supported by Paranthan Chemicals
02.	Firefighting Training Programme	32	64%	√		15 000.00
03.	Training Programme on Disciplinary procedures	32	91%		√	9 792.00
04.	Induction Training Programme For Newly Recruited Staff.	29	52%		√	9 542.00
05.	Awareness Programme on GIS Mapping Development	30	85%		√	8 000.00
06.	Training Programme on using Chlorinator cylinder and safety	39	92%		√	8 014.00
07.	Training Programme on New Water Connections procedure	19	54%		√	3 250.00
08.	Workshop on development of Water safety plan.	32	64%		√	18 653.00
09.	Implementation Of Water Safety Plan.	24	68%		√	20 625.00
10.	Productivity Workshop	48	60%		√	17 200.00
11.	Training Programme on Stores Management	28	80%		√	24 556.00
12.	Workshop on preparation of Asset Management Action Plan	23	57%		√	7 695.00
13.	Workshop On Positive Thinking For Meter Readers.	35	77%		√	11 331.00
14.	Water Treatment	23	76%		√	10 000.00
15.	Training Programme on New Billing System & Consumer Relation affaires	31	88%		√	15 210.00

No.	Name of Training	No. of Participants	Rate of attendance	trainer		Cost (or supported by)
				In house	Invited	
16.	Water Treatment	24	80%		√	15 250.00
17.	Capacity Development project for construction management of water supply pipe laying	15	68%		√	6 345.00
18.	Training on VSDs and Soft Starters conducted by Electro Serve (PVT) Ltd.	21	84%	√		External Organization (Electro serve)
19.	Workshop on attitudinal change	27	77%		√	24 000.00
20.	Induction Training Programme For Multi skills job trainee.	20	90%		√	9 000.00
21.	Capacity development project for construction management of water supply pipe laying	14	70%		√	6 345.00
22.	Maintenance of Torque converters and transmission system	4	100%	√		42 000.00
23.	Workshop on Total Productive maintenance	1	100%	√		3 000.00
24.	Training on ISO 9001 – 2008 Quality award	16	64%	√		5000.00

出所：質問表の回答より

<2015年>

No.	Name of Training	No. of Participants	Rate of attendance	trainer		Cost (or supported by)
				In-house	Invited	
01.	Training Programme For Plumbing Technicians.	15	25%		√	11 250.00
02.	Training Programme For Plumbing Technicians.	12	20%		√	17 925.00
03.	Induction Training Programme For Newly Recruited Meter Readers.	36	83%		√	9 070.00
04.	Training Programme On Water Gem.	16	66%		√	7 291.00
05.	Training Programme On Effective Supplies And Materials Management Function.	25	71%		√	16 750.00
06.	Technical Workshop On Borehole Submersible Pumps.	32	91%	√		MS analytical instrument (PVT) LTD
07.	Induction Training Programme For Newly Recruited Staff.	45	86%		√	9 453.00
08.	Review Workshop Of Water Safety Plan.	42	93%		√	6 728.00
09.	Induction Training Programme For Multi Skills on The Job Trainees.	10	100%		√	24 375.00
10.	Workshop On Positive Thinking For Meter Readers.	33	55%		√	12 195.00

付属資料3

No.	Name of Training	No. of Participants	Rate of attendance	trainer		Cost (or supported by)
				In-house	Invited	
11.	Training Programme On Finger Print Machine.	14	87%		√	2 500.00
12.	Training Programme On Arc Mapping.	19	76%		√	21 640.00
13.	Review Work Shop Of Water Safety Plan.	22	73%		√	7 500.00
14.	Workshop On Corporate Action Plan And Development Plan.	112	93%		√	90 000.00
15.	Workshop On Positive Thinking.	93	93%	√		31 100.00
16.	Training Programme For Plumbing Technicians.	45	23%		√	25 000.00
17.	Technical Work Shop On Variable Speed Drives.	22	88%		√	Electro Mettle Pressing (PVT) LTD
18.	Training Programme On Disciplinary Management.	12	60%		√	15 286.00
19.	Training Programme On Disciplinary Management.	14	56%		√	
20.	Maintenance of Diesel Generators	3	100%	√		33 300.00
21.	1 Day Training Programme for Drivers	2	50%	√		5 000.00
22.	Lean Management	1	100%	√		3 000.00
23.	Positive thinking and Personality development	1	100%	√		3 000.00
24.	Quality control circles	1	100%	√		6 000.00

出所：質問表の回答より

<2016年>

No.	Name of Training	No. of Participants	Rate of attendance	trainer		Cost (or supported by)
				In-house	Invited	
01.	Productivity Development	20	66%		√	6000.00
02.	Training Programme on Disciplinary Management.	16	64%		√	8 644.00
03.	Training Programme on Disciplinary Management.	33	82%		√	8 644.00
04.	Workshop on Financial Literacy	86	71%		√	25 000.00
05.	Workshop on Financial Literacy	112	71%		√	

No.	Name of Training	No. of Participants	Rate of attendance	trainer		Cost (or supported by)
				In-house	Invited	
06.	Development of Institutional Productivity through the Personal Development	32	53%		√	5000.00
07.	Training Programme for care takers	30	100%		√	19 529.00
08.	Refresher Course for plumbing	20	100%		√	2 875.00
09.	Training Programme on Productivity	82	82%	√		20 000.00
10.	Training Programme on Operation & Maintenance of Water Treatment Plant - I	25	92%		√	6 529.00
11.	Reduction of NRW - I	27	69%		√	} 28 233.00
12.	Reduction of NRW - II	30	78%		√	
13.	Training Programme on Traffic Laws signs & Road Safety - I	40	70%	√		10 000.00
14.	Training Programme on Operation & Maintenance of Water Treatment Plant - II	22	88%		√	4 800.00
15.	Training Programme on Traffic Laws signs & Road Safety - II	31	100%	√		22 311.00
16.	Productivity improvement	56	46%	√		13 700.00
17.	Training Programme New Billing System	41	97%		√	3 000.00
18.	Training Programme on Mapping	23	95%		√	8 625.00

出所：質問表の回答より

(4) 全体経費と職員研修の費用

(Rs.)

	2013	2014	2015	2016(budget)
Expenditure for staff training	na	na	na	na
Expenditure in total for the RSC	500 000.00	500 000.00	822 000.00	1 883 000.00

出所：質問表の回答より

9. ウバ州 RSC (Uva)

設立年： na
 所管地区： バドゥーラ県、モナラーガナ県

所管地区の人口： 1,259,900 (2012)

(1) 組織図

情報なし

(2) 職員数

	Western Central	NWSDB as of December 2015
Engineers	19	633
Accountants	3	92
Science and Technical	4	93
Graduate Trainee		-
Administration and Others	5	275
Technical	35	1206
Non-Technical	1	85
Clerical and Allied	30	1485
Skilled	107	3501
Unskilled	254	2902
Total	458	10,272

