

# **Business Proposition Toolkit Website Material**

## **Glossary**

**Abstraction.** The taking of water from surface water (rivers, lakes and reservoirs) and groundwater (boreholes and springs from water bearing rocks such as chalk, limestone and sandstone).

**AMP.** Asset Management Period. The five yearly operating cycles in England and Wales set out by Ofwat, the industry regulator since 1989. AMP4 runs from 2005-10.

**Ammoniacal nitrogen (NH<sub>3</sub>).** Ammoniacal nitrogen is often found in water as a result of the discharge of sewage effluent with high levels affecting the quality of fisheries.

**Aquifer.** Rock and soil which holds water, an underground water source for groundwater.

**Artesian.** Water abstracted from groundwater resources.

**BATNEEC/BAT.** Best available technology not entailing excessive cost/Best available technology.

**Biosolids.** The new expression for sewage sludge which has been processed for recycling. The latter refers to its application on agricultural land or after further treatment, as compost sold for horticulture and domestic gardens. As far as PR goes, a better term than refined human excreta.

**Blue Flag.** Under the EU's bathing waters directive, designated bathing areas that meet the stricter guideline standard for water quality, as well as satisfying standards for safety, can be awarded a blue flag.

**BMO.** Build, Manage, Operate. A form of Operation & Maintenance contract.

**BOD/COD.** These are chemical/biochemical determinants of water quality.

**Biochemical oxygen demand (BOD).** This is the amount of dissolved oxygen in water consumed in test conditions over a period of five days by the microbiological oxidation of biodegradable organic matter contained in effluent. BOD measures the amount of oxygen consumed, usually by organic pollution (mainly sewage effluent and effluents from the wood and paper industry), so lower values indicate better quality.

**Chemical oxygen demand (COD).** Unlike BOD, this includes all the oxygen consumed by effluents.

**BOT.** See Concession.

**CAP.** The Common Agricultural Policy of the European Union.

**Capex.** Capital spending. Money spent on new assets or replacing or upgrading extant assets.

**Carcinogen.** A substance which is believed to be a cause of cancers in humans.

**CEO.** Chief Executive Officer.

**CFO.** Chief Financial Officer.

**Coliform bacteria.** Gut living bacteria that are discharged with excreta. Drinking water contaminated with coliform bacteria is the main cause of diarrhoea and other intestinal infections. The most useful indication that sewage effluent is being discharged into a body of water.

**Combined sewers.** A sewer that carries both sewage and storm water runoff.

**Common Ownership.** A form of privatisation where the operating assets are corporatised and a minority of the shares in the asset-holding company are offered to one or more private sector companies. This is known as Kooperationmodell or the 'German Model'. A further variant is the Betreibermodell, where the private sector operator pays a fixed rate for the right to operate the services.

**Concession.** The granting of the right to operate given utility services for a locality for an agreed period of time. Unlike outright privatisation (see Asset Sale), the assets are transferred to municipal

ownership at the end of the concession's life. In a full utility concession, the collection of water and sewerage tariffs is included. There are also four main variants of the concession model (BOO, BOT, TOT and BOOT) where tariff collection usually remains in municipal hands. These versions are typically seen where the municipality needs private sector finance and management for new facilities.

**BOO (Build Own Operate).** The private sector company builds, owns, maintains and operates the facility for the length of its operating life.

**BOOT (Build Own Operate Transfer).** Similar to the BOO contract, save that the private sector company hands over the assets to the municipality at the expiry of the concession.

**BOT (Build Operate Transfer).** Similar to the BOOT except that the private sector company hands over the assets to the municipality on completing construction work.

**TOT (Transfer Own Transfer).** Take over an existing facility, rehabilitate and subsequently operate it and hand over the assets to the municipality at the expiry of the concession.

**COO.** Chief Operating Officer.

**Cryptosporidium.** Parasitic micro-organisms which live in water and are a cause of diarrhoea. The presence of crypto is arguably an indicator of an under-maintained distribution network.

**CSD.** Commission on Sustainable Development of the UN.

**DBFO.** Design, Build, Finance and Operate. A form of BOT concession.

**DBO.** Design, Build and Operate. A form of BOT concession.

**DBOT.** Design, Build, Operate and Transfer. A variant of the BOT contract incorporating the design of the facility.

**DfID.** The UK Government's Department for International Development, a government agency for promoting development initiatives.

