



**Minutes of the 362<sup>nd</sup> meeting of KWA held on 04/07/2013 at 11.00 a.m. in the Conference Hall, Kerala Water Authority, Thiruvananthapuram.**

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**Present:**

1. Sri. V.J. Kurian, IAS, Additional Chief Secretary (WR) Chairman
2. Sri. James Varghese, IAS Principal Secretary, LSGD
3. Sri. Ashok Kumar Singh, IAS Managing Director
4. Sri. K. V. Mani Member
5. Sri. Johny Areekattel Member
6. Sri. John Thomas Member
7. Sri. E. K. Chellappan Member
8. Sri. T. C. Subran Technical Member
9. Sri. V.S. Pradeep, (FM&CAO) Special invitee
10. Sri. R. Sukumaran Special invitee
11. Sri. Joseph Mathew Secretary

*Item No. I (1) Confirmation of the Minutes of the 360<sup>th</sup> Meeting held on 30/04/2013*

The Authority Confirmed the Minutes of the 360<sup>th</sup> Meeting held on 30/04/2013 with the following modifications  
Resolution No. 9425 may be corrected as - "The Authority directed that the Superintending Engineer, PH Circle, Kollam may be directed to submit as to whether the work can be started during monsoon."

*Item No. I (2) Confirmation of the Minutes of the 361<sup>st</sup> Meeting held on 14/05/2013*

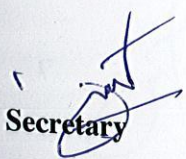
The Authority Confirmed the Minutes of the 361<sup>st</sup> Meeting held on 14/05/2013

*Item No. I (3) Review of Action Taken in the Previous Meetings*

The Authority Reviewed the Action Taken in the Previous Meetings  
The Authority observed that there is delay in implementing the Authority decisions. Hence the Authority directed that the Decisions taken by the Authority should be implemented without any delay.

*Item No. II (1) Monthly Plan Progress report for the month of May 2013(Annual plan 2013-14/Budget) and list of schemes completed during 2012-13*

Noted

  
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*Item No. II (2) Drought Relief Works- 2013 - Sanctioned-phase III - Ratification*

**Res. No. 9465** The Authority resolved to ratify the action of Managing Director in having sanctioned the Draught Relief works as Phase III, for 92 sanctions amounting to Rs.616.81 lakhs.

*Item No. II (3) Replacement of old pipes to AUWSS to Chalakkudy- replacing damaged 400mm dia. AC pipe with 400mm DI K7 pipe at Urumbankunnu – Sasthamkunnu*

**Res. No. 9466** The Authority took note of the emergency situation and resolved to accord Administrative Sanction for an amount of ₹ 78.5 lakhs for the replacement of old pipes to AUWSS to Chalakkudy- replacing damaged 400mm dia. AC pipe with 400mm DI K7 pipe at Urumbankunnu – Sasthamkunnu, under the Head of Account 2215-01-190-94 - Replacement of Old and Damaged pipes (Scheme Code 19 - Replacement of pipes).

*Item No. III (1) Jalmani Programme –Supply, installation and maintenance of standalone water purification system in the Rural schools in Kerala*

**Res. No. 9467** The Authority discussed the matter in detail and resolved to approve the proposal of implementing Jalamani Programme of Govt. of India, by short listing the 3 Firms M/s. Eureka Forbes, M/s Hindustan Uni Lever and M/s KENT with the approved rates of the products mentioned below.

Sl. No.	Firm	Model	Unit	Rate	Remarks
1	Eureka Forbes	Aqua guard Classic water Filter cum purifier	1	11,146.50/E	Including Warranty/ AMC for 5 years
		Aqua guard Verve Water Filter cum purifier	1	10,296.50/E	Including Warranty/ AMC for 5 years
		Aqua guard Pride Water Filter cum purifier	1	7,566.50/E	Including Warranty/ AMC for 5 years
		R.O. Model	1	27,609.50/E	Including Warranty/ AMC for 5 years

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2	Hindustan Unilever Ltd.	Pureit Classic	1	2,176/E	GKK to be purchased after every 1500lit by PTA/ school Authority @Rs450/-. No AMC
		Pureit Classic - Autofill	1	3,241/E	
		Pureit Marvella UV	1	7,398/E	
		R.O.Model	1	13,880/E	
3	KENT	KENT Maxx Storage UV purifiers	1	11,300/E	In Warranty/AMC for 5 years replacement charge of filter and plastic parts not included.
		R.O.Model	1	20,500/E	In Warranty/AMC for 5 years replacement charge of filter, R.O.membrane and plastic parts not included.

Suitability of appropriate product shall be decided by the Executive Engineer based on quality of water to be treated. It was also **decided to collect and circulate the list of schools, for implementing the programme. Executive Engineers of O & M Divisions shall be entrusted with implementation of the works and the Secretary will co-ordinate.**

*Item No. III (3) Procurement of new vehicle for the official use of KWA-sanction*

**Res. No. 9469**

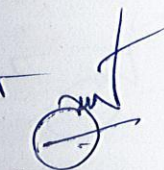
The Authority discussed the agenda in detail and noted that there is no sufficient fund for procuring the listed vehicles. Hence the Authority **resolved to approve the proposal for procurement of mentioned vehicles in a phased manner based on availability of funds after prioritizing the requirement for the offices.**

It was also directed that action may be taken to dispose the old petrol vehicles. In case, no sufficient funds are available for procuring new vehicle on replacement basis the Authority directed to give sanction for hiring the vehicles ensuring that there is no idling of Drivers.

*Item No. III (2) Adoption of pipe policy in Kerala Water Authority*

**Res. No. 9468**

The Authority discussed all the points mentioned in the draft pipe policy and **resolved to adopt the draft pipe policy in Kerala Water Authority. The details of pipe policy are mentioned as below.**



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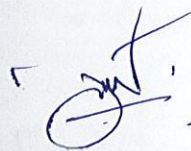
**POLICY FOR ADOPTION OF PIPE MATERIALS IN  
WATER SUPPLY AND SEWERAGE SCHEMES**

1. The KWA is implementing Water Supply and Sewerage Schemes in the entire State of Kerala. In Water Supply and Sewerage Systems, Pipe materials and other allied accessories contribute to over 60% of the total cost of the schemes and are critical to the success or otherwise of the schemes. Pipe materials that lead to frequent pipeline bursts and leakage and lend themselves to easy illegal tapping result in enormous wastage/loss of water, higher pumping costs, higher repair/maintenance/replacement costs, and reduced public satisfaction due to poor service delivery. This has been the case with several KWA schemes in the past. There are 3 main reasons for this state of affairs:

- (i) There is little by way of standardization of pipe materials for different types of uses, and choice of materials is left to the discretion of the engineers without any guideline for preparing the estimates and on several occasions, wrong choices were made.
- (ii) There is little proper documentation of the lessons learnt from previous schemes, especially of the reasons for failure, with the result that the same mistakes have been committed over and again.
- (iii) There is a tendency to look at only the initial cost of pipes rather than the total life cycle cost. A pipe material with a high initial cost but with a life of 60 years and requiring low repair/maintenance/replacement costs may actually turn out to be cheaper on total lifecycle cost basis than another pipe material with a low initial cost but whose life is only 5-10 years and which entails very high repair/maintenance/replacement costs.

2. In the past, KWA used to implement mostly smaller WSS costing less than about Rs.10 crores. But in the recent past and over the next few years, KWA will be implementing mega schemes with huge outlays running to hundreds of crores of rupees. While failure of water supply schemes owing to poor selection pipe material and consequent waste of public money cannot be countenanced even in the case of smaller WSS, there is simply no question of giving even the slightest scope for failure of these mega water supply schemes costing hundreds of crores of rupees owing to wrong and unscientific choice of pipe materials.

Hence the need for a "Pipe Policy" which builds on the lessons learnt from past failures, standardizes the choice of pipe materials for different types of uses based on detailed theoretical as well as practical considerations, and at the same time avoids rigidity and remains open to new alternatives.



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Also the Ministry of Drinking Water Sanitation, Govt. of India has decided to focus on implementation on piped water supply schemes in the 12<sup>th</sup> Five Year Plan period as per the 12<sup>th</sup> Five Year Plan Approach and Strategic Plan (2011-2016) of the Ministry of Drinking Water Sanitation. Since selection of pipe material becomes a significant part of the Detailed Project Report, the Govt of India directed to take action to prepare and notify a "State Pipe Policy" at the earliest.

The "Piping Policy" has been evolved in consultation with a number of experts within KWA and based on the recommendations of the High Level Technical Committee (HLTC)

3. The specifications, characteristics and use of various types of Pipes, required in Water Supply and Sewerage Schemes were analysed in detail.

### 3.1 Salient features of Pipes

The salient features of pipes namely size of pipes, standard length, allowable operating pressure, type of jointing, bedding required for laying the pipes, availability of specials, service connections, repair methods, relevant IS Standards, advantages and limitations of each pipe were discussed.

#### ➤ Selection Criteria of pipe materials.

The pipe selection depends on a number of factors including

- Selection on the basis of availability.
- Selection on the basis of nature of fluid and external soil / atmospheric condition
- Selection on the basis of user profile e.g. risk of third party damage.
- Selection on the basis of laying condition and structural stability.
- Selection on the basis of hydraulic parameters.
- Final Selection on the basis of economics.

#### A. Metallic Pipes:

##### (i). Cast Iron (CI) Pipes:

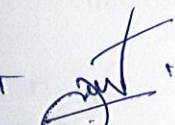
Availability : 80mm dia to 1050 mm dia; 5/5.5m length.

Pressure rating: 10 kg/cm<sup>2</sup> to 16 kg/cm<sup>2</sup>

- The CI pipes are manufactured with molten iron by spinning or centrifugal action (IS.1536)
- The pipes are spigot and socket type to be jointed with rubber gaskets.
- CI flanged pipes are usually cast in the larger diameters.
- Bituminous coating is provided inside and outside of the pipe.

#### Advantages:

- Moderate mechanical strength and toughness.
- High resistance against compressive force.
- Good beam strength.