出所：質問表の回答より

(3) 研修実績

<2014年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)(Ukr
			Un-house	Invited	
Basic Board Procedures	40	100%	✓		16000.00
Mapping	20	100%		✓	40000.00
Land Acquisition Procedures	30	100%		✓	7000.00
GIS/GPS	25	100%		✓	40000.00
Basic Board Procedures	35	100%	✓		20000.00
NRW	40	100%	✓		12000.00
School Health Education	300	100%	✓		20000.00
Excel Application in Computers	25	100%	✓		15000.00
Water TP process	35	100%	✓		6000.00
Safety	50	100%	✓		15000.00
School Health Education(4 Schools)	1500	100%	✓		150000.00
GIS	30	100%	✓		30000.00
Capacity Development	40	100%		✓	30000.00

出所：質問表の回答より

<2015 年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)(Ukr
			Un-house	Invited	
Water Resource Management	40	100%		✓	15000.00
Pumps Operating	30	100%		✓	12000.00
Basic Board Procedures	20	100%	✓		20000.00
Pipe pitting	20	100%	✓		40000.00
Scada System	25	100%		✓	85000.00
Community Action planning	40	100%	✓		15000.00
WSP Training	45	100%	✓		16000.00
Electro Mechanical System	25	100%		✓	16000.00
GIS	35	100%	✓		80000.00
Water Gem	35	100%	✓		15000.00
Corporate Action Planning	70	100%	✓		60000.00
Billing System	25	100%	✓		30000.00

出所：質問表の回答より

<2016 年>

Name of training	No of participants	Rate of attendance	Trainer		Cost (or supported by)(Ukr
			Un-house	Invited	
ISO 9001:2015(1)	20	100%		✓	12000.00
Training on Damp Designing	32	100%		✓	10000.00
ISO 9001:2015(2)	20	100%		✓	12000.00
Contract Billing	40	100%	✓		15000.00
ISO 9001:2015(3)	20	100%		✓	12000.00
Productivity(1)	20	100%		✓	10000.00
Productivity(2)	20	100%		✓	10000.00
Productivity(3)	20	100%		✓	10000.00
Environment Protection	60	100%		✓	2000.00
Water Safety Planning	25	100%	✓		20000.00
Structural Designing Schools)	40	100%	✓		25000.00
GIS	30	100%	✓		30000.00
Capacity Development	40	100%		✓	30000.00

出所：質問表の回答より

(4) 全体経費と職員研修の費用

情報なし

(5) キャパシティアセスメント結果

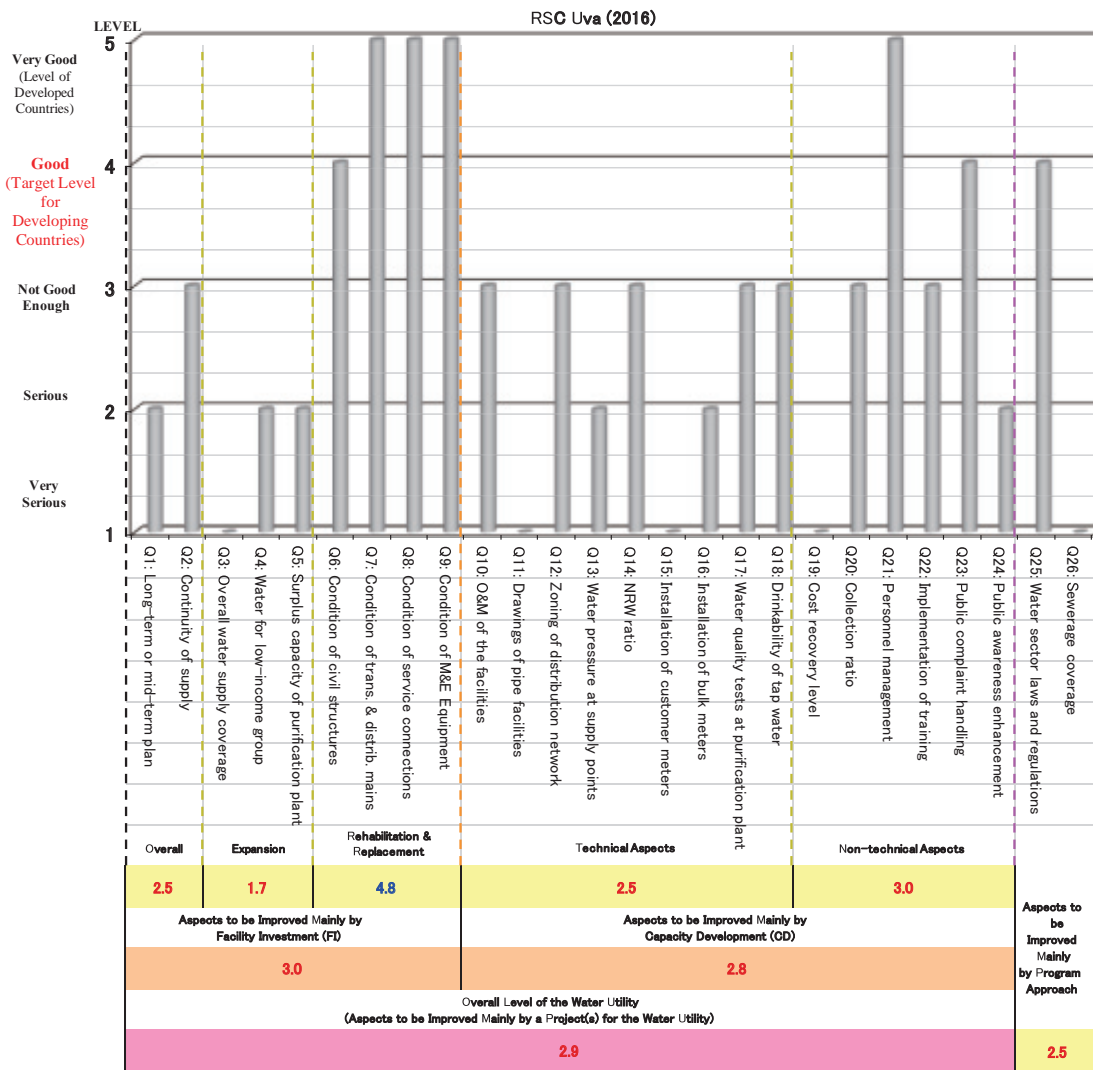


Figure: Results of the Capacity Assessment for RSC Uva using Utility Basic Checklist (Basic Tool ④)

出所：RSC の回答より

10. 北部州 RSC (Northern)

設立年： 2009 年
 所管地区： ジャフナ県、キリノリッチ県、マナー県、ムライティブ県、バブニア県
 所管地区の人口： 1,236,850 (2015 予測)

