**Assignment 4**

**1. List and briefly describe the measures by which the success or otherwise of a public–private partnership providing water supply services can be assessed**.

The following criteria could be used to measure the success of a PPP providing water supply (Open.edu, 2019).

1. Accessibility – the extent of coverage of the population, and the distance to the water point. According to the sphere standard, the distance from any household to the nearest water pint would be less than 500 minutes (Edgar Scrase, 2019).
2. Affordability – the cost of the water needed should be less than 5% of the household’s income. The pricing of water should be reflective of the economic situation of the community and substantial enough to enable the business break even.
3. Cost recovery – the cost of providing the water should be claimed back from the population. An effective cost recovery strategy will contribute to the sustainability of the partnership.
4. Minimization of non-revenue water – this should be reduced to 15% or less.
5. Water quality – the water should meet national standards for quality.
6. Operational efficiency – the quantity of water supplied per capita, and the duration of water supply per day.

**2. a. Give six possible causes of water emergencies, three due to natural causes and three due to humans.**

**b. What are the options for safe water supply during a water emergency?**

A1. Three possible natural causes of water emergencies:

1. drought;
2. flooding;
3. Earthquakes.

A2. Three possible causes of water emergencies due to humans:

1. accidental contamination of the water supply (as in the Camelford incident);
2. microbial contamination of water sources due to human mismanagement (such as the cholera outbreak in Haiti);
3. deliberate poisoning of the water supply as an act of terrorism.
   * 1. The possible options for safe water supply during a water emergency are:
4. delivery of water to consumers by water tanker and/or bottles
5. treatment of the water at the household to render it safe (e.g. by boiling).

**3. You are about to set off to conduct a sanitary inspection of an abstraction point at a river.**

1. **What would you take with you?**
2. **Explain four things you will be looking for during your inspection.**
3. You would need to take an appropriate checklist of questions to ensure that you inspect thoroughly and do not forget anything. You will also need a notebook and pen or pencil to record all the information you collect. Depending of the scale, camera could be used to capture images during the inspection.
4. Important things to look for include
   * 1. the location of any latrines or other possible sources of contamination (due to farming or industrial activities) relative to the river,
     2. the possibility of any landslide or mudflow,
     3. a good solid fence,
     4. the presence of a filter and, if a filter is present, that it is operating properly, and

**4. Explain briefly why a Water Safety Plan (WSP) is necessary**

A Water Safety Plan is necessary to ensure that the water that is produced and delivered to consumers is safe. It also ensures that the chance of an incident disrupting the continuous supply of water is minimised. It is the most effective means of consistently ensuring the safety and acceptability of a drinking-water supply. WSPs require a risk assessment including all steps in water supply from catchment to consumer, followed by implementation and monitoring of risk management control measures, with a focus on high priority risks. Where risks cannot be immediately addressed, the WSP approach allows for incremental improvements to be implemented systematically over time.

**5. Distinguish between the two types of maintenance at a water utility and give reasons why one of them is Better**

The two types of maintenance are preventive maintenance and breakdown maintenance. Preventive maintenance involves regular checks that everything is working properly. Breakdown maintenance is needed if equipment breaks down. Preventive maintenance is the better approach because it avoids any break in supply, and is usually cheaper. While breakdown maintenance is carried out to restore the performance of an equipment by replacing faulty parts(Hupje, 2019).

Preventive maintenance can further be divided into:

* Time Based Maintenance (TBM)
* Failure Finding Maintenance (FFM)
* Risk Based Maintenance (RBM)
* Condition Based Maintenance (CBM)
* Predictive Maintenance (PDM)

While breakdown maintenance include:

* Deferred corrective maintenance
* Emergency maintenance

**Reference**

Open.edu. (2019). *OLCreate: WaterSupply\_1.0 Study Session 15  Public–Private Partnership and Other Commercial Opportunities*. [online] Available at: http://www.open.edu/openlearncreate/mod/oucontent/view.php?id=80365 [Accessed 30 Apr. 2019].

Hupje, E. (2019). *Types of Maintenance: The 9 Different Strategies Explained*. [online] ROAD to RELIABILITY™. Available at: https://www.roadtoreliability.com/types-of-maintenance/ [Accessed 30 Apr. 2019].

Edgar Scrase, D. (2019). *Humanitarian Standards Partnership app*. [online] HSPApp. Available at: http://www.humanitarianstandardspartnership.org/ViewContent?DocID=1000011&VersionID=2000017&ChapterNumber=5&OrderInChapter=17&Lang=en [Accessed 30 Apr. 2019].