

Draft Pandemic Response Plan for Water and Sanitation Operators – Applied to Covid-19 –



German Water
Partnership



This plan draws on a number of different inputs. However, its structure and several recommendations in this plan are based on the Pandemic Operational Planning Manual from the Regional Council of Stuttgart and the German Federal Office of Civil Protection and Disaster Relief, Version 2.2B, Dec. 2007.

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Change Record

Insert only changes compared to the previous version and only those that result in new or changed recommendations, not editorial changes.

Changes with respect to the last publication			
Chapter	Page	Date	Comments

Table 1-1. Change Record

List of Abbreviations

Abbreviation	Meaning
GIS	Geographic Information System
IT	Information Technology
PPE	Personal Protective Equipment
PRP	Pandemic Response Planning
PRT	Pandemic Response Team
SARS	Severe Acute Respiratory Syndrome
THM	Trihalomethanes
VPN	Virtual Private Network
WHO	World Health Organization
WSO	Water and Sanitation Operators
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

1. General information

This Pandemic Response Plan (PRP) contains general recommendations for action and strategies that may be followed in the event of a pandemic and specifically includes measures that are adapted to the novel coronavirus pandemic. Its function is merely that of a guide and this PRP draft must be adapted by each company to its own realities.

Water and Sanitation Operators (WSO), which include drinking water and wastewater services, have a vital function for society and a responsibility for protecting the common good. Drinking water supply and distribution systems as well as wastewater collection and treatment systems therefore need to be kept operational, especially when keeping in mind that access to drinking water and final disposal of treated wastewater are the foundation for a successful pandemic response.

Given that WSO are equally threatened with losing staff or disrupted supply chains, even if only temporarily, it is all the more important that actions are taken and planned well in advance in order for them to be able to uphold their vital service to the community. What is more, such action is indispensable to both protect the company's staff and prevent larger economic damage to the company.

This PRP is structured in five phases (see Figure 2-2). Each phase reflects a development of the pandemic and contains appropriate measures to be taken when a phase comes into effect. The entry into force and expiration of a phase is decided upon exclusively by the coordinator of the Pandemic Response Team (PRT) in coordination with the general management of the WSO. When the next higher phase is reached, the actions already activated in previous phases remain in force.

The PRP and its measures must be adapted to the characteristics and development of each pandemic that is being dealt with, for example transmission paths and symptoms of the disease should be closely followed and respective measures continuously evaluated and updated accordingly. In case other measures are needed or changes occur, they must be communicated through the common internal communication channels (email, distribution lists, telephone or through the manager).

At the end of this plan, some further considerations are offered. These go beyond corporate considerations of WSO that concern the organisation of internal workflows but rather raise awareness of the special needs of certain population groups. WSO as providers of much needed services during pandemics may choose to assume responsibility in catering for the needs of the socially vulnerable.

2. Definition of terms and concepts

2.1. Scope of application

The recommendations contained in this PRP apply to all units of the company, as well as to staff working on behalf of the company or other external people entering its premises and administrative locations.

2.2. Phases of the PRP

This PRP is divided into five phases, as detailed in Figure 2-2 below.

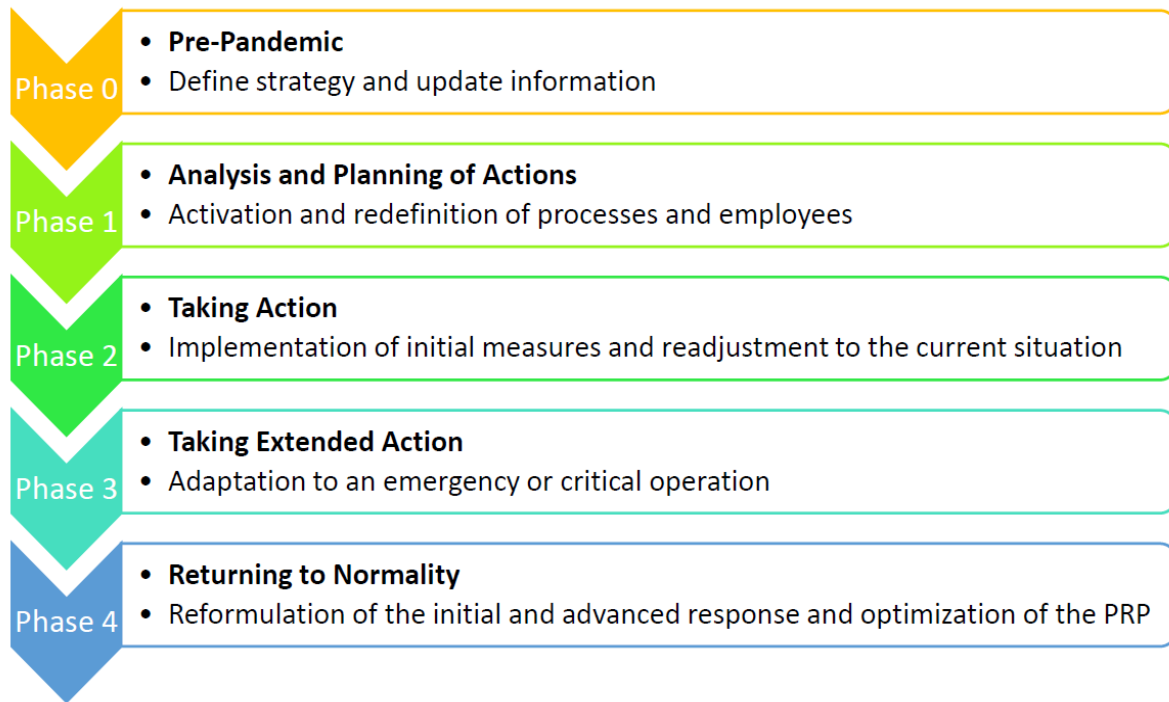


Figure 2-1. PRP phases and objectives

2.3. Pandemic

If a disease spreads not only regionally but also between countries and continents, experts refer to a Pandemic (as opposed to endemics which are locally bound to a region). According to the World Health Organization (WHO), pandemics are often caused by newly emerging pathogens or virus types and are transmitted through animals to humans. If a disease is new to humans, very few people will be immune to the virus. There are no vaccines in this case either. This can cause large numbers of people to become ill. How dangerous or deadly the disease is depends on the specific virus and the health of the person. A pandemic and the consequent restrictions on the availability and mobilization of personnel, availability and delivery of necessary supplies and services, etc., affect the regular operation of the business in the medium or long term.