  
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- High performance, simple to install joint.
- Pipe joint deflection (5 degree to 2 degree) and longitudinal withdrawal (dismantling).
- Not susceptible to corrosion under normal soil condition.
- Pipe impermeable to gas and organic contaminants.
- Wide range of dia (80 mm to 1,050 mm) available.
- Easy to locate underground pipe / leakage detection.
- Imported bedding material and backfill material not required.
- Relatively unskilled labour can lay pipes.
- Complete range of fittings available.
- Electrical dis-connectivity at joints means low risk of stray current corrosion.

**Disadvantages:**

- Relatively heavy (particularly above 300 mm dia).
- Brittle. Prone to development of hairline cracks during handling / transport and lying at site.
- Not good for high pressure application.
- Susceptible for failure under surge conditions.
- Since CI pipes are not available with cement mortar lining, incrustation and tuberculation takes place after some years of use reducing the flow diameter and cause red water problem.
- Due to the entry of DI pipes in Water Supply sector, the manufacturers of CI pipes either switched over to DI pipes or reduced/stopped the production of CI pipes.

**Application:**

**Suitable for:**

- All application including pumping main subject to moderate water hammer
- Gravity distribution mains.
- River Crossing pipe line
- Pump delivery with CI flanged pipes

**Not recommended for:**

- Extremely aggressive waters.
- High pressure applications.
- Grounds which are susceptible to horizontal and vertical movement

**(ii) Ductile Iron (DI) Pipes :**

Availability: 80 mm to 2000 mm diameter; upto 6m length. Pipe size upto 1000 mm is in the normal range of production presently and is easily available at present.

Pressure rating: 20Kg/cm<sup>2</sup> to 70 kg/cm<sup>2</sup>

- In the manufacture of DI pipes, small amount of magnesium is added to molten iron to form an alloy. The magnesium causes the flaky graphite changed into microscopic spheres.

  
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- Uniform distribution of modular carbon graphite in iron improves its property in corrosion resistant.
- The DI pipes have more tensile strength, ductility and toughness.
- DI pipes are normally manufactured using centrifugal process to ensure a uniform thickness throughout its length.
- Cement mortar lining to the pipes provides a smooth inner surface and prevents tuberculation by creating a high pH at the pipe wall and by providing a physical and chemical barrier to the water.
- IS 8329 provides specification for the centrifugally cast DI pipes.
- The pipes are spigot and socket type to be joined with push on rubber gasket.

#### Advantages:

- High mechanical strength and toughness.
- Relatively unskilled labour can lay pipes.
- High fatigue resistance.
- High resistance to handling/transport damage and accidental damage at site.
- Simple to install joints.
- Pipe deflection (5 degrees - 80 mm to 300 mm dia, 4 degree -350 mm to 1600 mm dia. Pipe) and longitudinal withdrawal (dismantling).
- Provided with corrosion protection internally viz. internal cement mortar lining.
- Pipe impermeable to gas and organic contaminants.
- Easy to locate underground pipe/leakage detection.
- Complete range of fittings available.
- Under pressure connections and system modifications are easier.
- Electrical dis-connectivity at joints means low risk of stray current corrosion.

#### Disadvantages:

- Relatively heavy
- Risk of increasing pH for cement mortar lined when conveying soft water of alkalinity less than 25 mg/ Litre (unless bitumen/seal coated).
- Should be laid with polythene sleeving in very aggressive soil.
- Cost is higher than MS.

#### Application:

##### Suitable for:

- All application
- Pumping main subject to surge and water hammer.
- Sewerage system if leakage is major concern.

#### Not recommended for:

Extremely aggressive soils water (unless high performance protection is specified).

  
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## (iii) Mild steel (M.S) Pipes:

Availability: 168.3 mm to 2,540mm diameter; 6m-12m length.

Pressure rating: Depends on grade of steel and to design requirements.

- MS pipes of smaller diameters can be made as tubes from solid bar sections by hot or cold drawing (extrusion) process and these tubes are referred as seamless.
- Large diameter pipes are manufactured by, either longitudinal or spiral welding together the edges or suitably curved plates.
- The thickness of a steel pipe is always considerably lesser than the thickness of corresponding size of CI pipes.
- Due to their elasticity, MS pipes adopt themselves to changes in relative ground level without failure.
- Inside of MS pipes needs protection from corrosion internally and externally against internal corrosion.
- MS pipes are given epoxy lining or hot applied coal tar/asphalt lining or rich cement mortar lining at works by the centrifugal process.
- The outer coating for underground pipe line may be cement mortar coating or hot applied coal tar asphaltic enamel reinforced with fibreglass fabric yarn.

## Advantages:

- Longer length (6 to 12m). Hence lesser number of joints / lesser leakages.
- High mechanical strength toughness.
- High fatigue resistance.
- Flexible when coating and lining is also of flexible type viz. Poly ethylene lining or poly urethane lining.
- Can be welded to repair and anchor that will resist end load.
- Pipe impermeable to gas and organic contaminants.
- Leakage detection and underground pipe location is easy.
- Easy repair by welding.

## Disadvantages:

- Heavy.
- Welded joints require skilled installation and special equipment – high cost.
- Susceptible to corrosion if protection systems are not provided/damaged.
- Difficult to protect the welded joints from inside which remains vulnerable.
- Cathodic protection requires regular monitoring / maintenance.
- Potential rise in pH occurs when conveying soft water.
- Dependant on stable support from soil.
- Retrospective installation of fittings / repair may be difficult if non-standard sizes used.
- Normally available without any corrosion protection at factory- subsequent protection given at site on corroded pipe is not much effective.



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- The coating can be damaged by an outside mechanical force (such as adjacent construction or rough handling) or from corrosion.
- Field cutting BCCP gasketed joints is impractical.
- Tapping BCCP is not so easy.

As a general policy, the use of BWSC pipes shall be avoided as far as possible, due to the inherent disadvantages as mentioned above. Since there is only one manufacturer at present advantage of competition may not be possible.

(V) Galvanized Iron pipes (GI pipes):

GI pipes are used for internal water supply connections in the house and for pumping main in hilly areas. The pipes are available in heavy, medium and light duties. As a general policy the usage of GI pipes are to be minimised due to its vulnerability to corrosion at joints and should be resorted to only when other options are not possible.

B. Cement pipes:

(i).Asbestos Cement Pressure Pipes (AC Pipes):

Availability: 50 mm dia. to 1000mm dia: upto 6m length available.

Pressure rating: 5 kg/cm<sup>2</sup> to 25 kg/cm<sup>2</sup>.

Advantages

- Ease of jointing.
- Rigidity.
- Corrosion resistance to most soils and waters.
- Flexible joints tolerate some deflection.

Disadvantages:

- Pipes cut on site need machining to correct diameter for jointing.
- Heavy & brittle. Susceptible to failure under point loading
- Susceptible to impact damage.
- Low beam strength.
- External diameter changes with class.
- Underground pipe location is difficult. As a result leakage detection is complicated.
- Installation of CI fittings/ repair complicated. AC fittings are not available.
- Shorter length. So relatively high number of joints per unit length.
- Permeable to certain organic contaminants especially when dry.
- Need for precaution against asbestos about risk during manufacture, cutting and site machining:
- Low service life. Replacement is a problem.
- Penetration of roots of trees through the joints into the pipe and spreading inside the pipe and reducing the hydraulic capacity.

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## Application:

## Suitable for:

- Mostly suitable for low pressure application under gravity flow.
- AC pipes can also be used under the following local conditions.
  - Ground subject to minor Improvement & subsidence (gravelly soil).
  - Minor carriageway' (low traffic load)
- Pumping and high pressure mains
- High levels of organic contaminants.
- Soil/water aggressive to cement
- Ground subject to high degree of movement and subsidence e.g. block cotton soil.
- Major carriage way (high traffic load).

## Not Advised in:

Due to the above disadvantages, as a general policy decision AC pipes should not be used for water supply schemes.

## (ii). Reinforced Cement Concrete pipes (RCC pipes):

Availability: 300mm dia. to 1800mm dia (NP3); upto 2.5m length.

Pressure rating: From 2 kg / cm<sup>2</sup> to 6 kg / cm<sup>2</sup>

- RCC pipes are made of centrifugal spinning or vibratory process.
- The pipes are manufactured either with plain ends to be jointed with RCC colors or with socket and spigot ends to be jointed with rubber gaskets.

## Advantages:

- Customized pipes can be designed according to the local parameters.
- High beam strength & rigidity
- High degree of compaction of backfill is not required
- Can withstand high earth load

## Disadvantages:

- Heavy.
- Susceptible to impact load.
- Repairing at site is difficult and time consuming.
- Pipes cannot be cut in the field.
- Jointing method is unreliable and susceptible to leakage
- Vulnerable to chemical attack by certain soil types and waters.
- Leakage detection is not easy.
- Joints are relatively inflexible
- Walls are not water tight



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- Not easy to add connections after installation.
- Shorter length (2.5m) means increased number of joints.
- Concrete pipe is produced in shorter lengths as compared to most flexible pipes due to its notable weight, transportation requirements and manufacturing methods and hence, number of joints is more comparing other types of pipes. Hence more leakages are likely to arise.
- They are not preferred for water transmission systems.
- Smaller lengths more joints and hence more leakage susceptibility.

## Application:

## Suitable for:

- Low pressure gravity main for sewers
- Light / medium traffic loads
- Contaminated land (organic).

## Not Advised in :

- Aggressive soils / waters
- Land contaminated with high concentration of solvents

## (iii). Pre-stressed Concrete pipes {PSC pipes}:

Availability: 200 mm to 2500 mm diameter; upto 6m length available.

Pressure rating: From 2 kg / cm<sup>2</sup> to 18 kg / cm<sup>2</sup>.

- They are manufactured in 6 metre lengths comparing to 2.4 metre length of RCC pipes.
- There are two types of PSC pipes in use today viz. a) Cylinder type and b) Non cylinder type.
- Cylinder Pipes:
 

Consists of a hydraulically tested steel cylinder (to produce 1400 kg / cm<sup>2</sup> hoop stress) with steel joint rings welded to its ends, centrifugally cast concrete core, and wrapped around the core with helix of highly stressed wire (13200 kg / cm<sup>2</sup>) and coated with dense rich cement mortar or concrete). The interior surface of PSC cylinder is very smooth and corrosion free. The external cement mortar coating of PSC cylinder is rugged shield that protects the pipe from normal damage during transport.
- Non-cylinder pipes:
 

Consists of a core, which is pre-compressed, both in longitudinal and in circumferential directions by highly stressed wire. The wire wrapping is protected by a coat of cement mortar or concrete.