**Digestion.** Process for stabilising sewage sludge before application to land. Digestion involves heating the sludge to 40°C to reduce the number of bacteria and pathogens. Anaerobic digestion (see Pasteurise) generates methane, which can be extracted for energy recovery.

**Distribution Loss.** Non-contentious expression for leakage (q.v.) which also includes other losses including theft of water.

**Dry tonne.** Sewage sludge or industrial effluent after all water has been removed. This is the standard measure used for comparing sewage sludge generation and disposal statistics.

**EBITDA.** Earnings before interest, taxation, depreciation and amortisation.

**EBRD.** European Bank for Reconstruction and Development. Loans for municipal and private services, with an emphasis on the EU candidate countries.

**Effluent.** Liquid wastes typically discharged into a body of water. Strictly speaking, it is the liquid discharged from a wastewater treatment plant into a body of water, which is meant to meet various quality criteria.

**EIB.** European Investment Bank. Loans for municipal and private enterprises, priority within the EU.

**EPA.** (National) Environmental Protection Agency.

**Eutrophication.** The process by which lakes and ponds become enriched with dissolved nutrients, resulting in increased growth of algae and other microscopic plants. Nitrogen and phosphorous enrichment of water, which causes algal growth to extend beyond that associated with the particular aquatic environment. Degrades the quality of the ecosystem and impairs water quality. The main causes are industrial agriculture (fertilisers and slurry) and excess effluent discharges.

**Evapotranspiration.** The removal of water from a surface through evaporation.

**FAO.** Food and Agriculture Organisation of the United Nations.

**French Model** Also known as affermage, (see Lease).

**Fresh water.** Water that contains less than 1000 milligrams per litre of dissolved solids such as metals and nutrients.

**FY.** Financial Year.

**GEF.** Global Environment Facility (World Bank)/Global Environment Fund (privately held).

**German Model** Also known as Kooperationmodell and the Betreibermodell (see Common Ownership).

**GDP.** Gross domestic product . most effectively compared through using the Purchasing Power Parity tool, PPP.

**Green Flag.** EU bathing water quality award for smaller and rural beaches and resorts, similar to the Blue Flag scheme.

**Groundwater.** The supply of fresh water found beneath the earth's surface (usually in aquifers) which is often used for supplying wells and springs.

**Groundwater recharge.** The inflow of water to an aquifer.

**Habitat.** United Nations Centre for Human Settlements (see UNCHS).

**Hague.** The second World Water Forum, held in the Hague in 2000. Unveiled the 2025 target for universal water and sanitation provision, allied with greater private sector investment.

**IADB.** Inter-American Development Bank. Development Bank primarily concerned with financing infrastructure projects in Central and South America.

**IFC.** International Finance Corporation (World Bank, investment banking and privatisation).

**IMF.** International Monetary Fund . encourages the sale of assets as part of state refinancing.

**Inset Appointment.** Term for water provision contracts awarded to a new company within an incumbent company's service area. A form of water service provision competition, mainly seen in the UK.

**IPO.** Initial Public Offering, whereby a company's shares are listed and subsequently traded on a recognised stock exchange for the first time.

**IPPC.** Integrated pollution prevention and control regulates the discharges from industrial processes into the air, land and water.

**IWRM.** Integrated Water Resources Management.

**K.** The percentage above (or below) the Retail Price Index that Ofwat allows a water company in England and Wales to alter its fees in a given year. This has evolved from the sRPI-X regulatory model pioneered by Oftel when British Telecommunications was privatised in 1984 and is an example of price driven regulation as opposed to the rate of return model used in the USA.

**L.** Litre.

**Leakage.** Loss of water through the distribution system either at joins between pipes or due to cracks in pipes. Because the perceived wastage of water is a contentious subject, definitions of leakage rates tend to vary. Pipes are affected by cold weather (ice-cracking) and dry weather (subsidence) as well as structural deterioration. Approximately one third of leakage takes place within the customer's

pipe network. It is also affected by water pressure, leading to a pay-off between water supply pressure and leakage rates.