2.4. Specific information on the current pandemic: Covid-19¹

Covid-19 Pandemic	<ul style="list-style-type: none"> • Covid-19 is the name of an infectious respiratory disease caused by the new coronavirus 2 of the severe acute respiratory syndrome. This contagious virus, which has been named SARS-CoV-2, is novel and thus no immunization pre-exists, hence explaining the virus's high potential to spread.
Symptoms of Covid-19	<ul style="list-style-type: none"> • In most cases, mild symptoms such as sore throat, (dry) cough and fever • In severe cases, it can lead to pneumonia, which can result in death

¹ This table serves as a model for providing key, concrete information to company personnel about the pandemic

Transmission of the virus SARS-CoV-2	<ul style="list-style-type: none"> • Through the respiratory secretions of infected people, e.g. from coughing or sneezing, which usually have a reach of two meters • By direct contact with respiratory secretions or objects contaminated with them
Potential of SARS-CoV-2 virus transmission through water	<ul style="list-style-type: none"> • The current state of scientific research is that a transmission of the coronavirus through drinking water is very unlikely • In the case of wastewater, the risk of direct transmission of the virus through the faeces of infected persons also appears to be low. To date, no cases of faecal-oral transmission of the virus have been reported although the presence of inactive virus RNA sequences in raw sewage has indeed been detected. Thus, it may rather serve as bioindicators to define a certain presence and the extent of infected persons. The same studies indicate that a wastewater treatment reduces the presence of these sequences, avoiding any later infection.
Prevention measures	<ul style="list-style-type: none"> • Main prevention measures should interrupt the route of transmission of the virus by distancing infected persons and/or their secretions from non-infected persons and disinfecting contaminated surfaces, including hands, by washing them with soap. • The virus can be inactivated with disinfectants such as ethyl alcohol (> 70%) and 0.5% calcium hypochlorite
Vaccination	<ul style="list-style-type: none"> • As of April 2020, there is no vaccine against the virus or to treat the disease

Box 2-1. Specific information on Covid-19

The criteria and conditions that have to lead to the activation of phase 1 (Analysis and Planning of Actions), need to be defined (preferably after consultation with the public pandemic crisis management committee, if available, or with the responsible health office in coordination with the municipal emergency plan). Similarly, it must be determined when the PRP will cease to be in effect. It should be noted that pandemics usually occur in waves, so the disease can spread over many weeks or months. Close contact with local, regional and national authorities is necessary here.

3. Concept of the Pandemic Response Plan (PRP)

3.1. Goals

The **main goal of the PRP**² is the protection of the health of all employees and persons working in the drinking water supply network, plants and sewers, ensuring the service of drinking water supply to users, as well as the maintenance of operational activities, collection and treatment of wastewater.

The specific goals of the PRP are:

- Protection of employee health (focused on minimizing the risk of infection),
- Ensure basic operational functions for drinking water and wastewater services,
- Reorienting all resources to the maintenance of primary processes during the pandemic

² The goals are but a proposal and can be adapted by the SSP general management and board of directors

- Employees are informed and prepared for their specific tasks during the pandemic.

3.2. General Management Functions

The general management of the WSO is responsible for the management of the company, also in the case of crises such as pandemics. Therefore, it must particularly carry out the following functions before, during and after pandemics:

- Setting guidelines on the general direction that measures shall take
- Decisions on the continuity of operations and the special measures required to achieve this
- Determination at which point in time or under which conditions each measure should be applied
- Participation in external crisis committees (among WSO or with local, regional government, health sector, etc.)
- Obtaining permits for internal and external employees to carry out key processes
- Setting communication guidelines and overseeing the implementation of measures

4. Phase 0: Pre-Pandemic

In the case of situations which suggest the emergence of a particular health risk, the Pre-pandemic phase is declared. This phase is regarded as a pre-alarm; no concrete personnel or protective measures have yet been initiated. Its purpose is to provide the essential foundations for dealing with an anticipated pandemic, e.g. appointing a pandemic response team leader or drawing up a communication concept.

The key measures during this phase are:

- Definition of the PRT, and designation of a PRT coordinator
- Regular update of the communication strategy
- Setting up a data platform

In case of long periods without activation of pandemics, it is advisable to carry out simulations (e.g. 3 days) to evaluate and adjust the measures established in this PRP.

4.1. Pandemic Response Team

The PRT supports the general management of the WSO during a pandemic. It will be responsible for operationalizing the general management's guidelines during a pandemic.

The members of the PRT normally hold senior positions within the company wherefore they have ample knowledge of the processes and procedures established in the WSO. It is important to mention that this team is not only in charge of supporting the general management in its crisis management, but – especially in phase 0 and 1 – assists with analyses and planning of measures as well as the procurement of the necessary supplies in case of a pandemic. Ideally, the PRT is composed of the following functions. Depending on the size of the company, certain functions can be carried out by the same person (See Annex 10.1 PRT List).

- PRT Coordinator and his substitutes
- Communications Manager
- General Management
- Managers of operational and administrative units
- Human Resources Manager (for personnel management issues)
- Financial Resources Manager
- Procurement Manager (acquisition of materials and goods)
- Occupational Safety Engineer
- Health Manager (doctor or nurse of the company or external)
- Elected employee representative

The PRT coordinator is supported in his decisions by the entire PRT and in particular by the WSO health staff.

The PRT coordinator activates or deactivates the PRP according to defined criteria, takes necessary actions during the pandemic phase and maintains an overview of planned and initiated actions.

Another important team member is the communication manager who assists the PRT coordinator in the area of acquiring and disseminating information to the PRT, employees and the public. The communication manager develops and regularly updates the concept of internal and external information for all phases of the pandemic.

4.2. Development of a communication strategy

An appropriate communication and information strategy should be developed for each phase of the plan. The aim is to ensure a functioning communication structure between all persons involved, also under restricted and/or quarantine conditions, e.g. between WSO headquarters, PRT, home offices and branch offices. In addition, the communication strategy should ensure that essential information can be rapidly transmitted to all employees. It is recommended that all communication and information be formulated in simple words, short and understandable sentences. The following boxes provide details about the essential communication issues in the different phases.

The pre-pandemic phase focuses primarily on dissemination of guidelines and contact information.

Important information during the pre-pandemic phase (0):

- Information that allow close coordination with PRT members
 - Directory of contact information for team members, staff and external entities such as health departments, crisis committees, or others. This directory should be kept constantly updated (see Table 4-1)
 - Definition of communication channels (email, phone, text message, etc.)
- Information on operational planning for the pandemic (e.g., restrictions to company operations, teleworking, temporary reduction of personnel, care and support for key personnel; see Chapter 6.1 of this document)
- Rules for dealing with third-party service contractors, suppliers, authorities, customers, etc. (see Chapter 6.6)
- Restrictions on travel and participation in hosting events
- Rules and notifications for the personal conduct amongst employees (e.g. personal hygiene, keeping physical distance; see chapter 6.4 of this document as well as the corresponding annex with examples for posters that may be posted at strategic points in the company)
- Procedure and notification in case of symptoms

- Information on the medical and epidemiological history of the pandemic, symptoms and the concept of protection such as vaccines

Box 4-1. Important information during the pre-pandemic phase

Contact directory ³							
Company/ Unit	Employee's name	Company Phone	Teleworking Phone	Email	Substitute's name	Substitute's Phone	Substitute's Email

Table 4-1. Example for a contact directory

The communication during the different phases of the pandemic is focused on the distribution of updated information on the evolution of the pandemic, the measures adopted, changes to the personnel's office presence and changes applying to third-party contractors and suppliers. Contact with authorities is maintained by the general manager or the PRT coordinator.

Important information during the pandemic phases (1-3)

- Regular information on the current situation and development of the pandemic (public and internal),
- Information on measures and operational restrictions in place according to the declared pandemic phase,
- Information on personal behaviour and hygiene measures in addition to normal ones, according to the declared pandemic phase,
- Information about the presence of staff and absences for different reasons, absenteeism because of illness, childcare or taking care of family members,
- Informing external organizations such as suppliers, customers and authorities about the declared pandemic phase and implications,
- Responsibilities and contact persons within and outside the WSO
- Information on the new staff planning and the rescheduling of holidays
- Information on measures aiming at a return to normality and on some positive or negative changes.