## Advantages:

- Customized pipes designed to suit local conditions for different pressure rating.
- High beam strength & rigidity:

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- High degree of compaction of backfill is not required.
- Underground pipe location is easier in case of cylinder type pipes.
- Can withstand high earth load.

**Disadvantages:**

- Heavy.
- Repair methods complex and time consuming.
- Susceptible to impact damage.
- Pipes cannot be cut in the field.
- Vulnerable to chemical attack by certain soils and waters.
- Underground pipe location (Non-cylinder) and leakage detection is not established.
- Joints are relatively inflexible.
- Not easy to add connection after installation.
- Cylinder type PSC pipes with socket and spigot rings with rubber gasket joints not mostly used in India. IS -specification yet to be established.

**Applications:**

**Suitable for:**

- Most applications including Low head gravity mains
- Low pressure pumping mains
- Light / medium traffic

**Not Advised in :**

- Aggressive soils / waters
- Land contaminated with high concentration of solvents (Non - cylinder)
- Ground subject to movement and subsidence (non cylinder or block cotton soils).
- Location subject to high levels of third party interference (Non-cylinder)

Due to the above disadvantages as a general policy usage of PSC pipes used for water supply schemes should not be used water supply schemes.

**c. Plastic pipes:**

**(i). Polyvinyl Chloride (PVC) pipes:**

Availability: From 40mm dia to 600mm dia; upto 6m length available.

Pressure rating : From 2.5 kg / cm<sup>2</sup> to 10 kg / cm<sup>2</sup>

- Polyvinyl chloride (PVC) is a polymer of vinyl chloride. The Vinyl Chloride is polymerized, to form long chains of polyvinyl chloride.
- PVC pipes are manufactured by extrusion process followed by" calibration to ensure maintenance of accurate internal diameter with smooth internal bores;
- They are manufactured as per IS 4985 - 2000.

**Advantages:**

- Corrosion resistant in most environments.

  
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- Light weight.
- Ease of jointing.

Disadvantages:

- Very limited joint deflections.
- Strength deteriorates with time.
- Joints need to be anchored.
- Susceptible to impact damage.
- Leakage detection complicated.
- Susceptible to poor installation practice.
- Underground pipe location difficult.
- Appropriate pipe zone back fill material must be used.
- Not suitable for high pressure applications.
- Ultraviolet degradation on prolonged exposure to direct sun light.
- Risk of pipe flotation.
- Disposal after use (cannot be recycled).
- Susceptible to failure under cyclic load.
- May fail during taping

Applications:

Suitable for:

- Low stress and low pressure pumping applications.
- Corrosive soil.
- Minor carriage way.
- Gravity distribution system.

Not Advised in:

- Above ground installations
- Pumping mains.
- Surge conditions.
- Major carriage ways.

It may be noted that as a general policy decision, the use of PVC pipes shall be limited to 160 mm dia and a minimum of 6 Kg/ cm<sup>2</sup> pressure rating pipe should be used for all schemes.

(ii). Polyethylene pipes (PE Pipes)

A. Medium Density Polyethylene (MDPE) pipes

MDPE pipes are manufactured from medium density polyethylene pipes grade materials for smaller diameter pipes as per IS 4987. The pipes are flexible and available in coil form for long lengths.

As a general policy decision the use of MDPE pipes shall be considered for house connections.

B. High Density Polyethylene (HDPE Pipes) Pipes:

HDPE pipes are manufactured from High Density Polyethylene pipe material

  
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PE 63, PE 80, PE 100 a most versatile material suitable for pipes. Pipes are manufactured as per IS 4984 - 1995 & IS 14151. The pipes are available in coil form or: straight lengths depending on sizes and customers requirements.

➤ HDPE Pipes

Availability: 50mm to 800mm diameter; 6m and above length available.

Pressure rating: 2.5 kg/cm<sup>2</sup> to 16 kg/cm<sup>2</sup>.

Advantages:

- Out of trench jointing possible.
- Alternative installations techniques possible (Trenchless installation, narrow trenching etc.).
- Corrosion resistant.
- Can be fusion welded to form leak free system that will resist end load.
- Flexible.
- Relatively light weight
- Can be made into a coil; easily bent, thereby eliminating specials.

Disadvantages

- Retrospective installation of fittings / repair is complicated.
- Fusion jointing requires skilled installers and special equipment, which is not easily available in rural areas.
- Leakage detection is complicated. Underground pipe location is difficult
- Ultra violet degradation of HDPE on prolonged exposure to direct sunlight
- Strength deteriorates with time and rise in temperature.
- Susceptible to permeation by certain organic contaminates

Applications:

Suitable for:

- Low and medium stress application/minor carriage ways.
- Gravity distribution mains.
- Ground subject. to minor movement & subsidence.

Not Advised in :

- High pressure pumping.
- Above ground installations.
- Ground contaminated with organic chemicals.
- Major carriage ways

The use of HDPE pipes are more economical and to be considered for smaller diameter pipes upto 110mm where they are available on coils thereby avoiding joints. Hence lesser number of joints thereby reducing leaks and the rates of pipes are quiet reasonable. As a general pipe policy decision the use of HDPE pipe shall be preferred up to 200mm since cost of pipe shall be appreciably high beyond 200mm.

  
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### III. GLASS FIBRE REINFORCED (GRP) PIPES:

Availability: 200mmdia to 3000mmdia; 6m and above lengths available.

Pressure rating: 3 kg / cm<sup>2</sup> to 20 kg / cm<sup>2</sup>•

- The matrix resin of Glass Fibre Reinforced Plastic (GRP) pipes consists mainly of cured polyester, but contains also small proportions of various additives. Generally, the matrix constitutes about 70 percent weight of the pipe material, the reinforcement being the other major component.
- The most popular matrix formulation used in pipes, are based on general purpose polyester, isophthalic modified polyester, polyester of biphenyl A, vinyl ester, and Chlorinated polyester resin
- Glass fiber is, however, the most common reinforcement used in plastic pipes. It may be continuous fiber, woven fabric, non-woven mat or chopped strand.
- By suitable selection of the resin matrix, GRP pipe can be made to resist aggressive fluids or soils and to withstand the corrosive action of most industrial chemicals at temperatures up to 105°C. GRP pipes are manufactured conforming to IS 12709 - 1994.

#### Advantages:

- Relatively light weight.
- Corrosion resistant.
- Ease of jointing.
- Flexible joints tolerable angular deflection (10 to 30) depending on diameter.
- Can be customized depending on operating conditions.

#### Disadvantages:

- Susceptible to impact damage. May suffer strain corrosion attack in soil/water of low pH.
- Dependent on stable support from the back filled soil. Hence costly/imported backfilling is necessary.
- Pipe location difficult. Retrospective installation of fitting / repair complicated.
- Susceptible to permeation / structural degradation by certain organic contaminants.
- Poor resistance to negative surge pressures.
- Strength and stiffness deteriorates with time.
- GRP fittings require full concrete surround.
- Jointing pipes (repair) in wet conditions in difficult

#### Application:

Suitable for

- Low and medium stress applications including sewerage and gravity mains.

Not Advised in:

- High pressure pumping mains / surge condition

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- Minor carriageways
- In location prone to third party interference
- Grounds which are susceptible to horizontal and vertical movement
- Where soil/water pH less than 5.5

Due to the above said disadvantage as a general policy usage of GRP pipes used for water supply schemes should be limited.

#### 4.2. Experience of usage of various types of Pipes:

A. Metallic Pipes: Cast Iron. Pipes/DI pipes/M.S. pipes/BWSC pipes/GI Pipes:

i) In general, the performance. of Metallic pipes is satisfactory as compared to Cement / Plastic Pipes. As a general pipe policy, designers are advised to prefer metallic pipes to non- metallic pipes.

#### ii) M.S. Pipes:

For higher pressure applications, M.S. Pipes of higher diameter are more economical as compared to CI and DI pipes. Such pipes have been widely used for pumping mains, for higher diameters in various water supply schemes, and found to be generally satisfactory.

M.S. pipes are found to be more rigid & have many advantages in the usage Since MS pipes are welded at joints; they are more suitable where the alignment of laying pipes vary considerably. But care should be taken to have anticorrosive protection throughout and more specifically at joints. Effort should also be taken to have cathodic protection for pipe that can extend the life of the pipe to a very great extent. . As a general policy decision only lined MS pipes to resist corrosion are to be used.

#### iii) BWSC Pipes:

The external cement mortar lining in BWSC pipe is susceptible to damage by outside mechanical force .and such problems are not encountered with in M.S. Pipes with coal tar / epoxy external coating. Also, BWSC pipes cannot be manufactured with coal tar / epoxy coating. The usage of BWSC pipes has not been reported in many States.

Considering the attributes prescribed by CPHEEO namely capacity to absorb surge pressure, capacity to withstand damage in handling and maintenance, resistance to external corrosion, durability (sustainable trouble free maintenance), reliability and effective joints, easy repair and maintenance, BWSC pipes are not preferable compared to other metallic pipes and hence not recommended in any schemes.

#### iv) D.I. Pipes:

For a design engineer the first priority in selection of pipe shall be DI pipe. Designers may resort to other pipe only when the use of DI pipe cannot be resorted to

  
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on technical ground. D.I. pipes are being widely utilized for transmission of water in various water supply schemes in KWA and are quite satisfactory in terms of installation, performance and maintenance. D1 pipes are preferable up to 900 mm diameter for conveying main in Water Supply and Sewerage Schemes in view of the easy of jointing.

v) G.I. Pipes:

The G.I Pipes are preferred for adoption in Rural Water supply pump erection works/River crossing- works with anchorage arrangements and OHT pipe connection works, considering their capacity to withhold vertical load and jointing either by flanged joints or threaded coupler joints and easy handling. As a general policy the usage of GI pipes are to be minimised due to its vulnerability to corrosion at joints and should be resorted to only when other options are not possible.