**Lease (Affermage).** Privatisation model pioneered in France whereby the private sector company rents the assets from the municipality for a given length of time. The municipality is responsible for investment while the company does the tariff collection. In France, this evolved into a form of concession model, with the company carrying out an agreed programme of asset improvements over the life of the contract.

**m3.** Cubic metre, or 1,000litres. Measure of water volume. One cubic km is one million m3.

**Mains.** Pipes that carry treated drinking water to the customers supply pipe via a connection pipe. Also called the distribution mains.

**Management Contract.** The simplest form of privatisation, where the private sector company provides management support for the operation of the assets. Usually seen as a means for the private and public sector entities to get to know each other.

**MG/day.** 4.55million metres per day. A volumetric measure used in the USA.

**Ml/day.** Megalitres per day (1,000m3 per day). Measure of water availability.

**Mt/pa.** Million tonnes per annum.

**Nitrates (NO3).** Nitrates are formed naturally in the soil by micro-organisms, but are also produced industrially and used as fertilisers. Nitrates are the nutrients, which in most saline waters control the production of algal growth with high levels of nitrates in the water causing eutrophication through algal and macrophyte growth. Furthermore 'blue baby disease', an affliction of the blood's oxygen-carrying capacity, is associated with drinking water containing nitrogen in the form of nitrates.

**NGO.** Non Governmental Organisation.

**Non-accounted for water.** The proportion of water put into a system that does not end up being paid for either directly or indirectly.

**O&M (Operation and Maintenance).** A step further from management contracts, but not a privatisation in the sense of a concession or asset sale. Here the private sector company operates and maintains the extant assets for a given period of time, but is not involved in the development of these assets or new facilities.

**OECD.** Organisation for Economic Co-operation and Development. Global grouping of 24 more developed economies.

**OFWAT.** Office for water services, the water regulator for England and Wales.

**Opex.** Operating expenditure. Money spent maintaining the extant infrastructure and using it to provide a service.

**PAH.** Polyaromatic hydrocarbons. A toxic industrial pollutant of increasing concern in EU and WHO water quality assessment criteria.

**Parastatal.** A state held entity that operates at least nominally independently of the state. A Parastatal may also operate as a corporatised (q.v.) entity.

**Pasteurise.** Sewage sludge which is more extensively treated than digested sludge (q.v.). After heating the sludge to 60oC for several days, all pathogens and bacteria are removed, making it satisfactory for a wide range of agricultural applications. The main techniques are known as anaerobic digestion and composting.

**Pathogen.** An organism which is capable of causing a disease.

**PCBs.** Polychlorinated biphenyls were mainly used for electrical transformers. They do not degrade and are understood to be carcinogens which can bioaccumulate (build up in an organism's body, typically in fat reserves) to a dangerous degree. Their manufacture was banned in 1977, but some 60% of all PCBs manufactured remain in use.

**PE.** The population equivalent or amount of oxygen demand (see COD/BOD) generated and discharged by the average person each day. In a typical town, it is 1.5 to 2.0 times the population.

**P/E.** Price Earnings Ratio (PER). A company's share price divided by its historic financial year (FY) earnings per share.

**Pesticides.** There are two main classes of pesticides: chlorinated hydrocarbons are long-lived and capable of being concentrated up the food chain (this is called bioaccumulation). The second group is the organophosphates which are short-lived and presumably degrade to 'harmless' end products, but whose long-term environmental impact is not yet known.

Chlorinated hydrocarbons: Aldrin, Endrin, Benzene, Hexachloride, Azodrin, Malathion, Parathion, Diazinon,

Organophosphates: DDT, Dieldrin, Endosulfan and others Trithiopn, Phosdrin and others.

**PFI.** Private Finance Initiative. A tool developed in the UK in the mid 1990s for awarding single projects to the private sector on a concession basis.

**Phosphates.** Phosphates are another nutrient, responsible for the eutrophication that mostly stems from sewage effluent with the remainder mainly from agricultural inputs and from extensive use of detergents.

**Physicochemical treatment.** The treatment of liquid wastes to reduce their environmental impact (see BOD/COD).

**Plumbsolvency.** The ability of water to dissolve lead from piping or solder. Soft waters (e.g. granite) are more plumbsolvent than hard waters (e.g. chalk). Soft water is defined as water that has less than 60 milligrams of calcium carbonate (lime) per litre.