Box 4-2. Important information during the pandemic phases

Important information during the post-pandemic phase (4)

- Information on the "restart" of operations, standardisation of all operational procedures,
- Information on special events and workforce news related to the pandemic,
- Information on the new staff and holiday planning,
- Information to external organizations such as suppliers, customers and authorities about the completed pandemic phase

Box 4-3. Important information during the post-pandemic phase

4.3. Setting up a data platform for the PRT

A space for the storage, exchange and central processing of electronic data is created and maintained for the work of the PRT. This can be located in the physical room of the PRT, with the corresponding

³ A contact directory is recommended for: employees, suppliers, external authorities, etc.

equipment, or in a virtual space (cloud) with the corresponding communication options (telephone, text message, email).

This ensures that all project members have the same level of information and that no multiple versions are circulated. The folder structure and rules for the management of the data platform must be established by the general management, the PRT coordinator and the communication manager. In this sense, it is important to clarify who has access to the platform with what right, i.e.: upload, change, delete or only download or read information. It is also advisable to communicate the structure of the platform to all staff.

5. Phase 1: Analysis and Planning of Actions

5.1. Activating the PRT

In phase 1, the General Management of the WSO activates the PRP considering the guidelines of the WSO, the guidelines of the national level, following the observation and evaluation of the development of the pandemic in the WSO's area of operation. The activation of Phase 1 implies the creation of the PRT.

The PRT meets at regular intervals, as needed. Relevant developments, events and decisions will be recorded in a corresponding protocol by the PRT coordinator or her/his delegate.

With the declaration of the pandemic phase, the company actively prepares for an escalation of the situation by analysing critical points for ensuring minimum services, in response to the particular requirements of the respective pandemic.

A checklist of measures to be taken during the pandemic phase can be found in Annex 10.2.

5.2. Establishing a communication interface with external crisis committees

The company should establish and actively maintain an exchange with external crisis committees at the municipal, regional and/or national levels. In this way, needs can be coordinated with the requirements and decisions of public administration entities.

In all conversations and communications, emphasis should be placed on the fact that the company is of strategic public interest, and that its needs should therefore be treated as a priority.

5.3. Definition of critical processes and necessary resources

In each operating and administrative unit, the critical processes required to maintaining operations and those that can be restricted in an emergency must be determined. Critical processes are those that directly affect the continuity and quality of service provision, as shown in Box 5-1. Dependencies on suppliers and external service providers for tackling potential supply bottlenecks or remedying failures in water and sanitation services must also be considered.

Critical processes	
Drinking water	<ul style="list-style-type: none"> • Production of drinking water • Distribution of drinking water to its users • Attention to breakdowns
Wastewater	<ul style="list-style-type: none"> • Sewage treatment • Quality Control
Support processes	<ul style="list-style-type: none"> • Maintenance of facilities • IT and communications • Customer service • Basic Health Unit or company doctor • On-call system to provide general or specific services to all essential processes

Box 5-1. Critical processes

It is necessary to identify the critical points in the infrastructure (e.g. control room or subdivision, smaller water suppliers, facility security), and on the operational side (ordering of processing materials, issuing of permits, etc.). The company's tasks and their interdependencies are very complex and an optimal decision making hence requires for detailed and analytical information per process and even sub-process, such as:

- the priority of specific sub-processes,
- dependencies between sub-processes and activities,
- what supplies are required for the execution of tasks,
- under which conditions the execution of tasks becomes critical,
- what knowledge and qualifications should the person responsible for the execution of tasks have,
- whether and how other employees can be quickly incorporated into a key process and with what minimum qualification profile.

A very general prioritization is not recommended, but rather one by process and sub-process, thus providing more detailed information.

Similarly, the impact of possible travel restrictions (e.g. for sampling) should be discussed. The final disposal of products such as sludge and solid waste should also be ensured over a longer period of time in the event of a pandemic (see Table 5-1).

Critical processes will be recorded in tabular form, identifying necessary inputs, products to be handled (usually by suppliers), service delivery contracts and whether there is a minimum requirement for personnel. During this activity it is important for the prioritization of activities to analyse the critical points (bottlenecks) that can put the functioning or operation of sub-processes at risk. Subsequently, a detailed analysis is made of each criterion, indicating the measures or alternatives to be taken, which are explained in the subsequent sub-chapters.

Management	Submanagement		Critical Processes	Supplies				Products to be handled	Third-party services	Staff
				Chemicals	Fuel	Electric Energy	Materials			
Operation & Maintenance	Drinking water	Production	Water line	x	-	x	x	-	-	x
			Sludge line	-	-	-	-	x	x	-
		Network etc.	General	x	x	x	x	x	x	-
			Pumping	-	-	x	-	-	-	x
	Wastewater	WWTP	Water line	x	-	x	x	x	-	x
			Sludge line	x	-	x	-	x	x	x
			Gas line	x	-	x	-	...	x	x
			General	x	x	x	x	x	x	-
		Sewage etc.	...							x
	
Administration	Commercial	Logistics	...							
		Accounting	...							
		Invoicing	...							
	Human resources	...								

Table 5-1. Example of a list of critical processes, supplies, outputs and personnel

5.3.1. Analysis of critical supplies

The threat of shortages of supplies needed in critical processes is analysed by management and process. Logistic chains are also analysed, identifying threats with the acquisition of critical inputs. It refers to inputs such as: chemicals, fuel, electric energy, and frequently used equipment (maintenance of equipment, laboratory).

For the analysis of the critical supplies (see Table 5-2), a stocked quantity must ensure the continuity of operations for at least 3 months without restocking. To carry out this exercise, the monthly consumption is calculated and compared with existent stocks. If provisions are projected to last less than 3 months, the input is critical and the PRT should consider alternatives such as local inputs, the application of lower concentrations or the substitution with a similar input that is locally accessible.

Sub-management	Process	Product	Logistic code	Use for	Priority / Impact	Storage capacity	Stored quantity	Use	Date of next reload	Supplier	Limitation of supply (current / projection for x months)	Alternatives	Comments
WTP	Water line	aluminum sulfate	1	coagulant, solids removal from water	High / stop of the WWTP	20 t	5 t	5 t/month	30.04.2020	XYZ	no / no	yes, PAC	
WTP	Water line	chlorine gas (907 kg)	2	Desinfection	High / water delivery	5 t	3 t	2 t/month	15.04.2020	XYZ	no / no	yes, NaClO	
...													
Networks													
...													
Sewage	Pumping chamber X	Diesel	1	Feeding the pump	High / Stop of the Pumps	5 000 l	1 000 l	200 l/day	10.04.2020	XYZ	no / no	no	
Sewage	Pumping chamber X	Diesel	1	Emergency power generator	Low / main pump supply from network	1 000 l	1 000 l	0 l/day	10.04.2020	XYZ	no / no	no	
...													
WWTP	Sludge line	polymer XYZ	3	flocculation support, sludge drying	High / stop of WWTP	3 t	2.5 t	0.5 t/month	30.06.2020	XYZ	no / yes	yes	check availability monthly

Table 5-2. Example of a critical supply analysis

5.3.2. Analysis of critical contractors

The threat of failure and/or cancellation of contracted third-party services, such as laboratories for drinking water testing, is analysed. Continuity of critical third-party services must be assured, and in the event of problems, replaced with locally accessible alternatives during the pandemic. For example,

in case of governmental restrictions on economic activity and free movement, it is important to inform the authorities that these services are indispensable to ensure drinking water and sewage service.