B.Cement pipes – AC/RCC/PSC/SWP

i) A.C. Pipes

KWA has had a bad experience of encountering a lot of leakages in usage of AC pipes in many Water Supply Schemes

KWA has already undertaken replacement of AC pipes with metallic pipes in most of the Schemes where AC pipes were used.

Hence, under the circumstances explained above, AC pipes are not recommended for Water Supply projects.

ii) RCC Pipes :

RCC Pipes are not generally used in Water Supply Schemes. However, for Underground Sewerage Schemes non pressure class RCC pipes are adopted, as the flow is by gravity.

Hence, for Under Ground Sewerage Schemes, RCC pipes are preferable for adoption in Under Ground Sewerage Schemes.

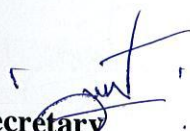
iii) PSC Pipes:

KWA has had a very bad experience in using PSC pipes and almost all schemes where PSC pipes were used, bursting of pipes is a regular occurrence. A typical example can be with the case of selection of PSC pipe for the pumping/ gravity main for the 86 MLD WTP at Aruvikkara catering a major portion of the requirement of Trivandrum city. Within a span of twelve years since commissioning of the scheme, the pipes are proposed to be replaced with MS (lined) pipe, due to frequent bursting of the PSC pipe resulting in huge revenue loss to KWA and widespread public contempt due to poor service.

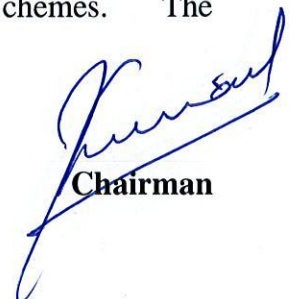
Hence the use of PSC pipes is not recommended in any schemes.

iv) Stoneware Pipes:

Stoneware Pipes are generally adopted in Sewerage Schemes. The

  
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performance of stoneware pipes used in said UGSS is found satisfactory. Stoneware pipes of size 300 mm dia are preferable in UGSS, for collecting sewage under gravity.

#### C. Plastic Pipes: PVC/HDPE/GRP

##### i) HDPE Pipes:

HDPE Pipes have the inherent disadvantages of requiring skilled labour and specialized machinery for laying, and difficulty in repairs once they are laid especially in rural by the pipe manufacturer and it is difficult for KWA to ensure that the contractor has procured the HDPE pipes from a quality manufacturer. Poor quality resin can lead to pipe becoming brittle. Hence HDPE pipes are to be used only when the uses of Metallic Pipes are not feasible especially when there is a possibility of Horizontal/ Vertical movement of bearing strata. Moreover the use of HDPE pipes shall not be economical for larger Dia pipes and hence the usage of HDPE shall be preferred for sizes up to 200 mm as a general policy decision.

##### ii) GRP Pipes:

The GRP Pipes are not much adopted in Water Supply Projects. Demerits of GRP pipes such as being susceptible to damage due to impact, suffering strain corrosion attack in soil / water of low pH, being dependent on stable support' from the back filled soil, involving costly/imported backfilling, difficulty in detecting pipe location, susceptible to permeation/structural degradation by certain organic contaminants, poor resistance to negative surge pressures, strength of stiffness deteriorates with time and not being advised in high pressure pumping mains / surge condition overweigh the advantages.

Hence, usage GRP pipes are to be limited in Water Supply Projects.

##### iii) PVC Pipes

PVC pipes are extensively used in pumping main & distribution system in Rural Water Supply Schemes and in distribution system of Urban Towns on account of the cost economics, easy handing and ease in day to day maintenance, even by unskilled labourers. The frequency of leakage is high. Also jointing of higher dia pipes is difficult.

Hence, PVC pipes are preferable for adoption of diameter less than 160 mm only. As a general pipe policy, the use of PVC pipes are to be minimized as far as possible and a minimum of 6 Kg/ cm<sup>2</sup> pipe has to be used in all water supply projects.

#### 4.3. Recommendations made:

It is analyzed the advantages and disadvantages of various types of pipes under three categories of pipes viz. Metallic, Cement and Plastic Pipes and, recommended the usage of the following types of pipes:

##### A. METALLIC PIPES:

##### (i). CI pipes (IS.15.1536-2001)

It is suggested to adopt CI - DF and S/S pipes at Head Works and River

  
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Crossing works, considering their heavy weight to withstand the flow in the river and safety of the pipeline,

(ii). DI pipes (IS. 8329-20.00)

It is suggested to adopt D1 Pipes

- a) For pumping and Gravity main of sizes upto 900 mm dia for Water Supply and Sewerage Schemes with Rubber Gasket Joints.
- b) For distribution system as follows:-

For Corporation and Municipal areas, D1 - K9 pipes are to be used for size from 150 mm and above considering the heavy vehicular traffic and the associated impact load and for effective maintenance and thereby minimizing Non Revenue Water.

For Panchayat and Rural habitations D1 - K9 pipes are proposed for distribution systems for sizes above 200 mm dia.

(iii). MS Pipes (IS. 3589/2001, IS 5504-1997)

It is suggested to adopt M.S. Pipes above 1000 mm dia, in conveying mains where the designer is fully convinced that the economics of providing anchor blocks for DI pipes is not viable and hence alternate pipe selection has to be made. In such situations spirally welded MS lined pipes are to be used since it ensures uniform thickness throughout the length, which is stronger than longitudinally welded pipes which will have square joints that are vulnerable for leakages. As a general pipe policy Spirally welded Lined MS pipes are to be used.

**B. CEMENT PIPES:**

(i). RCC Pipes (IS.458- 2003)

RCC pipes are not recommended for Water Supply Schemes. However RCC pipes of are recommended for under Ground Sewerage Scheme in Collection System.

(ii). PSC Pipes (IS.784-2001) :

It is suggested that in the light of past experience PSC pipes are not recommended for any schemes.

(iii). STONEWARE PIPES (15.651 - 1992):

It is suggested to adopt Stoneware pipes upto 300mm dia for Under Ground Sewerage Schemes.

**C. PLASTIC PIPES:**

(i). PVC pipes (1S.4985 - 2000)

PVC Pipes may be adopted for the Distribution Systems' in Town Panchayats & Rural Habitations for sizes of 160 mm and below. Considering higher cost of

  
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labour portion involved in pipe laying, the minimum dia of PVC pipe suggested in Urban area is 110 mm & in rural area is 75mm. Quality check of pipe materials is the key factor. Moreover as a general pipe policy, HDPE pipes are to be preferred to PVC pipes and if PVC is to be selected, then a minimum of 6 Kg/ cm<sup>2</sup> pipe has to be used.

(ii). HDPE pipes (IS.4984 -1995)

In view of the difficulties already discussed, wherever "HDPE pipes are used, skilled labour and specialized equipments for repairs and maintenance should easily available at hand. Again, quality check of pipe materials is the key factor. As a general pipe policy decision, HDPE pipes shall be preferred in plastic pipe segment.

(iii). PVC-U (IS.15328 -2003):

The Technical Committee suggested to adopt PVC-U pipes for House Service Connection in Under Ground Sewerage Schemes.

(iv) MDPE PIPES

The MDPE Pipes can be used in House Connection.

(v) Corrugated Steel Pipes

Subject to availability the use of corrugated steel pipe should also be preferred for house connections as they are highly flexible and hence does not require jointing and results in reduction of Non Revenue Water.

It is also proposed that planners should also consider providing distribution lines on both side of the road in Cities and major town's in order to avoid tar cutting in future. Similarly, whenever a new line is laid to supplement an old line, it should be ensured that old pipe lines shall be disconnected and all existing service line shall be altered to the newly laid line.

It is suggested that this Piping Policy may be reviewed at least after 3 years and shall be scrupulously observed by all the Engineers while formulating schemes. If any new piping material is introduced in the market in the meantime, the Chief Engineers may study the relevant literature, visit other States or private installations where they are used, and present the pros and cons of adopting the same to Kerala Water Authority which, after due analysis, may submit its views to the Board for consideration. As and when the Board approves a new piping material, it would be prudent to try it out first in three to five smaller schemes, and if successful, then in short stretches of three to five bigger schemes before going for wider use.

  
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**The policy shall be adopted by in all Schemes that are to be implemented in Kerala Water Authority in future.**

*Item No. IV(1) JICA Assisted Kerala Water Supply Project- Pattuvam and adjoining villages- Package III- Distribution System-Balance works-P3R6- Variation approval*

**Res. No. 9470** The Authority discussed the proposal for approval of variations in the contract for Package III –contract for balance works for zone P3-R6 of Pattuvam scheme and **resolved to approve an excess of Rs. 5,349,888/- towards excess over BoQ and new items as recommended by the High Level Technical Committee, as per break up given below.**

Excess over BoQ	:	Rs 2,266,110/-
Non BoQ Excess	:	Rs 3,083,778/-
Total Excess	:	Rs 5,349,888 /-

The Authority also noted that with the present approval, the overall excess for this package will be as follows.

Contract Amount	:	Rs 218,600,167/-
Overall variation	:	Rs 15,042,083/-
Percent excess	:	6.88%

*Item No. IV(2) JICA Assisted Kerala Water Supply Project- Pattuvam and adjoining villages- Package III- Distribution System-Balance works-P3R5- Variation approval*

**Res. No. 9471** The Authority discussed the proposal for approval of variations in the contract for Package III – contract for balance works for zone P3-R5 of Pattuvam scheme and **resolved to approve an excess of Rs. 2,892,811/- towards excess over BoQ and new items as recommended by the High Level Technical Committee, as per break up given below.**

Excess over BoQ	:	(-) Rs 1,565,812/- (Savings)
Non BoQ Excess	:	Rs 4,458,623/-
Net Excess	:	Rs 2,892,811 /-

The Authority also noted that with the present approval, the overall excess for this package will be as follows.