(1) 組織図

情報なし

(2) 職員数

情報なし

(3) 研修実績

情報なし

(4) 全体経費と職員研修の費用

情報なし

(5) キャパシティアセスメント結果

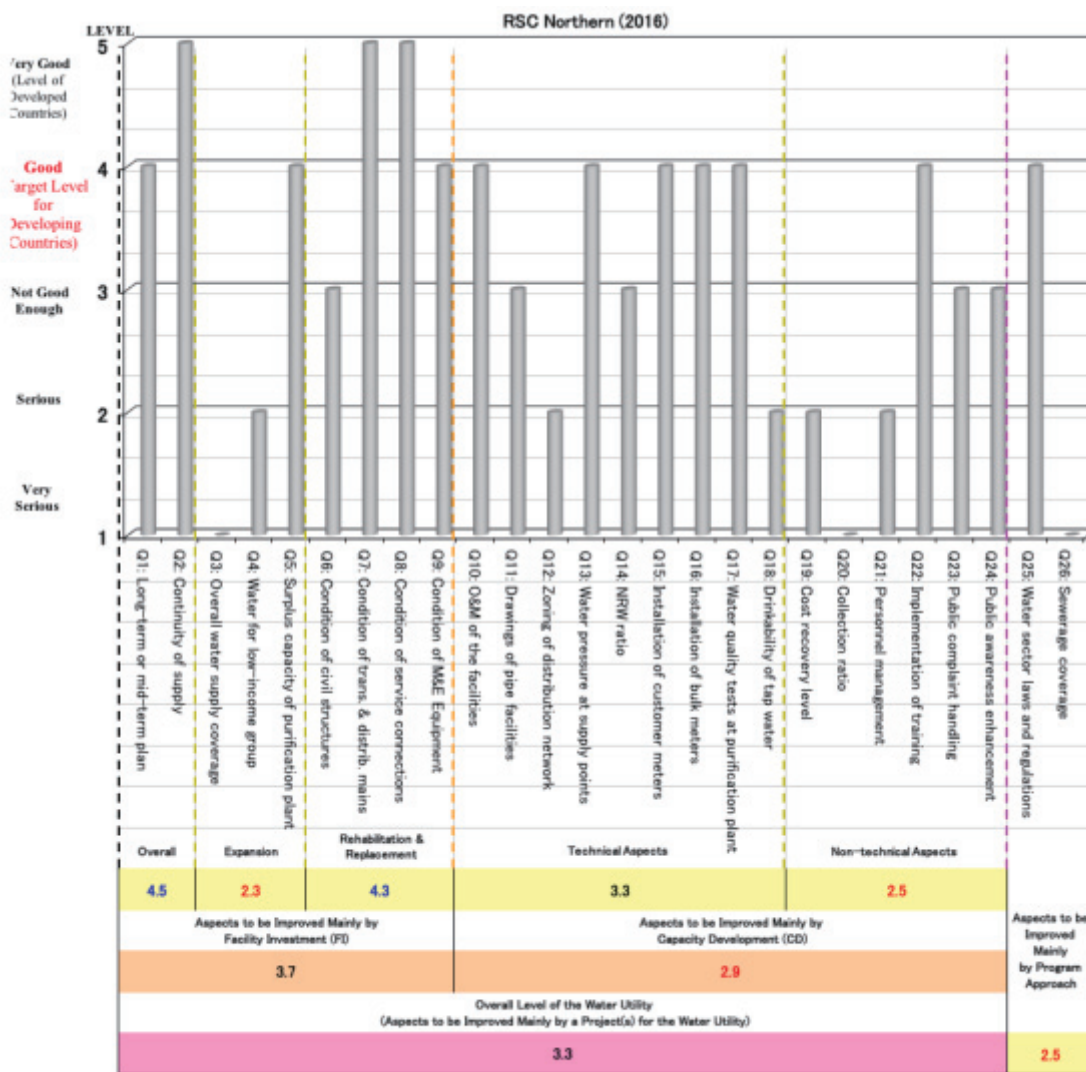


Figure: Results of the Capacity Assessment for RSC North using Utility Basic Checklist (Basic Tool ④)

出所：RSC の回答より

11. 東部州 RSC (Eastern)

設立年： na
 所管地区： アンバラ県、バツェイカロア県、トリンコマリー県
 所管地区の人口： 1,551,381 (2012)

(1) 組織図

情報なし

(2) 職員数

情報なし

(3) 研修実績

情報なし

(4) 全体経費と職員研修の費用

情報なし

12. 西部州浄水部 (Western Production)

設立年： na

所管地区： 西部州の上水道設備の維持管理を担当。

ドナーによる支援事業一覧

1-1. 日本

	案件名	実施年	対象エリア	スキーム	事業目的	目標(数値)
設備	アンバタレ浄水場整備計画	1994年～1995年	コロンボ圏	無償資金協力	アンバタレ浄水場を改修し大コロンボ首都圏の給水水质を改善すること。	実績:浄水能力 46.8 万 m ³ /日
設備	カル河水源開発・給水拡張事業	1997年～2006年	コロンボ圏	有償資金協力 (112.78 億円)	大コロンボ圏で見込まれる水需要に対応するために新規水源開発と関連水道施設を整備すること。	給水能力:6 万 m ³ /日
設備/無収水対策	コロンボ市上水道改修事業	1999年～	コロンボ市	有償資金協力 42.17 億円	安定的な水供給を確保するために、コロンボ市周辺の老朽化した上水道システムを改修、補強するとともに貧困層居住地区において無収水削減計画を実施し、無収水率の改善を目指す。	-
設備	水セクター開発事業	2007年～2015年	コロンボ圏 ガンバハ キャンデー圏	有償資金協力 132.31 億円	コロンボ圏とキャンデー圏において上水道設備を整備・拡張等を行い、安全な生活用水の安定的な供給を図ること。	目標:コロンボリハビリ:給水量 1.36m ³ /日 コロンボ北部(ガンバハ)事業:給水量:5.4 万 3/日 キャンデー:給水量:4.8 万 3/日
調査	基礎情報収集調査	2008年	コロンボ圏	基礎調査	コロンボ圏の情報整理・分析、事業提案	-
設備/無収水対策	水セクター開発事業 (II)	2008年～2015年	コロンボ圏	有償資金協力 83.88 億円	大コロンボ圏においてカル河水系の上水道システムを整備・拡張し、コロンボ市内の貧困者居住区域において、配水管の交換と貧困居住区世帯への戸別接続による給水促進により無収水を削減することにより、同地域における安全かつ安定した生活用水供給を図ること。	目標:給水量 4.8m ³ /日 マスタープランの更新含む。
設備	水セクター開発事業 (III) (カル河上水道拡張事業I)	実施予定	コロンボ県、カルタラ県	有償資金協力	西部州コロンボ県とカルタラ県で都市化に伴う急激な人口増と高い無収水率に対処するため、既存のカル河水系上水道施設の拡張と、Dehiwala, Moratuwa 地区で送・配水管の更新・修繕等を図る。	-
技術プロジェクト (無収水対策)	コロンボ市無収水削減能力強化プロジェクト	2009年～2011年	コロンボ市	技術協力プロジェクト	NWSDBのコロンボ市における無収水対策の遂行能力を強化すること。	-
設備	水道施設設計・施行 管理能力強化プロジェクト	2013年～2017年	コロンボ市	草の根無償 6,590 千円	名古屋市による事業。漏水の少ない維持管理の容易な水道施設を実現するために、NWSDB独自の、配水管を含む水道施設の工事に関する基準を作る。	-