The PRT should analyse alternative contractors or evaluate the possibility of carrying out a minimum performance by the WSO staff, always taking into account ensuring optimal drinking water quality.

Sub-management	Process	Contractor	Contracted service	Logistic code	Priority	Time before lack of service becomes problematic	Ability to provide the service by the company itself	Alternative Contractors	Comments
WTP	Water line	XYZ	Quality Analysis	XYZ	High / lack of control over the quality of the water produced	1 month	no	Laboratory from the University	
Network	Maintenance	XYZ	Repair of Leaks	XYZ	High / impact on service coverage, flooding, landslides	1 week	yes (up to a certain diameter)	XYZ	
WWTP	Water line	XYZ	Final disposal of solid waste	XYZ	Median / accumulation in WWTP	1 month	yes	XYZ	
WWTP	Sludge line	XYZ	Final disposal of sludge	XYZ	High / stop of WWTP	3 days	no	XYZ	

Table 5-3. Example of a critical contractor analysis

5.3.3. Identification of critical staff and preparation of a personnel plan

Due to the high infection rate of Covid-19, a significant number of employees are expected to stay away from work. Taking into account the analysis of key WSO processes, staff in non-priority processes (e.g. planning network extensions, meter reading) can be partially reduced for the time of the pandemic, so that employees concentrate on the key processes for the continuity of the drinking water supply and wastewater treatment.

Absenteeism of some of the employees will be "plannable": People with children in school or kindergarten, as well as people who have relatives who need care at home. Persons belonging to higher risk groups who must stay at home for precautionary reasons but cannot work from home will also be "out of service". Not plannable, however, will be the number of people who are not present because of their own illness or because they have to care for sick relatives. It is also not possible to plan which people will be quarantined by the public health department.

Personnel planning must focus on the goals of the PRP: to ensure the health of the personnel and to keep the key processes operational. Thereby, a number of points must be addressed in concordance with the corresponding national legal framework (e.g. on occupational health and safety) and the company's internal regulations, as well as with the endorsement of the employee's delegate to the PRT.

The underlying economic consideration regarding compensation and the costs of continued payment of wages in the event of quarantine is that they will not represent a major cost if timely action is taken and are nothing in comparison to the damages that could occur if no actions were taken.

Personnel planning during a pandemic is a continuous task that must be adapted to the current situation and therefore requires that there is a register of availability that is updated on a daily basis.

Communication between PRT, general management and human resource management is therefore essential.

Recommendations for Personnel Planning

- Ensure replacements and staff reserves, in particular for critical processes and the PRT (key functions).
 - Ensure compensation for the absence of a few employees or a group of employees at a time.
- Form small (with the minimum amount needed for absolutely relevant tasks) and fixed work teams to limit the probability of disease transmission, with limited rotation between them. Prohibit personal contact between teams and implement organizational measures, which reduce unintentional contact, for example through:
 - Avoiding overlap of start and end times of shifts and breaks so that teams do not meet,
 - The fixed allocation of vehicles per shift,
 - Ensuring that all teams and reserve staff have access to keys, chip cards and passwords necessary for carrying out their tasks,
 - Giving preference to system monitoring from the home office, as long as automatization allows for it,
 - Allow the emergency service team and other workers to operate and coordinate from home, if possible, as well as to leave from home towards their missions.
- Apply extraordinary work plans that might even include voluntary on-site accommodation of workers for periods of at least 1 or 2 weeks. This requires:
 - Supporting the families of key employees that are doing extra work with childcare, etc.,
 - Provision of the necessary emergency reserves for a concentration of staff e.g. in the control rooms (food, beds, sleeping bags, etc.) and ensuring the possibility of communication with the exterior,
 - If possible, test staff on the virus of the respective pandemic prior to their voluntary confinement.
- Analyse the possibility of hiring external personnel, duly trained:
 - Hiring via employment agencies,
 - Reactivation of retired workers with special knowledge (a record of these previous employees must be kept),
 - Exchange of trained personnel with neighbouring sanitation companies,
- Employ staff according to the needs of the company, even when positions do not correspond to the original profile,
- Training of company personnel in key processes by employees with specific experiences
- Explore possibilities for remote working from home, especially for administrative staff and equip workers with mobile equipment and ensure their communication with the company's internal communication channels,
- Explore the possibility of prohibiting holidays for critical personnel or offering remuneration in return, e.g. for PRT members, control room employees or technicians that are required for the operation of critical infrastructure.
 - Claims for damages as a result of holiday cancellations should ideally be assumed by the company
- Evaluate the possibility of declaring mandatory vacation for personnel not identified as critical in the pandemic phase but indispensable for normal operation, to reduce the economic impact to the company.

Box 5-2. Personnel planning recommendations

5.3.3.1. Analysis of minimum staff demand

The analysis of the staff demand is done by the management/sub-management determining the minimum number of people per function (for example: professionals, technicians, laborers or engineers, operators, mechanical technicians, electrical technicians) that is necessary to ensure the functioning of the basic operations of the company:

- operation (WWTP, quality control)
- network (pumping stations, leakage repair)
- sewage (leakage repair, pumping chambers)
- wastewater treatment (WWTP, quality control).

The analysis is carried out on the basis of the current organizational chart of the company's functions (with assignment of personnel, including names, current status and location of their job). This analysis should also consider all the support functions of the basic operations, e.g. logistics (which should ensure the procurement of the necessary supplies) or human resources (which should ensure the timely payment of salaries).