Contract Amount	:	Rs 174,311,961/-
Overall variation	:	Rs 6,401,109/-
Percent excess	:	3.67%

  
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Item No. V(1) *UWSS to Thodupuzha - Replacement of existing old and damaged pipe lines- S/L 150mm to 300mm DI K9, 100mm to 150 mm GI (Cl- B) and 110mm PVC Cl.4 (8Kg/cm<sup>2</sup>) distribution pipes in various roads of South Zone and Kanjiramattom area of Thodupuzha Municipality (Package I)- Tender*

**Res. No. 9472** The Authority discussed the agenda in detail. The Authority observed that the performance of lowest tenderer M/s Tecpro Infra Project Ltd in the Meenad JICA Project is very poor. Further it was noted that the Company is taking more works and in most cases, the works are not executed in time. **Hence the Authority resolved to award the work to the II<sup>nd</sup> lowest tenderer, if he is willing to take up the work at the lowest quoted rate, or else the work shall be retendered.**

Item No. V(2) *UWSS to Thodupuzha – Replacement of existing old and damaged pipe lines-Supplying and Laying 150mm to 300mm DI K9, 100mm to 150 mm GI (Cl- B) and 110mm PVC Cl.4 (8Kg/cm<sup>2</sup>) distribution pipes in various roads of North Zone -Kummankallu area of Thodupuzha Municipality - .(Package II)- Tender*

**Res. No. 9473** The Authority discussed the agenda in detail. The Authority observed that the performance of lowest tenderer M/s Tecpro Infra Project Ltd in the Meenad JICA Project is very poor. Further it was noted that the Company is taking more works and in most cases, the works are not executed in time. **Hence the Authority resolved to award the work to the II<sup>nd</sup> lowest tenderer, if he is willing to take up the work at the lowest quoted rate, or else the work shall be retendered.**

Item No. V(3) *UWSS to Thodupuzha – Replacement of existing old and damaged pipe lines- S/L 150mm to 300mm DI K9, 100mm to 150 mm GI (Cl B) &110mm PVC Cl.4 (8Kg/cm<sup>2</sup>) distriution pipes in various roads of Vengalloor Zone of Thodupuzha Municipality (Package III)- Tender*

**Res. No. 9474** The Authority discussed the agenda in detail and resolved to award the work “UWSS to Thodupuzha – Replacement of existing old and damaged pipe lines-Supplying and Laying 8100 m of 150mm to 250mm DI K9, 562 m of 100mm to 150 mm GI (Cl- B) and 7800 m of 110mm PVC Cl.4 (8Kg/cm<sup>2</sup>) distribution pipes in various roads of Vengalloor Zone of Thodupuzha Municipality (Package III)-” to the lowest tenderer Sri Sunil Mathew at his quoted amount of ₹ 276,64,781/- which is 1.25% above the TPAC of ₹273,22,094/-

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*Item No. V(4) NRDWP –WSS to Kumaramangalam Panchayat in Idukki District- Design, Construction, Commissioning and Maintenance of 3 MLD output capacity rapid sand filter Water Treatment Plant at Chozhamkudipara (Package- II) - Tender*

**Res. No. 9475** The Authority discussed the agenda in detail. The Authority noted that the land required for the TP for the above scheme has to be transferred from the Revenue Department. The Authority **resolved that the work shall be retendered.**

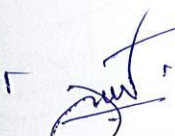
The Authority also observed that the offer of one bidder who was prequalified namely Sri. Velangapudi Ramarao was not accepted while processing the tender. The Authority directed to seek the reason from the Superintending Engineer for not accepting the offer of the above bidder.

*Item No. V(5) Deposit Work-RVNL (RAIL VIKAS NIGAM LTD.) - Permanent arrangement for crossing Perandoor Canal and Railway track at Vaduthala with 900 mm OD HDPE pipe – Supplying, laying, testing and commissioning 900mm OD HDPE PN 8 PE 100 pipes by crossing from Perandoor Balabhadra Temple to the North side of ICTT (International Container Transshipment Terminal) Railway line for realigning the damaged 800 mm MS pipe under the ICTT railway line*

The Authority discussed the tender in detail. The Authority directed to clarify whether M/s Cochin Port Trust is willing to meet the tender excess amount and also to obtain the alignment sketch of the proposed line. The agenda including the above details may be placed in the next meeting.

*Item No. V(6) Deposit work – GIDA – Improvement of water supply scheme to Kadamakkudy panchayat – Supply, erection testing and commissioning of 1No.630 KVA transformer, H.T installation and allied works at raw water pump house – Eloorkara – Tender*

**Res. No. 9476** The Authority discussed the agenda in detail. The Authority observed that this is a critical component and that KWA had submitted a statement before Kerala State Legal Service Authority under Hon'ble High Court of Kerala in a civil petition mentioning that the water supply scheme can be partially commissioned by the end of 2013. In view of the above facts, the Authority **resolved to award the work of “Deposit work – GIDA – Improvement of water supply scheme to Kadamakkudy panchayat – Supply, erection testing and commissioning of 1No.630 KVA**

  
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transformer, H.T installation and allied works at raw water pump house – Eloorakara” to the single tenderer M/s Tesla Heavy Electricals for an amount of ₹ 51,69,554/- (Fifty One lakhs Sixty Nine Thousand Five Hundred and Fifty Four only) which is 23.42% above (overall) TPAC amount of ₹41,88,579/-.

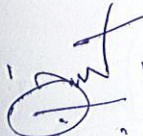
*Item No. V(7)* NABARD-RIDF XVI- Replacement of obsolete pumps and motors in various water supply schemes under PH.Division, Kottayam and PH Division, Thiruvalla- Supply erection and commissioning of suitable HP VT pump sets 12 Nos. at 11 different pump houses having capacity of 15 HP to 80 HP with all necessary accessories – Schedule Tender

**Res. No. 9477** The Authority discussed the agenda in detail. The Authority noted that this is the 4<sup>th</sup> tender call, and that there was no response for the previous tenders. Hence the Authority resolved to award the work of “NABARD-RIDF XVI- Replacement of obsolete pumps and motors in various water supply schemes under PH. Division, Kottayam and PH Division, Thiruvalla- Supply erection and commissioning of suitable HP VT pump sets 12 Nos. at 11 different pump houses having capacity of 15 HP to 80 HP with all necessary accessories” to the single tenderer M/S. Flow tech Engineers & Suppliers at ₹ 69,55,000/- which is 4.10% above tendered PAC of ₹66,81,078/-subject to following conditions.

- 1) The tendering authority shall obtain the make, type and capacity details of starter, M.V Panel board, Cables etc. from the tenderer before awarding the work.
- 2) The installation of the flow meters should be completed along with the erection of pump sets and the output shall be measured before making the final payment of pumpsets.
- 3) Verify the performance of pumps with the curves submitted with the tender at the time of erection.

*Item No. V(8)* WSS to Quality affected habitants in Niranam, Kadapra and Nedumpuram Paanchayath – Construction of 1 LL capacity OH tank at Erathodu, Laying 150mm DI K9 Pumping main and Construction of Pump House -Tender

**Res. No. 9478** The Authority discussed the agenda in detail and resolved to award the work of “WSS to Quality affected habitants in Niranam, Kadapra and Nedumpuram Panchayath –

  
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Construction of 1 LL capacity OH tank at Erathodu, Laying 150mm DI K9 Pumping main and Construction of Pump House” to Shri. Shibu Zacharia, Kottaviruthil, Thalavady PO at his negotiated quoted amount of Rs. 268,26,000/- which is calculated to 9.75% above estimate amount after excise duty exemption.

*Item No. V(9)* CARWSS to Kulathupuzha and Adjoining Villages - Supplying, Laying Jointing Testing and Commissioning of Distribution System Zone-1 -Tender

**Res. No. 9479** The Authority discussed the agenda in detail and resolved to award the work of “CARWSS to Kulathupuzha and Adjoining Villages - Supplying, Laying Jointing Testing and Commissioning of Distribution System Zone-1” to the single tenderer Shri. S. Raju, Leena Bhavan, Mayyanad PO, Kollam at his negotiated quoted amount of Rs. 246,02,762/- which is 8.17% above estimate amount excluding excise duty. The Authority also directed that since the quoted working charges is below 25% estimate amount, Performance Guarantee as per NIT condition shall be remitted by the tenderer.

*Item No. V(10)* ARWSS to Thrikkovilvattom and Nedumpana Panchayat (Part) - Phase I - Construction Of 5.5 MLD Water Treatment Plant at Kannanalloor -Tender

**Res. No. 9480** The Authority discussed the agenda in detail and resolved to ratify the action in awarding the work of “ARWSS to Thrikkovilvattom and Nedumpana Panchayat (Part) - Phase I - Construction Of 5.5 MLD Water Treatment Plant at Kannanalloor” to M/s. New Construction Company, Vadakkebhagam, Pullichira, Kollam JV with M/s. Navin Construction Corporation at their quoted amount of Rs.251,50,000/-which is 8.22% below estimate amount.

*Item No. V(11)* CARWSS to Kaviyoor and Kunnamthanam Villages - Phase - II- Supplying and Laying Distribution System in Zone - II -Tender

**Res. No. 9481** The Authority discussed the agenda in detail and resolved to ratify the action in awarding the work of “CARWSS to Kaviyoor and Kunnamthanam Villages - Phase - II-Supplying and Laying Distribution System in Zone - II” to Shri. K.Sathyadevan, Krishnalayam, Kollam at his quoted amount of Rs. 183,81,549/- which is 10.49% below estimate amount after

  
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**excise duty exemption subject to remittance of performance guarantee as per NIT conditions by the lowest tenderer.**

*Item No. V(12) RWSS to Ezhumattoor Panchayat - Phase I – Design & Construction of 2.5 MLD WTP at Karamala -Tender*

**Res. No. 9482** The Authority discussed the agenda in detail. The Authority noted that this is a single tender and the quoted rate seems to be on the higher side. Hence the Authority **resolved to retender the work.** The Authority also directed to examine the estimate before retendering.