	案件名	実施年	対象エリア	スキーム	事業目的	目標(数値)
設備	配水管施工管理能力強化プロジェクト	2014年～2017年	スリランカ国内の水道配水管敷設箇所	草の根無償 29,171千円	名古屋市による事業。NWSDBにおいて、配水管工事の施工管理能力が強化すること。	-
設備	コロンボ北部上水道事業	1996年～2006年(工事完了)	ガンパハ県	有償資金協力 51.22億円(実行額)	コロンボ北部地域において送配水施設を整備し、同地域への給水能力の向上を図ること。	新規接続人口(実績)2008年 30,105人
調査	大キャンディ圏・スワラエリア上下水道整備計画調査	1998年	キャンディ圏・スワラエリア市	開発調査	大キャンディ圏とスワラエリア市で生活用水の不足を解消し、排水量増加に対応する下水・衛生処理システムを確立するために、2015年を目標とした上水道と下水・衛生処理施設整備計画のマスタープランとファイナジビリテイスタディを実施すること。	-
設備	キャンディ上水道整備事業	2001年～2006年	キャンディ市・北部	有償資金協力 46.44億円(実行額)	キャンディ市と北部において、給水施設を整備することにより、上水道の安定供給と供給拡大を図る。	3.3m3万/日(2011年実績)
設備/無収水対策	東部州給水開発事業	2010年～2016年	東部州アムバラ県	有償資金協力 49.04億円	東部州において給水設備を建設・拡張(送水・配水網整備、施設建設等)することにより、安全な飲料水の供給を図る。	給水人口(計画):209,000人 (2015年)
設備	スワラエリア給水改善計画(第1期)	2001年～2002年	スワラエリア県	無償資金協力 4.8億円	スワラエリア市において乾期における断水等の不安定給水の状況を改善し、安定した飲料水の供給を可能とすること。	データが取られていないためほぼ目標の実績値は不明。
設備	スワラエリア給水改善計画(第2期)	2002年～2003年	スワラエリア県	無償資金協力 5.55億円	上水道設備の拡張・整備を行い、乾期において安全で安定した給水を図ると共に無収水の削減を図ること。	-
調査	パッケージ型無収水削減策の普及・実証調査	2015年～2017年	スワラエリア県	実証調査 (テスコアジア株式会社)	パイロットエリアにおける無収水率が改善され、漏水削減による給水量の増加から上水道の普及が促進されることが期待できる。(愛知県テスコアジア株式会社)	-
設備	マータラ上水道整備計画	2003年～2006年	マータラ県	無償資金協力 14.65億円(実績)	マータラ県4郡で、取水場と浄水施設の拡張、新規配水池の建設、導水管・送配水管の布設・リハビリを実施することにより、当該地域住民へ安全で衛生的な水の安定供給を図ること。	給水能力(実績):4.5万m3/日
設備	キリリッチ上水道復旧計画	2012年～2015年	キリリッチ県	無償資金協力 6.8億円	キリリッチ県において既存の上水道施設を整備することにより、安全な水へのアクセスを向上させること。	目標値:給水量2300m3/日

	案件名	実施年	対象エリア	スキーム	事業目的	目標(数値)
設備	アスラダブアラ県北部 上水道整備事業フェーズ1	2013年～2018年	アスラダブアラ県	有償資金協力 51.66億円	スリランカ北中部州アスラダブアラ県北部において上水道施設を整備することにより、安全かつ飲用可能な水の供給を図ること。	安全かつ飲用可能な水にアクセスできる人口(人):61,000人 (2020年目標)
設備	アスラダブアラ県北部 上水道整備事業フェーズ2	実施予定(2016年～)	アスラダブアラ県	有償資金協力	-	-
調査	未給水地域における 給水事業準備調査	2011年～2012年	ジャラタラ地区 (コロポボラ外)、タルデ ナ・ミーガハキ ウラ地区・ガラ ウダ地区(バド ウラ外)	案件化調査 (豊田通商)	BOP 層の生活環境の底上げに貢献するというBOP 事業としての位置付けに配慮しつつ、民間事業としての水道事業の実現可能性と JICA 事業との連携可能性を検討する。BOP ビジネスとして、緩速る過方式の浄水場建設を提案。	-
調査	途上国における経済 的な水道整備に資 するPCタンク普及の ための案件化調査 普及・実証調査	2013年 2014年～2017年	カルタラ県 カルタラ県ペー ルワラ市	案件化調査(安部 日鋼工業・かいは つマネジメントコン サルテイング) 実証調査(安部日 鋼工業)	PCタンクの建設事業をスリランカにおいて展開し、スリランカ NWSDB が関わる日本の ODA 案件や、その他の上下水道事業への導入につなげるための事業計画の見直しをすること。	-
アドバイザー	上水道開発計画	1994年～1997年	全国	個別専門家	-	-
アドバイザー	上水道開発計画	2000年～2001年	全国	個別専門家	-	-
アドバイザー	上下水道分野人材 育成計画	2002年～2004年	全国	個別専門家	-	-
アドバイザー	浄水処理技術向上	2002年～2004年	全国	個別専門家	-	-
アドバイザー	浄水処理適正化/改 良計画	2005年	全国	個別専門家	-	-
アドバイザー	上下水道セクターア ドバイザー	2008年～2009年	全国	個別専門家	セクター戦略策定、案件形成、計画、設計、事業実施及びモニタリングに係る国家上下水道公社の能力を向上するための助言・指導を行うとともに、ドナー調整を支援する。	-
アドバイザー	NWSDB 業務最適化 に係る支援	2013年		有償資金協力(実 施促進アドバイザー)	-	-

2. ADB

	Project Name	種類	Project Status	承認年度	完了日	事業費 (融資額) (百万\$)
1.	Third Water Supply and Sanitation	Loan	Closed	1997	2008	75
2.	Water Resource Management	Loan	Closed	2000	2007	20
3.	Secondary Towns and Rural Community-Based Water Supply and Sanitation	Loan	Closed	2003	2013	60
4.	Local Government Infrastructure Improvement Project	Loan	Active	2005	-	50
5.	Secondary Towns and Rural Community-Based Water Supply and Sanitation (Supplementary)	Loan	Closed	2006	2014	14
6.	Secondary Towns and Rural Community-Based Water Supply and Sanitation (Supplementary)	Loan	Closed	2006	2013	47
7.	Dry Zone Urban Water and Sanitation	Loan	Active	2008	-	85
8.	Greater Colombo Wastewater Management	Loan	Active	2009	-	80
9.	Greater Colombo Wastewater Management	Loan	Active	2009	-	20
10.	Jaffna and Kilinochchi Water Supply and Sanitation	Loan	Active	2010	-	90
11.	Improving Community-Based Rural Water Supply and Sanitation in Post-Conflict Areas of Jaffna and Kilinochchi	Loan	Active	2011	-	2
12.	Secondary Towns and Rural Community-Based Water Supply and Sanitation (Supplementary)	Loan	Active	2011	-	17
13.	Local Government Enhancement Sector Project (SF)	Loan	Active	2011	-	59
14.	Greater Colombo Water and Wastewater Management Improvement Investment Program - Tranche 1	Loan	Active	2012	-	70
15.	Greater Colombo Water and Wastewater Management Improvement Investment Program - Tranche 1 (SF)	Loan	Active	2012	-	14
16.	Dry Zone Urban Water and Sanitation Project - Additional Financing (SF)	Loan	Active	2012	-	40
17.	Greater Colombo Water and Wastewater Management Improvement Investment Program - Tranche 2	Loan	Active	2013	-	88
18.	Strengthening the Regulatory Framework for Water Supply and Sanitation	TA	Closed	2002	2008	0.29
19.	Strengthening the Regulatory Framework for Water Supply and Sanitation (Supplementary)	TA	Closed	2006	2008	0.04
20.	Basic Social Infrastructure Development Project	TA	Closed	2003	2008	0.5
21.	Small Towns Rural Arid Areas Water Supply and Sanitation	TA	Closed	2006	2009	0.87
22.	Institutional Strengthening for Decentralized Service Delivery in the Water Sector	TA	Closed	2008	2011	0.75
23.	Lagging Local Authorities Infrastructure Development	TA	Closed	2010	2012	0.7
24.	Capacity Development for Water Supply and Sanitation Service Delivery*	TA		2010		0.6