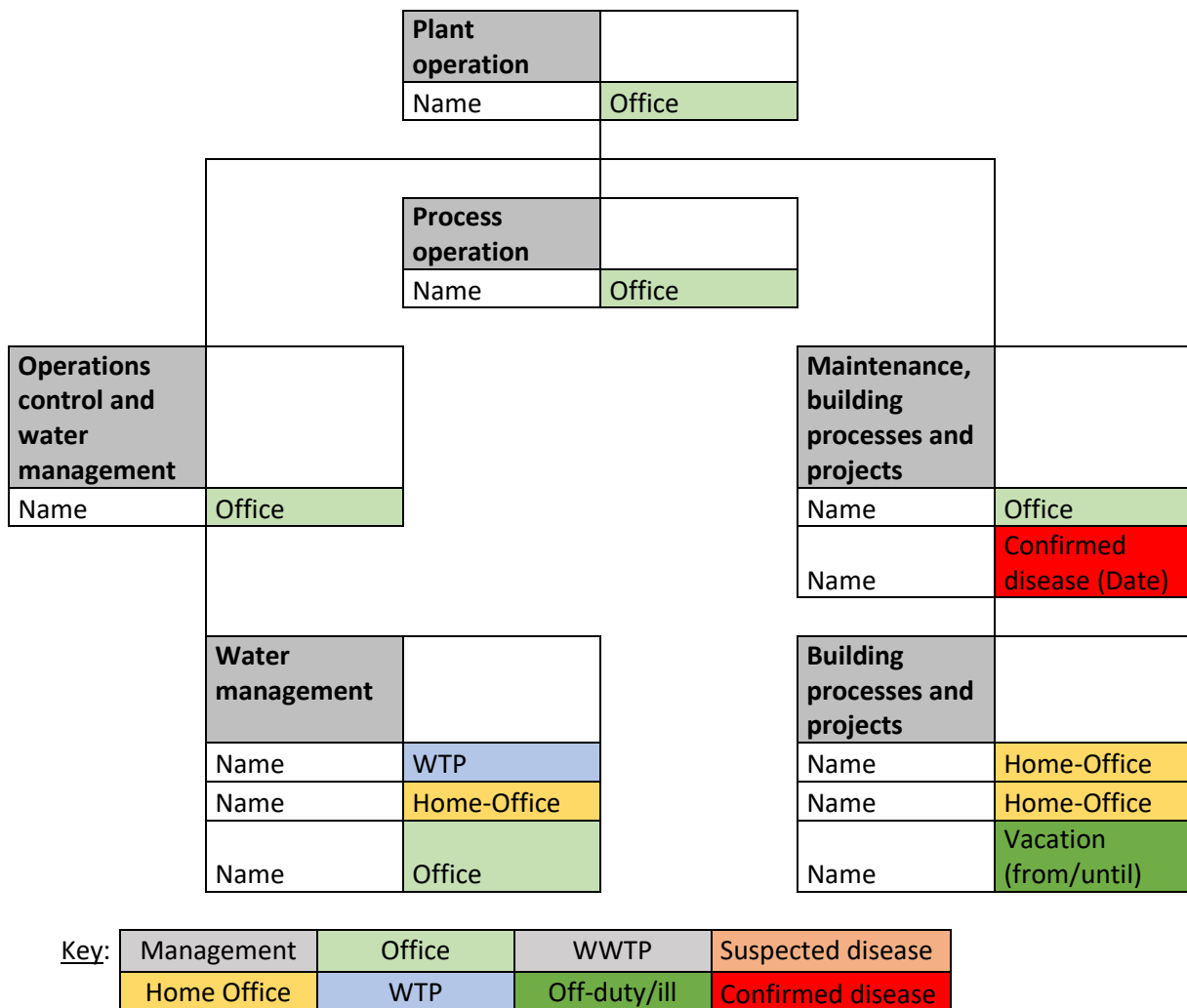


Figure 5-1. Example of assignment and location of personnel based on the organizational chart

Name	Submanagement code	Remote work	Main function	Backup function A	Backup function B	On-call service	Risk group (> 60 years,etc)	Replaceable by an external contractor
	114	yes	Plant operation manager			yes	yes	no
	1141 - 2	no	Water manager	Laboratory: process operation		no	no	no

Table 5-4. Example of the personnel analysis according to their main function and replacement functions

5.3.3.2. Employee involvement in PRT measures

During the pandemic phases, it is important that special attention is given to upholding the continuity of critical operations. Therefore, the PRT prepares and will regularly provide information on the following topics:

- Current situation and effects of the pandemic, changes and developments
- Personnel and organizational measures
- Teleworking possibilities (this may require ensuring accessibility by phone and communication through online channels)
- Dealing with absences due to illness, childcare or family members
- Measures applying to personal conduct and operating procedures
- Responsibilities and contact persons inside and outside the company (e.g. medical advice)
- Distribution of protective gear, e.g. protective masks, protective clothing, hygiene material
- Possibilities of vaccination, tests and advice from the company doctor

5.3.4. Analysis of the pandemic's impact on water demand

In some areas, the quality of drinking water may be affected by stagnation and reduced demand for water in industrial and institutional estates and tourist areas due to pandemic-related restrictions on the movement of people. In such cases, the water supplier should consider the following measures: closing unnecessary circuits, purging lines and cleaning these areas if necessary.

Where the closing of entire circuits is not viable, one can explore the possibility of closing the inlet faucets of individual facilities where no people are actually present in order to reduce physical losses of drinking water due to internal leaks or open faucets. This would also help reduce operating costs.

In any case, users must be contacted prior to any initiative to avoid inconveniences and service problems.

5.3.5. Analysis of the financial and economic situation

Depending on the state's activities and decisions to manage a national pandemic, it is possible that companies will be forced to suspend the collection of tariffs for drinking water and wastewater services, including sewage. This will cause a short-term liquidity problem for the company and may affect the possibility of buying necessary supplies or paying salaries.

To be prepared, WSOs should determine the minimum costs and expenses during the emergency operation and draw up a balance sheet for this pandemic situation. It then analyses some of the proposed measures to reduce expenses and increase revenues.

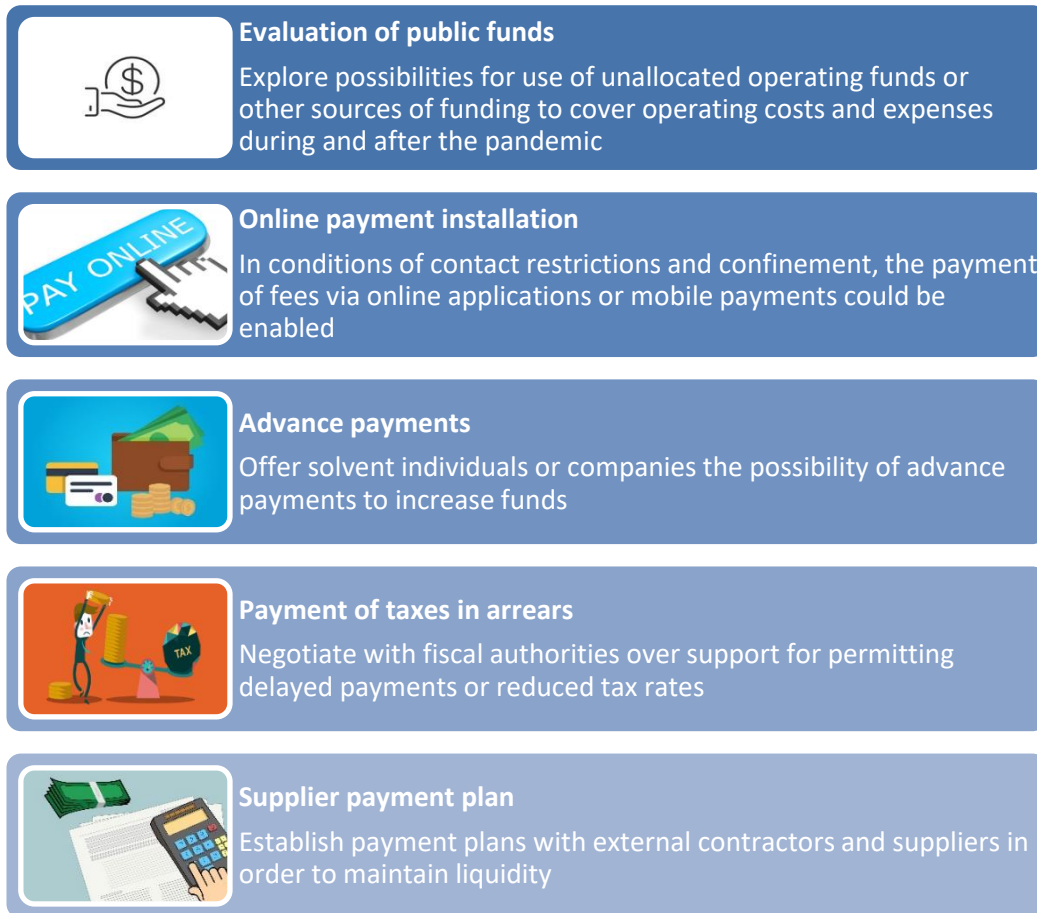


Figure 5-2. Measures to ensure liquidity of WSO during the pandemic

5.3.6. Provision of protective and auxiliary supplies

In the event of a pandemic, personal protective equipment will quickly become scarce, so acquisitions should begin as soon as possible. First, it must be made clear which groups of people will receive which type of equipment. Personnel planning must be available for this purpose (see Chapter 6.2).