**Potable.** Water that is fit for human consumption, as defined by World Health Organisation (WHO), EU or national standards.

**PPP.** Polluter pays principle, whereby a discharger of polluting substances pays a fee relating to the pollution load discharged. PPP can either be used to encourage dischargers to minimise their pollution loads or to finance the development of an appropriate effluent treatment network.

**PPP.** Public-Private Partnership, where the private sector manages state or municipally held assets on a partnership basis. sPPP is a common TLA (triple letter acronym) affecting the water sector.

**PSP.** Private Sector Participation. Another TLA for PPP.

**Raw water.** Water from surface or ground sources prior to treatment.

**Red List.** Substances deemed harmful to the environment. Their discharge into the environment is to be brought under the control of the EU's IPPC directive. Grey List substances are of intermediate toxicity and are subject to a less stringent set of controls.

**Reservoir.** A body of water, usually artificially impounded, for maintaining controllable supplies of raw water. Prior to distribution, it is usually sent to a treatment works to be made potable and held in a service reservoir.

**River basin.** A term used to designate the area drained by a river and its tributaries.

**Sanitary sewers.** Underground pipes that carry off only domestic or industrial waste, not storm water.

**Septic tank.** Tank used to hold domestic wastes when a sewer line is not available to carry them to a treatment plant; part of a rural on-site sewage treatment system.

**Sewage.** Domestic sewage mainly consists of human excrement. Agricultural sewage has the same environmental impact, but its legal status is more ambiguous (as long as it is not discharged directly into watercourses).

**Sewage sludge.** The House of Lords, in its 1991 paper on the EU's UWWTD, perhaps harks back to school when describing sewage sludge as having "the consistency of thin semolina." The principal byproduct from sewage treatment. Typically consisting of 96-97% water and 3-4% dry solids, it is usually measured in terms of dry solids to allow international comparisons to be made.

**Sewage treatment.** This usually involves a series of phases, each designed to progressively reduce the environmental and health impact of the effluent. Sewage is carried in the effluent either as solid matter or in dilute, suspended solids. While several performance criteria are used to assess the performance of a sewage treatment works (mainly, the removal of silts, BOD and ammonia), each level of treatment can be judged by its ability to remove these solids from the effluent stream prior to its final discharge. There is a fairly close relationship between ultimate solids removal and the lowering of an effluent stream's BOD.

- **Level of treatment Process involved:**
  - None and Preliminary Screening out of solids
  - Primary (1°) Settlement to remove solids from effluent
  - Secondary (2°) Biological treatment to remove suspended solids
  - Tertiary and Advanced Further nutrient removal via filtration, etc.
- **Level of treatment Percentage of sludge removed BOD removal**
  - None and Preliminary 2% (range 0-5%) of sludge removed 0-5%
  - Primary 30% (range 10-40%) of sludge removed 2-35%
  - Secondary 90-95% of sludges removed 75-90%
  - Tertiary and Advanced 99-100% of sludges removed 95-98%
- **Preliminary/Screening.** Intended to remove solids flushed down lavatories, such as condoms, tampons and nappies. Reduces the aesthetic impact of the sludge without affecting its environmental impact.
- **Primary (1°).** Physical treatment, where the effluent is placed in a settlement tank, so that solids are left behind and the liquid effluent is then discharged.
- **Secondary (2°).** Biological treatment, where the effluent trickles through inert materials such as slag, clinker, gravel or more recently, moulded plastic, so that it comes into contact with micro-organisms, which oxidise and clarify the effluent.
- **Tertiary.** A bit of a catch-all expression, usually referring to chemical treatment. Usually concerned with the removal of nutrients such as nitrogen and phosphorous.
- **Advanced treatment and disinfection.** In addition, reverse osmosis membranes are being adopted where space is at a premium. For example, for serving a bathing area directly backing onto cliffs. Treatment can be extended to include further disinfection by exposing the effluent to ultra violet light or ozone prior to its final discharge.

**Sewerage.** The collection and distribution network linking domestic and industrial properties with the sewage treatment system.

**Storm sewer.** A system of pipes (separate from sanitary sewers) that carry only water runoff from building and land surfaces.

**STW.** Sewage treatment works. Sewage effluents are collected at a STW for treatment, with the sewage sludge being separated from water for discharge.