	Project Name	種類	Project Status	承認年度	完了日	事業費 (融資額) (百万\$)
25.	Colombo Water Supply Service Improvement	TA	Closed	2011	2014	0.7
26.	Local Government Service Enhancement*	TA		2011		0.54
27.	Colombo Water Supply Service Improvement (Supplementary)	TA	Closed	2012	2014	0.7
28.	Capacity Development for Non-Revenue Water Reduction	TA	Closed	2012	2015	0.2
29.	Trincomalee Integrated Urban Development	Loan/TA	Proposed	2013	-	0.5
30.	Capacity Development for Project Implementation	TA	Active	2013	-	0.5
31.	Institutional Development of National Water Supply and Drainage Board	TA	Active	2014	-	1
32.	Rapid Assessment of Sea Water Desalination and Other Alternative Water Sources for Jaffna Water Supply	TA	Active	2014	-	0.23

3. WB

	Dedicated W&S/ Other	Project ID	Project Name	Status	Approval FY	Closed date	Project Cost (M\$)	WB Commitment / (\$M)	Net for W&S (\$M)
1.	Dedicated	P058067	Second Community Water	Closed	2003	2011	62.4	39.8	27.9
2.	Dedicated	P147827	Water and Sanitation Improvement	Active	2015	-	183.9	165.0	165.0

Results of the Workshop

Purposes

1. To identify and share the current challenges that the NWSDB faces to achieve the targets set in the Corporate Plan 2016 - 2020.
2. To discuss and share the needs and prioritized areas to be enhanced at the NWSDB.

Date and Time

21 October 2016: 0900 – 1400

Participants

The managerial officials of the NWSDB (approximately 7-10) (attach the participants list later)

Process

Step 1: Confirm the targets of the NWSDB



Step 2: Identify current status and challenges that the NWSDB faces



Step 3: Check of causes of the challenges that the NWSDB faces (mainly focusing on NRW, Asset Management, Water tariff, and HRD)



Step 4: Discussion of prioritized areas to tackle identified challenges



< Summary of findings >

Mission Statement of the NWSDB:

Vision: To be the most prestigious utility organization in Sri Lanka through technical and service excellence

Mission: To serve the nation by providing sustainable water and sanitation solutions ensuring total user satisfaction

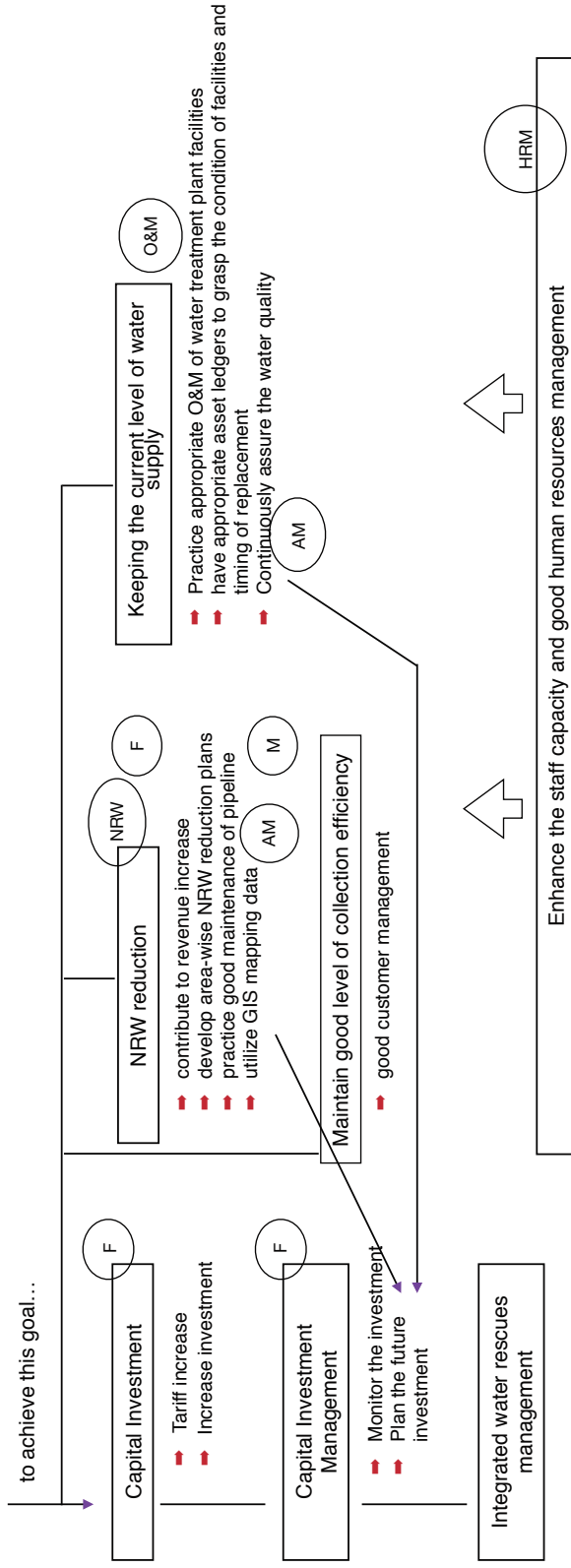
Mid-term vision of the NWSDB

In 2020... NWSDB will be more prestigious utility organization

- providing sustainable water (stable and safe)
- being financially viable

Priorities of the NWSDB

✓ Top priority of the NWSDB: 49.1% of piped water supply coverage by 2020



Goal 1: Increase water supply and sanitation coverage

Goal 1.1: Piped water supply coverage of 60% (49.1% by NWSDB) of the total population by 2020

Fact	Issue	Action
<p>1. Coverage is 45.9% at as of December 2015.</p> <ul style="list-style-type: none"> ➔ 35.2% (by NWSDB) ➔ 10.7% (by CBOs and others) 	<ul style="list-style-type: none"> ➔ Need to expand existing systems ➔ Need to develop new water supply systems ➔ Require more investment (see No. 3 below) 	<ul style="list-style-type: none"> ➔ Monitoring of on-going projects ➔ Look for available funds
<p>2. Water resources are limited.</p> <ul style="list-style-type: none"> ➔ 60% of rescues are surface water ➔ in some areas, there are conflicts with farmers 	<ul style="list-style-type: none"> ➔ Need more human resources for new development ➔ Quality (need capacity development) ➔ Quantity ➔ Need the integrated water resources management 	<ul style="list-style-type: none"> ➔ Better inter-agency coordination
<p>3. Capital investment is limited.</p> <ul style="list-style-type: none"> ➔ for new and expansion ✓ necessary cost: 500 thousand Rs/connection ✓ necessary cost: 500 billion Rs/year to achieve this goal 	<ul style="list-style-type: none"> ➔ Need to increase water tariff ➔ Difficult for political reason ➔ The revenue by water sales cannot cover capital investment (approval of parliament is necessary for tariff increase) ➔ Need to develop simplified formula (calculate the balance of energy cost and tariff) ➔ Interest rate of commercial loan is high compared with that of development partners ➔ Recently, lack of lower loan (availability of loan from development partners is less than before) 	<ul style="list-style-type: none"> ➔ Review process of setting water tariff ➔ set up appropriate tariff satisfying government and customers ➔ Look for available funds with lower interests ➔ Introduce competitive bidding for commercial loan???