In addition, the duration of use (e.g. how long a protective mask can be used), the procurement route, costs, and possible alternatives should be determined (see Box 5-3). As a proposal, the table in Annex 10.2.7 may be used for the calculation of certain personal protection and hygiene items.

It is recommended that access to protective gear be limited during the pandemic phases.

Minimum requirements of protective and auxiliary equipment

- Detergents and disinfectants (ready-to-use products should be preferred to reduce the risk in their preparation and application, paying attention to their limited shelf life),
- Hand soap and paper towels (consider their disposal)
- Protective gloves,
- Respiratory and/or face protection masks (specifications depend on the hazard identified and evaluated by the company physician or company occupational safety engineer, e.g. FFP3 or NF95 will be used to address the risk of infection through the respiratory system)
- Face protection glasses in places where there is a risk of close contact with third parties despite preventive measures,

- If necessary, full-body protective suits (the need and requirements must be agreed with the occupational safety engineer and the company doctor),
- Physical separation between workplaces in offices and/or at public counters

Box 5-3. Minimum requirements of protective and auxiliary equipment

5.4. Determination and application of rules and restrictions

The rules and restrictions pursuant to the PRP intervene in the following four main areas.

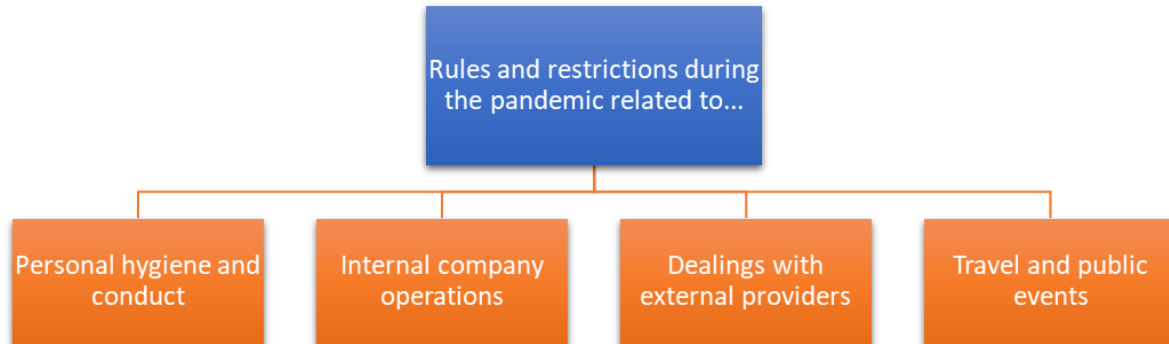


Figure 5-3. Intervention areas for rules and restrictions during the pandemic

5.4.1. Personal hygiene and conduct

Rules of personal hygiene and conduct must be communicated and published more frequently than usual (see communication strategy). In addition, posters, signs and information brochures in bathrooms, social rooms, meeting rooms, treatment plant entrances, etc. can increase attention. The rules are drawn up by the company's health or safety officer or an external doctor and are based upon an assessment of the respective diseases' infection risk.

Information for personal conduct may include:

- Instructions on generic measures of personal protection against contagious diseases
 - Instructions for proper hand washing and disinfection, especially after using the more frequented rooms (toilets, washrooms, social rooms) and after working in areas of danger of contagion (see Annex 10.3 for communication examples)
 - Coughing and sneezing etiquette, avoiding touching one's face
 - In the case of work in the sewerage system and / or WWTP, consider the biological hazards of wastewater in the specific context of the respective pandemic.
- Instructions on cleaning and disinfection measures for additional working environments, e.g.:
 - More frequent cleaning of objects and surfaces that are touched by several people, especially before a shift change,
 - Provision and use of disinfectant material in work vehicles.

5.4.2. Rules for internal company operations

- Instructions for reducing direct physical contact and maintaining distance
 - Define procedures before entering shared work areas, at least to limit possible contact between incoming and outgoing people,
 - Replace personal meetings and reports (e.g. at shift delivery) with phone calls, e-mail, WhatsApp, or other means,

- If meetings must take place in person, limit their durations as much as possible and use well-ventilated rooms and that are large enough to keep minimum distance between participants or opt directly for outdoor meetings,
- Analyse the possibility of establishing a second (third, ...) temporary operation centre, control room, or company branch in order to have as few employees as possible in one place,
- Reduce the number of passengers in vehicle transport to the minimum possible.
- Instructions to ensure a less contagious environment, such as:
 - Ensure regular ventilation of working environments and reduce the use of lifts
 - Implement a protocol for the use and delivery of shared vehicles
 - Replace fingerprint authentication with alternative solutions
- Instructions on precautions in the use of public transport to commute to the workplace,
- Management and reporting of suspected infections by the employees. This should include considerations of whether employees should initially indicate whether they have travelled to a critical pandemic region when returning to work from a trip.

5.4.3. Rules on dealings with external providers

- Regulations on the handling of external personnel, product suppliers and service providers communication, delivery of products, and ways of signing off delivery documents. Furthermore, it is advised to collect information on the health status of employees of third-party contractors. It is also recommended to prohibit the entrance of external service providers, without the approval of the PRT.

External Provider	Contact [name, phone]	Do they have a PRP? [yes / no]	List of required products	Delivery method [post office, forwarding agent, etc.]	Contagion threat [yes /no; If yes - how is it minimized?]

Table 5-5. Example for listing information on health status of external service and product providers

5.4.4. Handling of public events and business trips

- Define regulations on the conditions for the realisation of and participation in public events as well as the realisation of business trips
- Limit travel to an absolute minimum and ensure the adherence to rules of hygiene and personal conduct
- Define which staff travels are essential to ensuring the operation of critical processes, such as sampling, control of critical infrastructure (e.g. pumping stations)

6. Phase 2: Taking Action

In this phase, all previously identified measures are implemented. The activation of this stage is carried out following the observation and evaluation of the development of the pandemic and after the previously identified triggering criteria have materialized.

The precise measures in this phase, at the level of each sub-management/branch, should be coordinated with the PRT to ensure that the approach is as compatible as possible with the WSO's procedures. The PRT needs to decide which measures it considers appropriate for the pandemic in question. For guidance, some of these are outlined below, but are not to be considered an exhaustive list of measures.

6.1. Adapting of Communication

The PRT, on the recommendations of the Manager of Communication, constantly and transparently informs employees about the current situation of the pandemic, about operational measures and protection instructions, in particular about hygienic behaviour.