*Item No. V(13) Water supply scheme to Erumely Panchayat in Kottayam District – Package 4- Supplying, laying, jointing, testing and commissioning of clear water pumping main 200mm DI K-9 pipe 5650m from TP site at MES Jn. to OHSR at Nerchapara, construction of 2.50 LL OHSR at Nerchapara, supplying and laying of PVC pipes (various sizes – 9253m), G.I.M.pipes (various sizes – 198m), 250mm DI K-9 pipe- 760m, 200mm MS pipe 10m, 250mm MS pipe 10m for distribution network from service reservoir at Nerchapara Zone V-LS Tender*

**Res. No. 9483** The Authority discussed the agenda in detail and resolved to award the work of “Water supply scheme to Erumely Panchayat in Kottayam District – Package 4- Supplying, laying, jointing, testing and commissioning of clear water pumping main 200mm DI K-9 pipe 5650m from TP site at MES Jn. to OHSR at Nerchapara, construction of 2.50 LL OHSR at Nerchapara, supplying and laying of PVC pipes (various sizes – 9253m), G.I.M.pipes(various sizes – 198m), 250mm DI K-9 pipe- 760m, 200mm MS pipe 10m, 250mm MS pipe 10m for distribution network from service reservoir at Nerchapara Zone V” to Sri. Binu Mathew, Kottaviruthil (H), Anaparampal (N) P.O, Thalavady JV with Sri. Ansel, M/s. New Construction Company, Kottiyam, Kollam at Rs. 3,59,71,917/- which is 29.81% above TPAC of Rs. 2,77,10,892/- based on Revised SoR 2010 and 6% above the estimate amount of Rs. 3,39,33,760/- based on SoR 2012 excluding excise duty.

*Item No. V(14) ARWSS to Kanjirappally, Elikulam and Chirakkadavu Panchayat – Supply, erection and commissioning of CF pump set 2 Nos. in the clear water pump house at the treatment plant site for pumping water to the GL tank at Panacheppally — Schedule Tender*

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- Res. No. 9484** The Authority discussed the agenda in detail. The Authority noted that this is a single tender and that the quoted rate seems to be on the higher side. Hence the Authority **resolved that the work shall be retendered.**
- Item No. V(15)* *CWSS to Vithura and Tholicode Villages - Package III - Supplying, laying, testing and commissioning of 250mm DI K9 clear water pumping main from WTP at Vavupura to OHSR at Thavakkal and construction of 6.95 LL capacity OHSR at Thavakkal - Tender*
- Res. No. 9485** The Authority discussed the agenda in detail. The Authority noted that this is a single tender and the quoted rate seems to be on the higher side. The Authority **resolved to award the work of "CWSS to Vithura and Tholicode Villages - Package III - Supplying, laying, testing and commissioning of 250mm DI K9 clear water pumping main from WTP at Vavupura to OHSR at Thavakkal and construction of 6.95 LL capacity OHSR at Thavakkal" to M/s Chicago Constructions Intl. (P) Ltd, Chithira lane, Kochar road, Sasthamangalam, Thiruvananthapuram at 15% above tendered PAC of ₹ 24479831/-, if the contractor is willing to take up the work or else to retender the work.**
- Item No. V(16)* *Renovation of existing Civil structures owned by KWA- maintenance of staff quarters at Kadavanthra - Tender*
- Res. No. 9486** The Authority discussed the agenda in detail. The Authority noted that this is the 4<sup>th</sup> retender. Hence the Authority **resolved to award the work of "Renovation of existing Civil structures owned by KWA- maintenance of staff quarters at Kadavanthra" to the lowest tenderer Sri.Johnson.V.Francis, Valiyaparambil House, Perandoor Road, Kaloor, Kochi at the negotiated quoted amount of Rs.37,97,890.00 which is 29.74 % (overall) above TPAC of Rs. 29,27,384.00 based on SoR 2012, considering the pathetic condition of staff quarters at Kadavanthra and the work to be carried out urgently.**
- Item No. V(17)* *Providing WSS to Infopark, Koratty in Thrissur District-Package-IV (B)- construction and commissioning of of 6.00 LL OHSR and 1LL sump at Infopark campus*
- Res. No. 9487** The Authority discussed the agenda in detail. The Authority noted that this is a single tender and the quoted rate seems to be on the higher side. The Authority after discussion **resolved to award the subject tender of Providing WSS to Infopark, Koratty in**

  
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Thrissur District-Package-IV (B)- construction and commissioning of of 6.00 LL OHSR and 1LL sump at Infopark campus to the single tenderer Sri. K. K. Mohammed, Karuppadath House, 1<sup>st</sup> Convent Road, Thottakkattukara.P.O, Aluva if the contractor is willing to take up the work at 15% above tendered PAC of Rs.1,05,94,665/- based on SoR 2012 and if the tender excess amount will be borne by the Infopark Authorities or else to retender the work.

Item No. V(18)

*NRDWP-XV-SLSSC-2012-WSS to Kayakkodi Village-Supplying, laying, testing and commissioning distribution system Zone I - Tender*

**Res. No. 9488**

The Authority discussed the agenda in detail and resolved to approve the work of NRDWP-XV-SLSSC-2012-WSS to Kayakkodi Village-Supplying, laying, testing and commissioning distribution system Zone I to the single tenderer at their quoted amount of ₹ 3,17,27,398/- which is at an overall excess of 2.54% below the tendered PAC of ₹ 3,25,54,185/- based on SoR 2012. The Authority directed that necessary Performance Guarantee /Bank Guarantee as per NIT conditions shall be executed by the contractor.

Item No. V(19)


*NRDWP-XV-SLSSC-2012-WSS to Kayakkodi Village-Supplying, laying, testing and commissioning distribution system Zone- II - Tender*

**Res. No. 9489**

The Authority discussed the agenda in detail and resolved to approve the work of NRDWP-XV-SLSSC- 2012-WSS to Kayakkodi Village-Supplying, laying, testing and commissioning distribution system Zone II to the the single tenderer M/s Parambi Constructions, Koratti south P.O, Thrissur at their negotiated quoted amount of ₹ 2,69,23,875/- which is at an overall excess of 4.40% above the tendered PAC of ₹ 2,57,88,370/-, based on 2012 SoR. The Authority directed that necessary Performance Guarantee /Bank Guarantee as per NIT conditions shall be executed by the contractor.

Item No. V(20)

*NRDWP- XVII SLSSC 2012 - Water Supply Scheme to Payangodanpara in Puzhathi Panchayath of Kannur District - Supplying, Laying, Testing, Commissioning and Trial running of Gravity Main, Pumping Main and Distribution Network, Design, Construction and Commissioning of O.H Tank of capacity 1.50 lakh litre, Supply, Erection, Commissioning and Trial running of pumpsets - Tender*

  
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**Res. No. 9490** The Authority discussed the agenda in detail and resolved to award the work of “Supplying, Laying, Testing, Commissioning and Trial running of Gravity Main, Pumping Main and Distribution Network, Design, Construction and Commissioning of O.H Tank of capacity 1.50 lakh litres, Supply, Erection, Commissioning and Trial running of pumpsets” for NRDWP-XVII SLSSC 2012 - Water Supply Scheme to Payangodanpara in Puzhathi Panchayath of Kannur District to the single tenderer Sri.K.Kannan, Amrutham, Chirakkal, Kannur at his quoted amount of Rs. 1,92,99,099.22/- which is at 7.92% above the tendered PAC of Rs. 1,78,83,605/- based on SoR 2012. Chief Engineer (NR) shall verify the experience certificate for the supply, erection and commissioning of pumpset having capacity not less than 5 HP as per NIT conditions before awarding the work.

*Item No. V(21)* NRDWP- XVI – SLSSC 2011 Proposal for new projects Central : State(50:50)- ARWSS to Maloth and Balal- Drinking Water Supply to 6 wards in Balal Village and 4 wards in Malom Village of Balal Grama Panchayath in Kasaragod Dist - Supplying, Laying, Testing and Commissioning of Pumping Main, Gravity Main and Distribution Lines from Vellarikundu , Konnakkad - Tender

**Res. No. 9491** The Authority resolved to award the work of “Supplying, Laying, Testing and Commissioning of Pumping Main, Gravity Main and Distribution Lines from Vellarikundu , Konnakkad ” for NRDWP- XVI – SLSSC 2011 Proposal for new projects Central : State(50:50)- ARWSS to Maloth and Balal- Drinking Water Supply to 6 wards in Balal Village and 4 wards in Malom Village of Balal Grama Panchayath in Kasaragod District to the single tenderer Sri.C.M.AbdulKhader, Cherakala, Chengala P.O, Kasaragod at the quoted amount of Rs 3,26,85,342/- which is at an overall excess of 25.98% above the tendered PAC of Rs. 2,59,45,418/- based on Revised SoR 2010 (i.e. at an overall excess of 3.36% above the estimate PAC of Rs.3,16,21,955/- based on SoR 2012). Performance guarantee / Bank Guarantee shall be executed as per NIT conditions.

*Item No. V(22)* WSS to Mananthavady Edavaka, Nallooradu Villages- NABARD-RIDF XVII Design construction testing commissioning 8LL GL Sump, 16LL &7LL OHSR and supplying laying testing commissioning distribution system to Mananthavady & Edavaka Villages-Tender

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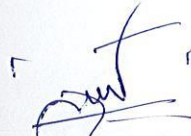
**Res. No. 9492** The Authority discussed the agenda in detail. The Authority noted that this is the second tender call. The Authority resolved to **approve the lowest offer for the work of WSS to Mananthavady Edavaka, Nalloornadu Villages- NABARD-RIDFXVII Design construction testing commissioning 8LL GL Sump, 16LL & 7LL OHSR and supplying laying testing commissioning distribution system to Mananthavady & Edavaka Villages received from the lowest tenderer Sri.Shahul Hameed, Varikkodan House, Down Hill, Malappuram at his negotiated quoted amount of Rs. 8,31,74,381/-, which is @ 13.9 % above the tendered PAC of Rs. 7,30,23,031/-.** The Chief Engineer shall also issue direction to Superintending Engineer to deduct estimate amount plus overall tender excess if any of the items / component is left incomplete, for those items / components for which rates have been quoted below the estimate rate.