Goal 1: Increase water supply and sanitation coverage

Goal 1.2 : Prepare water safety plan to ensure high degree of water security with respect to quality and quantity for all water supply schemes

Fact	Issue	Action
<p>Asset Management</p> <ol style="list-style-type: none"> 1. Mapping system based on GIS (ArcInfo) is used at NWSDB as asset ledger. 2. Information on facilities is inputted on GIS. <ul style="list-style-type: none"> ➔ basic information of pipelines, wells, etc. 3. Most of the information in Colombo city is inputted on GIS already. 4. Information of the facilities of water treatment plants is inputted in the different system. 	<p>Level of utilization and data input differs among areas</p> <ul style="list-style-type: none"> ➔ Depending on the perspectives of area managers <p>Necessary data is not inputted on GIS in areas except Colombo city</p> <ul style="list-style-type: none"> ➔ Need staff training <p>Data maintenance is not appropriately carried out</p> <ul style="list-style-type: none"> ➔ Need to do regular updates of the data ➔ Need to change the habit or culture of the staff for proper data input <p>GIS data is not effectively utilized</p> <ul style="list-style-type: none"> ➔ Need to promote usage for daily work <p>Need to use it for customer management</p> <ul style="list-style-type: none"> ➔ Easy to identify the location of customers on GIS Improve customer service <p>The system of managing facilities' information may need to be integrated (or need to be standardized)</p> <ul style="list-style-type: none"> ➔ GIS mapping system and information on water treatment plant facilities 	<p>Staff training of proper data input on GIS</p> <p>Promote GIS data input at all areas</p> <p>Show the actual usage of GIS to area managers and top management of RSCs</p> <p>In the future, data of GIS will be utilized for replacement plan or investment plan (business plan)</p>

Goal 2: Improve business efficiency

Goal 2.1 : Improve organizational efficiency to operate as a sustainable commercialized service

Fact	Issue	Action
<p>Reduce NRW</p> <ol style="list-style-type: none"> 1. NRW ratio in Colombo City is still high. <ul style="list-style-type: none"> → 46.1 % at as of December 2015 → To be reduced to 18% by implementation of ADB Project 2. National level of NRW ratio is 27.2% at as of December 2015 <ul style="list-style-type: none"> → Plan to reduce it to 25.0% by 2020 3. Although the pipelines are obsolete in many areas, the NWSDB will not be able to replace all of them by 2020. <ul style="list-style-type: none"> → In some areas, the soft-measures such as leak detection/repair or detection of illegal connection are effective to reduce NRW. 	<p>Expected that ADB project will greatly contribute to reduce NRW ratio in Colombo city</p> <ul style="list-style-type: none"> → The expansion plan prepared by former JICA technical cooperation project may be utilized in this project. → The soft-measures (NRW reduction activities) may be effective in other areas except Colombo city, especially south area of Colombo city or Matara. → NRW reduction in Matara will be included in the Water Sector Development Project III. → Need to prepare area-wise NRW reduction plan by identifying the effective measures to reduce NRW <ul style="list-style-type: none"> → the station or conditions are different among areas. → Need to use it for customer management <ul style="list-style-type: none"> → Easy to identify the location of customers on GIS → Utilize this for improvement of customer services → Improve customer service → The system of managing facilities' information may need to be integrated (or need to be standardized) → GIS mapping system and information on water treatment plant facilities 	<ul style="list-style-type: none"> → Practice good maintenance of replaced pipelines in the future → Prepare area-wise NRW reduction plan → Apply soft-measures of NRW reduction in some areas → In the future, data of GIS will be utilized for replacement plan or investment plan (business plan)

Goal 2: Improve business efficiency

Goal 2.1 : Improve organizational efficiency to operate as a sustainable commercialized service

Fact	Issue	Action
<p>Human Resources Management</p> <ol style="list-style-type: none"> Staff evaluation system was established in 1980s (old) Information of staff is not computerized. The performance measured by KPIs is linked to all employees bonus (once a year). 	<p>Need to update the staff evaluation system</p> <p>Need to prepare scheme (criteria) of staff recruitment</p> <p>Need to introduce ICT system for managing the information of staff</p> <p>Promote ICT</p> <p>Need to revise cadre system (?)</p> <p>Need to prepare successor plan for personnel replacement (transfer or retirement)</p>	<p>Update the staff evaluation system</p> <p>Prepare scheme of staff recruitment</p> <p>Revise cadre system?</p>

Goal 2: Improve business efficiency

Goal 2.1 : Improve organizational efficiency to operate as a sustainable commercialized service

Fact	Issue	Action
<p>Human Resources Development</p> <ol style="list-style-type: none"> Training programs are categorized into three types. <ul style="list-style-type: none"> In-house training Sending staff to external institutions Overseas training (scholarship type) such as JICA's counterpart training, training at Nagoya or Kobe. Lecture style training is applied for in-house training program (focusing on theory) Training programs are planned during October and December for next year. <ul style="list-style-type: none"> Training needs assessment is conducted in October/November, hearing the needs from section managers through on-line system. In December, the Manpower Development & Training Division prepare an entire plan Most of the training programs are carried out at the Head Office <ul style="list-style-type: none"> The number of staff who can participate in the training from RSCs is limited The number of trainers is limited. <ul style="list-style-type: none"> 8 trainers at the Head Office (Technical 2, IT 2, HR 1, Supply chain 1, Finance 1, Management 1) 5 trainers at RSCs Evaluation on training programs is conducted. <ul style="list-style-type: none"> Course evaluation is conducted at the end of the training programs Impact evaluation which is conducted in 6 months after the training is not successful. The resins rate is 10%. The training guideline is prepared. <ul style="list-style-type: none"> Ensure the frequency to participate in the trainings at least two times / year / staff at most four times / year/ staff 	<p>Practical training needs to be provided for staff (in-house training program)</p> <p>Need training equipment to provide practical training, especially technicians and engineers</p> <p>NRW reduction including leak detection/repair, connecting pipes, pipe laying, water treatment process, pollution management, HR, Supply chain management, IT, Financial management, billing system</p> <p>Need to carry out the trainings at regional level</p> <p>Better to decentralize the HRD (partially management as well) to the regional level</p> <p>including the decision of salary increase, etc.</p> <p>Need to encourage the staff motivation to participate in trainings</p> <p>Some of the staff are not willing to participate.</p>	<p>Develop the practical training programs</p> <ul style="list-style-type: none"> Revise contents of training Procure training equipment Train more number of trainers (TOT) <p>Develop on-line training program?</p>