In addition, the PRT is interested in information on the local occurrence of infections and outpatient and inpatient care of the sick, which can be important for staff planning and is an important indicator for activating the next phase.

6.1.1. Internal Communication

In order to ensure the functioning of operations and the safety of employees, it is recommended that an internal communication channel be established, especially in the case of illness, or suspected illness, of employees so that they can report directly to the PRT.

Employees (even those with mild symptoms of a cold) should stay home and not come into physical contact with other employees. Returnees from risk areas should be informed about the procedure (e.g., home office, home stay/quarantine) in advance to prevent them from showing up for work and possibly infect colleagues.

6.1.2. External Communication

The PRT should establish contact channels with public authorities such as the public health department or the law enforcement office and exchange information periodically (if necessary: cases of disease or suspicion should be reported to the authorities). Insofar as this has not yet been done through existing crisis committees at the municipal and district level, of which the company could be a member, a regular exchange should be established with the municipal administration, the fire department, the police, the emergency services as well as fellow WSO in the municipality,

Should curfews exist, ask the respective authorities for exemptions for your employees and also provide them with lists of your external contractors.

It is recommended to conclude regional cooperation agreements with neighbouring water and sanitation companies as soon as possible, so that all can support each other with personnel, equipment, know-how, etc., if necessary.

6.2. Adapting the Planning of Personnel

In order to maintain an overview of available staff - especially for key processes - staff planning must always be kept up to date. This can be used for internal replacements and other personnel actions, such as the activation of key personnel.

6.3. Activating Remote Working

Where technically and organizationally possible, employees should be enabled to work from home. This should be decided with the respective manager or the head of the IT, taking into account the infrastructure available at home and the authorisations required for this type of work:

- Access to Citrix or VPN access via a mobile (portable) device
- Video conferences
- Phone calls (business mobile phone)

To be sure, the company's IT department should be asked if the appropriate licenses or bandwidths are available in the event of a pandemic. Such an assessment must be considered at an earlier stage to provide the minimum necessary infrastructure.

6.4. Strengthen compliance with rules of hygiene and conduct

In the various departments and maintenance offices, more attention should be paid, especially by superiors, to strict compliance with the hygiene and conduct standards set out above (see chapter 6.4). This also includes the instruction of employees by their superiors.

The risk assessment is decisive for the necessary level of protective measures. Cleaning and disinfection measures can be increased after consultation with the responsible specialist departments (building management, cleaning staff), especially in entrances and other highly frequented areas.

Employees in administrative buildings may themselves treat surfaces such as door handles, handrails, light switches, water taps, backs and arms of chairs, tables, photocopiers, time clocks, telephones and mobile phones with disinfectants at regular intervals (use protective gloves). Indoor places where employees spend more time should be well ventilated and particularly before shift changes. If it is not possible to open windows, technical solutions should be explored; however, they must be well maintained as they could otherwise increase the risk of infection. Hygiene regulations also apply to vehicles.

Risks must be eliminated mainly by structural, organisational and hygienic measures. Where this is not possible, employees must be additionally protected with personal protective equipment.

6.5. Applying restrictions to company operations

For the processes identified as critical by the company, the following measures are proposed to guarantee the continued functioning of services (see Box 6-1).

Critical Process	General measures for Phase 2 - "Taking Action"
Catchments, WTP, Drinking Water Pumping Systems, Breakdowns and Network Operations Control Centres	<ul style="list-style-type: none"> • Operation must be maintained as normal to ensure service delivery, • Reducing, as much as possible, the number of people present in each shift, • Apply social, physical and temporal distancing
WWTP, Sewage Pumping Systems, Operations Control Centres	<ul style="list-style-type: none"> • Operation must be maintained as normal to ensure service delivery, • Reducing, as much as possible, the number of people present in each shift, • Apply social, physical and temporal distancing
Quality Monitoring	<ul style="list-style-type: none"> • Must continue by applying those controls necessary to ensure the safety of drinking water produced in WTPs • To guarantee the provision of service, shifts need to be made • Reducing, as far as possible, the number of people present in each shift, and applying physical and temporal social distance • Create backup groups
Maintenance of Facilities	<ul style="list-style-type: none"> • At the least, a 24-hour breakdown service must be guaranteed, • Postpone regular maintenance work as far as possible, • Carry out periodic inspections at the most critical facilities, • Create support groups (as backup on standby) that act independently • Restrict the number of people in each team, do not switch people or equipment and vehicle, and apply social, physical and temporal distancing during work and breaks
IT and Communications	<ul style="list-style-type: none"> • Secure communications and access to servers and applications throughout the organization must be ensured, • If necessary for the promotion of teleworking and virtual communication, external providers should be contracted
Reception and Customer Service	<ul style="list-style-type: none"> • Install systems based on telephone and telematics, • Avoid face-to-face attention as much as possible
Basic Health Unit or Company Doctor	<ul style="list-style-type: none"> • Health care for all workers must be guaranteed by the company itself or by contracting external services
For all other non-essential processes	<ul style="list-style-type: none"> • Ensure that all staff are contactable, • Promote remote working in all areas where this is possible

Box 6-1. General measures for phase 2 of the PRP

Activities with a particularly high risk of infection, such as face-to-face meetings, should be significantly restricted. The following measures are recommended.

Restriction measures during Phase 2 of the PRP

- Meetings should be held by telephone or video conference
- Company locations should not be used as event locations - they are reserved for on-site employees
- Avoid the possibility of staff accidentally crowding indoors (copy room, social rooms, kitchens) or reorganize these places to facilitate contact avoidance
- Changing rooms, toilets and washrooms should only be accessed in accordance with hygienic measures and preferably individually (always wash your hands!)
- Do not use public premises for eating and drinking
- Meals should be taken alone if possible, and better outdoors; preparation of meals for communal consumption is not allowed, as well as birthday cakes or communal breakfasts
- If there are canteens, either close them down or extend the hours to avoid concentrations of staff at peak times
- If it is necessary to stay or work on the premises, where there is an increased risk of infection, e.g. due to the formation of aerosols, masks, gloves and goggles should always be worn in addition to standard protective equipment.

Box 6-2. Propelling restrictions in business operations

6.5.1. Proposed measures for Drinking Water Treatment Plants⁴

Organizational measures

- Alternative shifts will be established among the WTP personnel in order to reduce their presence at these facilities to the operational minimum. Remote working will be implemented whenever possible.
- Reserve shifts should be established among the WTP operators, who should remain at home. They shall not leave the city and only go out into public spaces as is absolutely necessary. It is advisable to consider extending the shifts to 12 hours in order to free up personnel who may be on standby in an emergency situation.
- All personnel will be required to immediately inform the PRT in the event of experiencing symptoms potentially associated with the coronavirus, regardless of whether or not an infection is confirmed. These persons should be sent home immediately
- In order to avoid as much as possible, the entry of personnel from outside the facilities, all work in progress or planned that is not absolutely essential for the operation of the facilities will be suspended or postponed.
- It is recommended that the water samples for quality control be left at the door of the laboratories, so no external personnel needs to enter the laboratories.
- Laboratory analyses should be reduced to the minimum necessary for the production of safe drinking water, in order to reduce the physical presence of personnel in the laboratories. If not possible, alternating shifts in the morning and afternoon without simultaneous presence may be introduced.
- Collection of samples at critical points in the distribution network should be intensified as far as possible in order to ensure proper disinfection of the water throughout the network
- In WTPs or treatment facilities that disinfect with chlorine, an output of more than 1.00 mg/L is recommended, to ensure a minimum of 0.2 mg/L at network end points. If this practice

⁴ Source: ASOCIACIÓN ESPAÑOLA DE ABASTECIMIENTOS DE AGUA Y SANEAMIENTO COMISIÓN V AGUAS RESIDUALES, Adapted measures for drinking water facilities

involves the occasional excess of Trihalomethanes (THM) levels in mains water, the Health Authority will be informed of the incident and its cause.