*Item No. V(23)* *NABARD-RIDF XVII-RDWDD to Kattoor, Padiyur, Poomangalam and adjoining villages- Supplying, laying, jointing, testing and commissioning distribution network for Kattoor Zone I and Zone II & construction and commissioning of 5.7 LL capacity OH tank at Rajiv Gandhi Colony- Tender Sanction*

**Res. No. 9493** The Authority discussed the agenda in detail. The Authority noted that this is a single tender. The Authority observed that this is the 3<sup>rd</sup> tender call and that there was no response for previous tenders. The Authority resolved to **approve the lowest offer for the work of NABARD-RIDF XVII-RDWDD to Kattoor, Padiyur, Poomangalam and adjoining villages- Supplying, laying, jointing, testing and commissioning distribution network for Kattoor Zone I and Zone II & construction and commissioning of 5.7 LL capacity OH tank at Rajiv Gandhi Colony by the single tenderer M/s Parambi Constructions, Koratty South P.O, Thrissur JV with Sri. Mohammed Kunhi, AM Manzil, East Bevenje, Thekkil Ferry post, Kasargod at an overall excess of 15% above the tendered PAC of Rs. 3,93,16,312/-, if the contractor is willing or else to retender the work.**

*Item No. V(24)* *Grievances raised by the Water Supply Engineering Contractors Association regarding the modification of NIT condition*

**Res. No. 9494** After detailed discussion the Authority resolved to make the following changes in the modified NIT conditions.

  
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**(i) Clause 8.14.1**

For pipe laying works alone, the work will be treated as "completed", when it is ready for commissioning with the completion of all allied civil works with anchor blocks and thrust blocks including fitting of all valves, specials etc without any gap closing works in the pipe line alignment and after completion of testing of the pipeline laid. Then the Completion Certificate will be issued by the concerned Assistant Executive Engineer in charge of the work within one month. Security deposit will be released as per modified NIT conditions on the grant of Completion Certificate as specified above.

**(ii) Clause 8.8:**

No mobilization advance shall be paid to the contractor. However the contractor shall raise a claim for 80% of the value of tested materials he has supplied at site, at the estimate rate and in accordance with the break up of payment approved as secured advance, which shall be considered by the Authority in accordance with the relevant provisions of the rules for release of secured advances in Kerala Water Authority. Sanctioning of such secured advances shall be at the discretion of the agreement authority and shall not be taken as a right of the contractor.

**(iii) Clause 8.25 para 2<sup>nd</sup>**

"For pipe laying works completion shall be deemed to be 1 year additional from the date on which the work is actually completed" shall be treated as deleted

All other conditions in the modified NIT conditions remain unchanged.

Item No. V(25)

*ARWSS to Manjalloor – Improvements of Water Supply facilities to Thekkumala, Chakkippara and 3 Cent colony in ward No. 11,12 and 13 of Manjalloor Panchayat. –Sanction*

Res. No. 9495

The Authority discussed the agenda in detail and resolved to accord Administrative Sanction for the work "ARWSS to Manjalloor – Improvements of Water Supply facilities to Thekkumala, Chakkippara and 3 Cent colony in ward No. 11,12 and 13 of Manjalloor Panchayat" for an amount of Rs. 66 lakhs, under the Head of Account 2215-01-190-99 (07) - Other RWSS - Improvements to existing schemes (Scheme Code 29 - RWSS - Improvements).

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*Item No. V(26) Special Package for all round development of the Munrothuruth Island in Kollam district – Inadequacy of Drinking water*

The Authority discussed the agenda in detail. The Authority directed to ensure that the source is perennial and also to check the quality of ground water. The proposal shall be placed in the next SLSSC for consideration.

*Item No. V(27) MPLADS-2012-13- RWSS to Chundale-Reconstruction of OHSR at Chundale town and supplying and laying of pumping main – payment of excess amount*

**Res. No. 9496** The Authority discussed the agenda in detail and **resolved to approve the payment of excess amount in respect of “MPLADS-2012-13- RWSS to Chundale-Reconstruction of OHSR at Chundale town” subject to a maximum of Rs. 240422/- under “69- Renovation of existing civil structures” for the completion of the subject work in addition to the MP-LAD fund.**

*Item No. V(28) 19-Replacement of pipe lines – Replacement of old AC pipe with DI pipe – 150 to 500mm dia in Mala and adjoining panchayath in Thrissur district (25.71 KM)*

Ratified.

*Item No. V(29) NABARD – RIDF XVI – Replacement of obsolete pumps and motors in various water supply schemes under P.H. Division, Thiruvalla & P.H. Division, Kottayam - Supply, erection and commissioning of suitable HP CF pump sets 61 Nos. at different pump houses having capacity of 5 HP to 100 HP with all necessary accessories – Schedule Tender*

**Res. No. 9497** The Authority discussed the agenda in detail. The Authority noted that this is the 4<sup>th</sup> tender call and there was no response for previous tenders. Hence the Authority **resolved to award the works of “NABARD – RIDF XVI – Replacement of obsolete pumps and motors in various water supply schemes under P.H. Division, Thiruvalla & P.H. Division, Kottayam - Supply, erection and commissioning of suitable HP CF pump sets 57 Nos. at different pump houses having capacity of 5 HP to 100 HP with all necessary accessories” to M/s. Barnet Associates, Ettumanoor, Kottayam at their negotiated quoted amount of Rs. 1,62,20,812/- which is 29.72% above estimated amount of Rs. 1,25,04,898/-.** The Authority also directed that the tendering

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authority should take necessary steps to complete the installation of the flowmeters along with the erection of pumpsets.

*Item No. V(30)*

*WSS to Elanthur - Mallappuzhasserry Villages - Phase-II - Laying Distribution System in Zone-I Part-I -Tender*

The Authority discussed the agenda in detail. The Authority noted that the subject tender is for laying distribution system for WSS to Elathur - Mallappuzhasserry village. The Authority observed that there was no response for the tender for the WTP of the scheme although tendered twice. Hence the Authority directed to get the explanation of Superintending Engineer, P. H. Circle Kollam who has tendered the work without finalizing the tender for WTP.

The Authority also directed that action shall be taken to extend the firm period of the tender for 3 more months, and to initiate action for tendering the work of WTP immediately.

*Item No. V(31)*

*ARWSS to Perinadu and Athikkayam Villages Phase-I – Construction of 8MLD Water Treatment Plant at Bethany Plantations -Tender*

**Res. No. 9498**

The Authority discussed the agenda in detail and resolved to award the work of “ARWSS to Perinadu and Athikkayam Villages Phase-I – Construction of 8 MLD Water Treatment Plant at Bethany Plantations” to the single tenderer M/s. Chicago Constructions International (P) Ltd., Sasthamangalam, TVPM at 15% above tendered PAC of Rs. 581,55,000/- if the firm is willing to take up the work or else to retender the work.

*Item No. V(32)*

*RWSS to Ezhumattoor Panchayath - Phase -1 – Supply, Laying and Commissioning of 100mm DI K9 gravity main & Construction of 3 LL capacity GL tank at Kaaramala -Tender*

**Res. No. 9499**

The Authority discussed the agenda in detail and resolved to award the work of “RWSS to Ezhumattoor Panchayath - Phase -1 – Supply, Laying and Commissioning of 100mm DI K9 gravity main & Construction of 3 LL capacity GL tank at Kaaramala” to Shri. Mathew. P.Abraham, Puthankada Veedu, Valakom.P.O, Kottarakkara, Kollam at his negotiated quoted amount of Rs. 143, 11,630/- which is calculated to 9.37% above estimate amount after excise duty exemption.

*Item No. V(33)*

*ARWSS to Kilimanoor, Pazhayakunnummel and Madavoor villages – Package IV - Supplying and laying gravity main cum distribution lines for 400mm DI K9, 350mm DI K9, 200mm PVC 6kg and 75mm PVC 8kg as per deviation -Tender*

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**Res. No. 9500** The Authority discussed the tender in detail and resolved to award the work of "ARWSS to Kilimanoor, Pazhayakunnummel and Madavoor villages – Package IV - Supplying and laying gravity main cum distribution lines for 400mm DI K9, 350mm DI K9, 200mm PVC 6kg and 75mm PVC 8kg as per deviation" to Shri. S. Sreekumar, Aswathy, Paloorkonam, Parassala at his quoted amount of Rs. 146,94,469/- which is calculated to 4.16% above estimate amount after excise duty exemption.

*Item No. V(34)* *Providing bulk water supply to the grama panchayats from Water Supply Schemes of KWA – Fixing tariff*

**Res. No. 9501** The Authority after detailed discussion, resolve to approve the bulk water tariff as follows.

1. To fix the tariff at the minimum rate applicable to domestic consumer @ Rs.4.00/- per kilolitre, subject to periodic revision as ordered by Government from time to time.
2. For financial sustainability, the Local bodies may charge 20% enhancement in minimum water rate to take care of the leakages and operation and maintenance cost for distribution system inside the panchayat.

*Item No. VI(1)* *Project Development Consultancy Unit – Concept Paper*

Deferred

*Item No. VI(2)* *Formation of WASCON – Concept paper – Financial and Administrative Powers of WASCON*

Deferred

*Item No. VI(3)* *Introduction of multilayer filter media with Anthracite at Chiranickal Water Treatment Plant of Adoor WSS – Expert Committee to study the Techno Economical aspects - report*

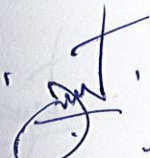
Deferred.

*Item No. VI(4)* *Revision of consultancy charges*

Noted

*Item No. VII(1)* *Constitution of DPC and action taken in this regard*

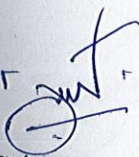
The Authority discussed the agenda and decided that the existing constitution of DPC shall be continued for the time being.