Goal 3: Ensure greater accountability and transparency

- Goal 3.2 : Achieve better performance of activities of RSCs with improved services
- Goal 3.3 : Meet the debt service obligation of "Sustainable Loan Agreements" with the Government

Fact	Issue	Action
<p>Performance of RSCs</p> <ol style="list-style-type: none"> Level of authority of DGMs at RSCs. <ul style="list-style-type: none"> ➔ Tender: until 10 million Rs /tender ➔ Payment: until 5 million Rs/payment Conduct training for labors at the staff level of 0-15. (staff level ranges from 0 to 30) RSCs organize monthly staff meetings. RSCs do not have sufficient facilities including OA. Internal procedures taken at each RSC are not standardized. O&M practice at RSCs is not good. SOPs are not prepared or utilized appropriately. Key Performance Indicators (KPIs) are collected and summarized monthly at RSCs and reported to the Head Office. <ul style="list-style-type: none"> ➔ 11 KPIs: 1) Piped Water Connected Coverage, 2) Water Quality, 3) NRW, 4) Staff/1,000 Connections, 5) Defective meters/1,000 connections, 6) Estimated bills per 1,000 connections, 7) Energy Cost/ cum of water produced (Rs./ cum), 8) Accounts Receivable Period (months) (excluding disconnections), 9) Operating Ratio, 10) Stock Efficiency, 11) Customer Complaints/1,000 connections. Customer management is not appropriately practiced at RSCs in some cases. 	<p>Issue</p> <ul style="list-style-type: none"> Facilities or equipment need to be given to RSCs (such as PCs, etc.) Need to standardize the internal procedures at RSCs Need to enhance the O&M capacity at RSCs Need to have necessary SOPs at all RSCs Need to improve customer management at RSCs ➔ How to talk to the customers Need more loan from development partners Need transparency of competitive bidding for local banks 	<p>Action</p> <ul style="list-style-type: none"> Enhance various capacities of RSCs continuously Improve customer service
<p>Debt Service Obligation</p> <ol style="list-style-type: none"> Availability of loan is less than before <ul style="list-style-type: none"> < Capital investment in 2015> <ul style="list-style-type: none"> ➔ Local: Rs. 7.3 billion ➔ Foreign: Rs. 20.2 billion ➔ Total: Rs. 27.5 billion 		

Goal 3: Ensure greater accountability and transparency

Goal 3.3 : Meet the debt service obligation of “Sustainable Loan Agreements” with the Government

Fact	Issue	Action
<p>Performance of RSCs</p> <ol style="list-style-type: none"> 1. Level of authority of DGMs at RSCs <ul style="list-style-type: none"> ➔ Tender: until 10 million Rs /tender ➔ Payment: until 5 million Rs/payment 2. Conduct training for staff at the level of 0-15. (staff level: 0-30) 3. RSCs do not have sufficient facilities including OA. 4. Internal procedures taken at each RSC are not standardized. <ul style="list-style-type: none"> ➔ SOPs are not prepared or utilized appropriately 5. Key Performance Indicators (KPIs) are collected and summarized at RSCs monthly and reported to the Head Office. <ul style="list-style-type: none"> ➔ 11 KPIs: 1) Piped Water Connected Coverage, 2) Water Quality, 3) NRW, 4) Staff/1,000 Connections, 5) Defective meters/1,000 connections, 6) Estimated bills per 1,000 connections, 7) Energy Cost/ cum of water produced (Rs./cum), 8) Accounts Receivable Period (months) (excluding disconnections), 9) Operating Ratio, 10) Stock Efficiency, 11) Customer Complaints/ 1,000 connections, 6. Customer management is not appropriately practiced at RSCs 	<p>Need to improve office facilities or equipment such as PCs</p> <p>Need to standardize the internal procedures at RSCs</p> <p>Need to improve customer management at RSCs</p> <p>➔ How to talk to the customers</p>	<p>Enhance various capacities of RSCs continuously</p> <p>Improve customer service</p>

付属資料6 国内外の研修施設事例

1. 東京都水道局研修開発センター¹

(1) 敷地面積：177,000 m²（うち研修フィールド：4,500 m²）

(2) 実技エリアの機能： 以下表のとおり。

大口径配管実習施設	配水管の工事現場を模した溝内で、耐震継手管（φ500mm）の配管実習を行う
小口径配管実習施設	耐震継手管の T 字連絡（φ250×φ100）や切り回し配管（φ100）の実習を行う
浄水処理プラント	能力は 100m ³ /日×2 系統で、高濁度や pH 変動等における急速ろ過の浄水処理を経験する
漏水防止研修等実施エリア	配水小管（φ100）を使用し、サドル分水栓による給水管取り出しや、割継輪による応急修理（不断水）
舗装種別毎漏水探知実習エリア	電子式漏水発見器を使用して、3 種類の舗装（アスファルト等）の違いによる、漏水音の聞き分け
模擬漏水実習エリア	音聴棒、電子式漏水発見器を使用して、管材質の違いによる漏水音の聞き分けや漏水箇所の特定制
給水管布設等実習エリア	4 種類の給水管（ポリエチレン管、塩ビ管等）を用意し、布設替技術を習得
メーター取換え実習エリア	メーター柵内に設置されているメーター交換作業を行う
バルブエリア	スルース弁（φ500・φ700）及び空気弁（双口）の分解・組立やパッキン交換
減圧弁エリア	減圧弁（φ150）の構造や仕組み、操作手順を学ぶ
栓止エリア	鋼材防護の移動と特殊押輪の緩みで、配水小管（φ150）から継輪と栓が抜け落ちる実習施設

¹ (<https://www.waterworks.metro.tokyo.jp/suidoigvo/torikumi/kkcenter/>) 2017 年 2 月 28 日アクセス

(3) モデルエリアの機能： 以下表のとおり。

コンクリート擁壁モデル	コンクリート構造物の段階的な工程を学ぶため、擁壁モデルを例示（配筋、型枠設置、コンクリート打設等）
土留め、覆土、吊受防護等モデル	配水管（φ100・φ500）布設現場を想定し、各種土留・覆工・吊受防護などを例示
舗装種別カットモデル	4種類の舗装（透水性アスファルト、アスファルト、インターロッキングブロック、コンクリート）の施工面と断面を例示

2. 横浜市水道局管路研修センター²

(1) 敷地面積：951 m²（うち研修フィールド：901 m²）

(2) 研修フィールドの機能： 以下表のとおり。

配水管路施設	配水管路の基礎的な配管・水運用技術・維持管理技術等を習得 ○口径 100mm の NS 形・GX 形ダクタイル鋳鉄管等の配管技術 ○水撃圧体感装置 ○管栓拔出し疑似装置 ○サンドエロージョン疑似装置
給水管実習施設	口径 50mm 以下の給水装置の基礎的な配管・工法・維持管理技術を習得。 ○不断水穿孔から給水栓までの配管技術 ○漏水修理等に伴う維持管理技術
漏水調査実習施設	音聴棒、電子式漏水探知機、相関式漏水探知機等による地下漏水を探查する技術を習得