**Supply pipe.** The part of the water distribution network which is on the customer's property and thus usually owned by the customer, not the water supplier. The statutory obligations of water provision companies usually do not extend to the supply pipe.

**Surface water.** All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, seas, estuaries). It also refers to springs and wells, which are directly influenced by surface water.

**SWC.** The statutory water companies are private sector companies with a statutory obligation to provide water in England and Wales under the 1973 Water Act. Also known as water only companies (WOCs) and are distinct from the Water Plcs.

**TOT.** Transfer, Operate and Transfer. A variant of the BOT contract where extant assets are taken over and operated for a set period of time.

**Trade effluent.** Dilute wastewater (effluent) discharged by industry into the sewerage network. Increasingly subject to restrictions under IPPC whereby it is to be treated separately from domestic sewage.

**Tuck-In.** Acquisitions by a major water company of small water companies within or adjacent to their service area, which are tucked-in or integrated into their networks.

**Turbidity.** Cloudiness caused by the presence of suspended solids in water; an indicator of water quality.

**UFW.** Unaccounted for water. Distribution losses or leakages (q.v.), either expressed as a percentage of water put into the system or in terms of million litres per day (or year). Percentage losses are typically avoided due to their emotive impact. Often also includes illegal abstraction and unmetered supply that has not been billed for.

**UNDP.** United Nations Development Programme

**UNEP.** United Nations Environment Programme.

**UWWTD.** The EU's 1991 Urban Wastewater Treatment Directive (91/271/EC). All populations of more than 2,000 to have suitable sewage treatment from 2005.

**WASC.** Water and sewerage company, see Water Plc.

**Wastewater.** Typically either sewage (q.v.) or an effluent (q.v.). Water that carries wastes from homes, businesses, and industries. A mixture of water and dissolved or suspended solids.

**Water consumption.** Consumption is the part of a withdrawal of water that is ultimately used and removed from the immediate water environment whether by evaporation, transpiration, incorporation into crops or a product, or other consumption.

**Water contamination.** Impairment of water quality to a degree which reduces the usability of the water for ordinary purposes, or which creates a hazard to public health through poisoning or spread of diseases.

**Water Plc.** Colloquial expression for the ten water and sewerage companies (WASCs) of England and Wales, which were privatised in 1989.

**Water pollution.** Industrial and institutional wastes, and other harmful or objectionable material in sufficient quantities to result in a measurable degradation of the water quality.



**Water quality.** Classification of inland waters. EU classifications range from sVery Good (IA) quality waters that have no appreciable indicators of human activities and are capable of supporting more sensitive species such as Brown Trout, to sPoor (III) quality waters that support a significantly degraded community of plant and animal species, and sBad (IV) quality waters that (with the exception of some fungi and algae) are usually incapable of supporting life.

**Water use.** Water use is usually defined and measured in terms of withdrawal (q.v.) or consumption (q.v.) that which is taken and that which is used up. Not all water withdrawn is consumed, but is instead returned to a surface or ground water source from a point of use and becomes available for further use.

**WB.** World Bank. Loans targeting services and infrastructure at the pre-privatisation phase. Broad remit to encourage cost recovery and commercialisation.

**WBCSD.** World Business Council for Sustainable Development.

**Wet tonne.** A measure of weight for sewage sludge or industrial effluent. In the case of sewage sludges, this usually refers to material removed from the sewage treatment process. Sewage sludge usually consists of 95-98% water, falling to 75-85% after basic drying. The variability of the water content makes wet tonnes an inconsistent measure of sewage generation, hence the use of dry tonnes when comparing sewage data.

**WFD.** The EU s 2000 Water Framework Directive. Inland waters to be of %good ecological quality+by 2012-15. Calls for cost recovery from 2010 and water management at the river basin level. The expected practical compliance date will be during the third assessment cycle, ending in 2029.

**WHO.** World Health Organisation. Sets Global Standards for drinking water quality, as specified in its sGuidelines for Drinking-water Quality (3rd edition published in 2004).

**WOC.** See SWC.

**WTW.** Water treatment works render raw (untreated) water potable or fit for human consumption.

**WWTW.** Wastewater treatment works, another term for sewage treatment works.