  
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- Item No. VII(2)* *Proposal for waiving of liabilities in respect of Smt.K.J.Valsala, Divisional Accountant, who expired while working at Water Supply Division, Attingal*
- Res. No. 9502** **The Authority resolved to write off Rs. 14967/-(Rupees Fourteen thousand nine hundred and sixty seven only) towards the outstanding liability in respect of Smt.K.J.Valsala, Divisional Accountant who expired on 02.03.2012 while working at Water Supply Division, Attingal based on GO(P) No.591/97/Fin dated, 17.06.97 and GO(P) No.5/99/Ird dated, 03.12.99.**
- Item No. VII(3)* *Enhanced rate of Dearness Allowance/Dearness Relief – extension of benefit to the Employees/Pensioners of Kerala Water Authority*
- Ratified.
- Item No. VII(4)* *Re-designation of category – Divisional Accountant as Divisional Accounts Officer*
- Res. No. 9503** **The Authority resolved to implement the G.O. (Ms) No. 51/2013/(127)/Fin dated 25/01/2013 to the employees of Kerala Water Authority also, by re-designating the post of Divisional Accountant under common category as Divisional Accounts Officer.**
- Item No. VII(5)* *Unauthorized absent from duty, Sri.S. Shaji, Peon, P.H. Sub Division, Perinthalmanna*
- Deferred
- Item No. VIII(1)* *Implementation of Water Management System-Proposal from M/s Keltron (joint venture with M/s IBM)-*
- Deferred
- Item No. VIII(2)* *(i) Amendment of KWS &S Act 1986 for including Executive Director, KRWSA as an ex-officio member of KWA Board in place of the Secretary to Government in charge of Development Department and (ii) appointment of Sri. R.Sukumaran as Special Officer in KWA - Terms and conditions and duties and responsibilities-Fixed*
- Noted.
- Item No. VIII(3)* *Revision of tariff of Guest Houses/Inspection Bungalows of Kerala Water Authority*

  
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**Res. No. 9504** The Authority discussed the proposal in detail and resolved to enhance the tariff of the Guest Houses / Inspection Bungalows/ Dormitories of Kerala Water Authority as suggested by the Committee w.e.f from August 2013. The revised rates are as shown below.

Sl. No.	Room Type	Dept. Staff on duty		Dept. Staff off duty		Outsiders	
		Existing Rate/day (Rs./day)	Revised Rate/day (Rs./day)	Existing Rate/day (Rs./day)	Revised Rate/day (Rs./day)	Existing Rate/day (Rs./day)	Revised Rate/day (Rs./day)
1.	Non A/C double room with single occupancy	25	100	50	125	100	300
2.	Non A/C double room double occupancy	40	150	75	175	150	300
3.	A/C double rooms with single occupancy	75	200	125	225	200	600
4.	A/C double rooms with single occupancy	100	300	175	325	300	600

The above rates are excluding service tax and the service tax at the prevailing rates shall also be collected in addition.

*Item No. VIII(4) Repair work of vehicle No. KL 01 AT 2658 attached to the o/o CE(SR), Tvpm*

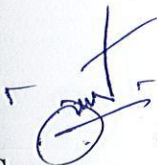
Deferred

*Item No. VIII(5) Proposal for implementing Solar Photo Voltaic Power Plants in reservoirs of KWA*

Deferred

*Item No. VIII(6) Kerala Water Authority - Training Centre – Recommendation of the Training Advisory Committee*

Deferred

  
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Item No. VIII(7) *Plan schemes for Trainings/Skill Development of executives and employees of SLPEs during the 12th five year plan*

Deferred

Item No. VIII(8) *Representation submitted by Fr. Joseph Kochuchirayil, Vicar, Lourdes Hill Church, Peroorkkada for parking vehicles in KWA land*

Deferred

Item No. VIII(9) *Request of M/s. K. Raheja Group of Companies for the Protection, beautification and development of a portion of Pipeline road situated at Edappally South Village of Kanayannur Taluk of Ernakulam District and request for tarring of the pipe line road in Ernakulam*

Deferred

Item No. VIII(10) *Advocate fee-Adv.M.T.George, Standing Counsel for Hon'ble Supreme Court for conducting SLP©No.11279/2013 filed by M.M.Varghese*

**Res. No. 9505** The Authority discussed the agenda and **resolved to approve the expenses towards memo of fees and initial expenses of Rs.22,000/- (Rupees Twenty Two Thousand Only) to Adv.M.T.George, Standing Counsel of Kerala Water Authority at Supreme Court for conducting SLP No.11279/13 filed by M.M.Varghese.**

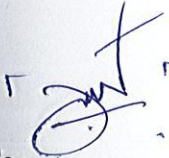
Item No. VIII(11) *Execution Petition No. 85/2013 & 86/2003 filed by M/s.Fixopan Engineers (P) Ltd - before Hon'ble High Court of Delhi-in Suit No.1828/98 and Suit No.1048/98*

**Res. No. 9506** The Authority discussed the agenda in detail. After discussion the Authority **resolved to comply with the award and to deposit an amount of Rs.17890.84 along with 18% interest from 1.1.85 till date of payment in E.P.No.85/13 and an amount of Rs.18,59,150 in EP.No.86/13 in suit No.1048/1998 in the High Court of Delhi.**

Item No. VIII(12) *NRW Management Unit- Special Allowance/Incentive- Sanction*

Deferred

Item No. VIII(13) *Revision of Rates - M/s. New Indian Express*

  
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Deferred

*Item No. VIII(14) Revision of Rates - M/s. The Times of India Group*

Deferred

*Item No. VIII(15) Repayment of Loan Taken from L.I.C – Scarcity of fund under Revenue – Payment out of fund available under State Plan – Ratification*

Ratified.

*Item No. VIII(16) M.Tech sponsorship to College of Engineering, Trivandrum and Government Engineering College, Thrissur*

**Res. No. 9507** After detailed discussion the Authority resolved to ratify the action in adopting the CPHEEO norms in the case of age limit of the applicants for M.Tech Course 2013-2015 in Kerala.

The Authority also resolved to adopt the following norms for sponsorship M.Tech courses in future.

1. Age limit -45 years as on date of notification each year
2. Service seniority in Kerala Water Authority
3. Person having M.Tech in any one of the sponsored courses will not be considered for the second program.

*Item No. VIII(17) Revision of Rates - M/s. The Hindu*

Deferred

*Item No. IX(1) Arrears of water charges of Sree Chithra Home, Thiruvananthapuram - Settlement of arrears - allowing exemption of fine and surcharges*

**Res. No. 9508** The Authority examined the proposal in detail and resolved to

1. Exempt all additional charges imposed against consumer HGB/113/N and HGB/114/N and to collect the actual water charges only of Rs. 686612 and Rs.133254/-, up to December 2012.
2. To treat the water charges account of consumer No. TGB/43/N as settled as on 31/12/2012.
3. To allow retrospective conversion of category from Non-domestic to domestic from 1/1/2013 onwards.

  
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*Item No. IX(2) Arrears of water charges of M/s. KELTRON - Settlement under one time measure.*

**Res. No. 9509** The Authority considered the proposal in detail and resolved to accept the offer of M/s KELTRON and collect Rs. Four lakhs towards total settlement of water charges in respect of the connection existed in the KELTRON premise with Consumer No. APW/182/I and treat the account as closed. The Authority also decided to write off the balance amount outstanding in the account of the connection, after receipt of above amount.

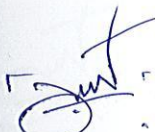
*Item No. IX(3) NRDWP - XVI SLSSC - RWSS to Kavalangadu Panchayat and ward No. 4 & 5 of Pallaraimangalam Panchayat - Supplying and laying distribution in Reach I of Zone I - Package V - Tender - Ratification*

Ratified.

*Item No. IX(4) NRDWP - XVI SLSSC - RWSS to Kavalangadu Panchayat and ward No. 4 & 5 of Pallaraimangalam Panchayat - Supplying and laying distribution in Reach II of Zone II - Package V - Tender cancellation*

**Res. No. 9510** The Authority noted the circumstances mentioned in the agenda and request of the Superintending Engineer, PH Circle, Muvattupuzha regarding the subject tender. The Authority after deliberations decided to cancel the decision taken vide resolution No. 9420 and resolved to award the work "NRDWP-XVI-RWSS to Kavalangadu panchayat and ward No.4 & 5 of Pallarimangalam panchayat - Supplying and laying distribution in Reach II of Zone I Package V" to the lone tenderer Sri. Baby N.V at the negotiated quoted amount of Rs.238,67,780/- which is at 22.11% above Tendered PAC of Rs.195,46,511/- based on SoR 2012. This is 11.92% above the recasted PAC incorporating the rates as per Circular dt.04.03.2013 Rs.213,26,348/-.

*Item No. IX(5) Non Revenue Water Management Unit - Reverse Osmosis Water Treatment Plants for water scarce arrears - Sanction for Retendering with revised conditions and issue of revised Administrative Sanction*

  
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**Res. No. 9511** The Authority resolved to retender the work with the recommended provisions as below:

1. The participating firms should have experience in contracts of similar nature for at least 3 years prior to the due date of tender which was 5 years in the earlier tender
2. The O& M shall be for 3 yrs and extended period of 2 yrs but this has to be quoted separately and the quote for 3 yrs only will be taken for evaluation
3. The firm should have installed 50 number of similar plants within the period of 3 years prior to due date of tender.


The Authority also directed that the water quality at each location has to be confirmed to substantiate the choice of technology. It was also resolved to issue a revised AS of Rs. 5,07,000,00/- for the work.

*Item No. IX(6)* Estt - Appointment of Special Officer for Land Acquisition cases and Land related cases on contract basis - Reg.

**Res. No. 9512** The Authority noted that Sri. Suryanarayanan appointed as Special Officer on contract basis for Land Acquisition cases and land related cases has relieved and the post is vacant. The Authority also noted that Sri. P. N. Venu is the next candidate in the selection list of the interview conducted for the above post. Hence the Authority resolved to appoint Sri. P. N. Venu as Special Officer on contract basis for Land Acquisition cases and land related cases, for a period of one year with a salary of ₹ 30,000/- per month + allowances.

*General Item I* The Authority expressed concern over the occurrence of pipe burst in various places such as in Trivandrum, Cherthala, Kaloor - Kadvanthara (Kochi) areas recently. The Authority opined the need for a detailed study on the issue. The Authority directed the Technical Member to conduct a detailed study in the matter of bursting of pipe and to place the report before the Authority within 2 months.

*General Item II* The Authority directed to incorporate the module in "PASK" for recording details of pipe inspections in future.

  
Secretary

  
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