² (<http://www.city.yokohama.lg.jp/suidou/kvoku/torikumi/sonota/kashidashi.html>) 2017年2月28日アクセス

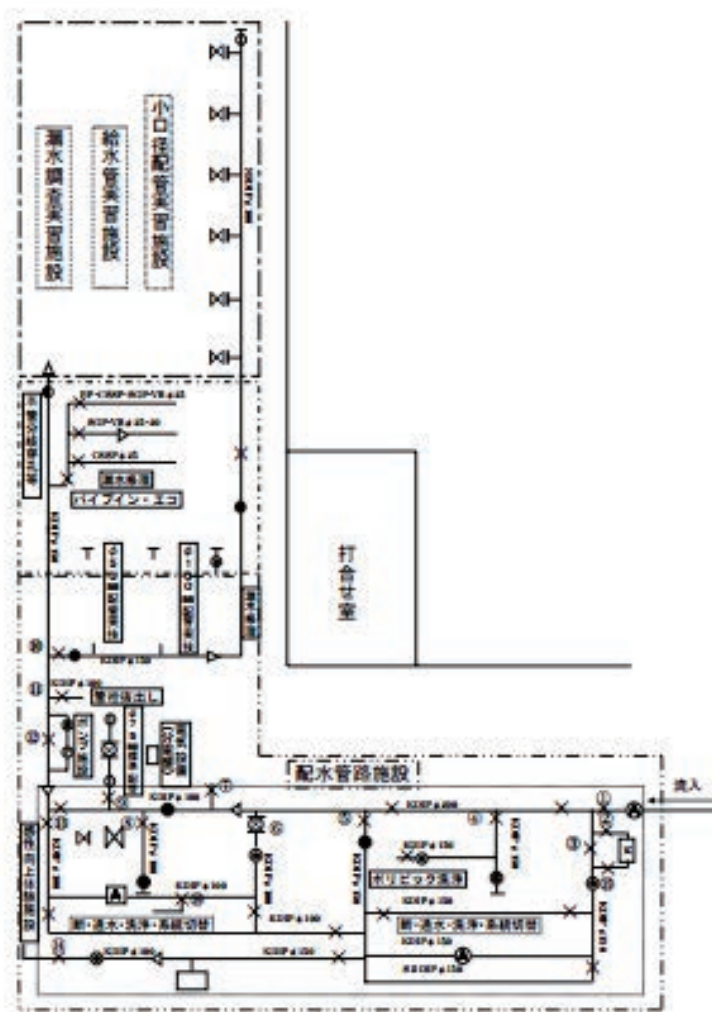


図 1 横浜市管路研修施設詳細図



相關式漏水探知機を用いた訓練の様子



研修フィールド

3. 名古屋市上下水道局技術教育センター³

(1) 敷地面積： 19,436 m² (うち研修フィールド： 12,714 m²)

(2) 主な機能： 以下表のとおり。

給配水設備施設	一般家庭の給水機器や排水設備の構造等を習得する施設
屋内給水漏水調査施設	屋内給水管の漏水調査を実習する施設
給水管接合実技施設	給水管の分岐工法、配管工法、漏水修理などの技術を習得する施設
バルブ操作施設	φ 600 mmバタフライ弁等を利用して、適切なバルブ操作を実習する施設
屋内配管実技施設	日水協配水管工技能講習会(□)などを実施。全天候型施設
切管挿し口加工実習施設	キールカッターで直管の切断、溝切後、挿し口形成を実習する施設
模擬道路施設	車道幅員 8m、歩道幅員 4m の模擬道路を利用して保安設備の配置等を実習する施設
大口径管接合実技施設	直径 300mm、900NS 形、600S 形、KF 形、印籠継手、1350US 形、1100 水圧試験等の接合実習施設 (延長約 50m×2)
エコロールパイプテストヤード	名古屋上下水道総合サービス(株)と共同開発し、特許を取得したエコロール工法(ポリエチレン管引抜工法)の実演施設

4. ペナン水公社「研修グラウンド」

草の根技術協力「マレーシアにおける無収水削減技術研修・能力向上プロジェクト⁴」において整備された研修グラウンド。

配管及びその埋設条件はマレーシアで採用されているものが適用されている。

(1) 敷地面積： 704 m² (横 32m×縦 22m)

(2) 主な機能： 漏水探知実習、配管実習

(3) 漏水対策機器： 以下表のとおり。

電子式漏水探知機	5 台	音聴棒	10 本
TS-LC	2 台	相関式漏水探査機	1 台
ヘリウムガス漏水探査機器	1 台	金属管探知機	1 台
水質検査用キット	1 台		

³ (<http://www.water.city.nagoya.jp/intro/library/education/content3.html>) 2017 年 2 月 28 日アクセス

⁴ 東京水道サービス株式会社から提供



訓練の様子



研修グラウンド

付属資料7 収集資料リスト

第一次現地調査収集資料リスト

入手先	資料名称 (内容)	形態	番号
Western South RSC	WS RSC のプレゼンテーションスライド	HC	1-1
Western Central RSC	WC RSC のプレゼンテーションスライド	HC	1-2
Western North RSC	資産台帳 (備品台帳)	HC	1-3
Southern RSC	資産管理台帳の例	HC	1-4
Central RSC	Eriyagama 配水系統の配管図と DMA の設定状況	HC	1-5
Kandy Municipal Council	水道料金表	HC	1-6
Greater Kandy Project	Project Area for NRW Reduction Pilot Project	CD	1-7
	水道料金の改定に関する上申書	HC	1-8
	資産管理に関するプレゼンテーション資料	HC	1-9
	Establish of Gauge Station and obtaining flow measurement of water Streams, Rivers and Water Resource Development plan	HC	1-10
新日本ランカ	会社概要	HC	1-11
Greater Colombo Water and Wastewater Management Improvement Investment Project (GCWWMIIIP) Office	NRW ビル (新トレーニングセンター) のデザイン	HC	1-12
	プロジェクトの DMA ゾーン及び プロジェクトパッケージの詳細図	HC	1-13
	NRW 管理・建設監理コンサルタントの TOR	HC	1-14
戸田建設	GCWWMIIIP の地域区分図	HC	1-15
GIS Mapping Center	GIS マッピング図面アウトプット	HC	1-16

*HC : ハードコピー CD:コンパクトディスク

第二次現地調査収集資料リスト

入手先		資料名称 (内容)	形態	番号
NWSDB	Policy & Planning	2016 年料金改定案	HC	2-1
	Western Central RSC	Western Central RSC の事業概要	HC	2-2
		無収水対策 10 年間(2017-2027)展開計画 (NRW Unit)	HC	2-3
	Western South RSC	保有 NRW 機器リスト	HC	2-4
		メーター検針票	HC	2-5
Ministry of City Planning and Water Supply		MCPWS 組織図	HC	2-6
		MCPWS 所管事項	HC	2-7
		National Policy on Drinking Water	HC	2-8
		NWSDB 法(1974)	HC	2-9
		NWSDB 修正法(1992)	HC	2-10
		MCPWS2017 年予算見積総括表	HC	2-11
		MCPWS2017 年予算見積積算表	HC	2-12
		投資的経費配付手続・時期	HC	2-13
		NWSDB 予算執行状況	HC	2-14

*HC はハードコピー