- In the WTPs or treatment facilities that carry out disinfection with chloramines, it is not necessary in principle to exceed the limit of 2.0 mg/l of combined chlorine at the outlet. If it is deemed necessary due to specific circumstances in the distribution network, there could be incidences of exceeding the levels of nitrites and/or ammonium in the network. In this case, the Health Authority must be informed of the incident and its cause.
- All vacations and non-essential leaves must be postponed. All personnel who work from home, are on standby or in preventive quarantine must be available and reachable. Partially retired staff and particularly vulnerable staff should be sent home.
- Smoking is strictly forbidden in any WTP facility, except in expressly authorized areas. Hand washing and hygiene must be carried out thoroughly before smoking.
- Avoid, as far as possible, the use of vehicles inside the premises. Special care should be taken to ensure hygiene inside WTP service vehicles. Avoid getting into them with stained or splashed clothes.
- The supply of essential reagents for the process should be ensured and stocks maintained at maximum capacity.
- The work of external control laboratories that are considered basic and necessary should be ensured, as well as their supply chains.
- Waste and sludge removal activities must be carried out safely and guaranteeing hygiene for the company's own personnel, transporters and the general public.
- Safe channels for accessing WTP control systems and GIS systems should be reviewed or implemented.

Hygienic measures

- Personnel who do not belong to the facilities, offices and laboratories but have to be involved in the delivery of material, supply of reagents, documentation, or in the waste collection, shall reduce their stay to the minimum necessary. Own staff shall maintain the minimum safety distance from external personnel and wear a mask or face shield.
- The sharing of equipment and common objects should be avoided as much as possible. If it is unavoidable, instructions will be given for the use and disinfection of common material: guards' telephones, vehicles, machinery, tablets, computers, pens, mice, tables, etc..., indicating that the person who is going to use them must previously clean and disinfect them.
- In the WTPs, all the safety and personal hygiene measures are kept in force and must be complied with strictly. It would be a good measure to check the body temperature on each shift.
- Nails should be kept short and clean. The use of rings, bracelets, wristwatches or other adornments should be avoided.
- Throughout all work operations, greater attention should be paid to efficient hand washing with soap and water, in accordance with the recommended guidelines.
- Touching the eyes, nose and mouth with unwashed hands should be avoided. The use of gloves does not exempt the correct hygiene of hands after their removal.
- Special attention should be given to towels and street clothes, avoiding as much as possible contact with work clothes, even if double lockers for street and work clothes are already available.
- The frequency of cleaning bathrooms, changing rooms, offices and common areas is to be increased.

- Clean and disinfect the interior of the vehicles (especially the steering wheel, gear lever, handles and accessible areas of the interior) using biocides and/or disinfectant gel or similar, at the beginning and end of each work shift. Cleaning shall be carried out with disposable paper that can be discarded afterwards.
- For COVID-19, the WHO recommends the use of the following disinfectants: 70% ethyl alcohol to disinfect tools and reusable equipment, after each use; 0.5% sodium hypochlorite (equivalent to 5000 ppm) for surface disinfection.
- As far as possible, keep doors open on the premises in order to minimise contact. Ventilate rooms sufficiently by opening windows to refresh the air and minimise or disable the air conditioning.

Personal protection measures

- The use of Personal Protective Equipment (PPE) is still mandatory for WTPs (clothing, gloves, boots, goggles and face shields and masks), depending on the work to be carried out, especially when changing gas containers and operating with both solid and liquid treatment products.

6.5.2. Proposed Measures for Wastewater Treatment Plants⁵

Constructional and technical measures

- Particular caution should be taken with regard to work where unexpected splashes or contact with the wastewater may occur. In the case of wells, the holes can be temporarily covered. In larger areas, it can be covered with accessible plastic materials.

Organisational measures

- Alternating shifts should be established among the personnel of the WWTPs, to avoid crowding on WWTPs' premises. Remote working should be implemented whenever possible.
- All personnel will be required to immediately inform the PRT in the event of experiencing symptoms potentially associated with the coronavirus, regardless of whether or not an infection is confirmed. These persons should be sent home immediately.
- Reserve shifts should be established among the WWTP operators, who should remain at home. They shall not leave the city and only go out into public spaces as is absolutely necessary. It is advisable to consider extending the shifts to 12 hours in order to free up personnel who may be on standby in an emergency situation.
- In order to avoid as much as possible the entry of external personnel, all work in progress or planned projects that are not absolutely essential for the operation of the facilities will be suspended or postponed.
- Laboratory analyses should be reduced to a minimum in order to reduce the physical presence of personnel working in the laboratories. If not possible, alternating shifts in the morning and afternoon without simultaneous presence may be introduced.
- All vacations and non-essential leaves must be postponed. All personnel who work from home, are on standby or in preventive quarantine must be available and reachable. Partially retired staff and particularly vulnerable staff should be sent home.
- Smoking is strictly forbidden in any WWTP facility, except in expressly authorized areas. Hand washing and hygiene must be carried out thoroughly before smoking.

⁵ Source: ASOCIACIÓN ESPAÑOLA DE ABASTECIMIENTOS DE AGUA Y SANEAMIENTO COMISIÓN V AGUAS RESIDUALES, Adapted measures for wastewater facilities

- Avoid, as far as possible, the use of vehicles inside the premises. Special care should be taken to ensure hygiene inside WWTP service vehicles. Avoid getting into them with stained or splashed clothes.
- Particular attention shall be paid to the chlorination and disinfection of reclaimed water, according to technical standards to be specified.
- The supply of essential reagents for the process should be ensured and stocks maintained at maximum capacity.
- Waste and sludge removal activities must be carried out safely and guaranteeing hygiene for the company's own personnel, transporters and the general public.
- Safe channels for accessing WWTP control systems and GIS systems should be reviewed or implemented.

Hygienic measures

- The sharing of equipment and common objects should be avoided as much as possible. If it is unavoidable, instructions will be given for the use and disinfection of common material: guards' telephones, vehicles, machinery, tablets, computers, pens, mice, tables, etc..., indicating that the person who is going to use them must previously clean and disinfect them.
- In the WWTPs, all the safety and personal hygiene measures are kept in force and must be complied with strictly. It would be a good measure to check the body temperature on each shift.
- Nails should be kept short and clean. The use of rings, bracelets, wristwatches or other adornments should be avoided.
- Throughout all work operations, greater attention should be paid to efficient hand washing with soap and water, in accordance with the recommended guidelines.
- Touching the eyes, nose and mouth with unwashed hands should be avoided. The use of gloves does not exempt the correct hygiene of hands after their removal.
- Special attention should be given to towels and street clothes, avoiding as much as possible contact with work clothes, even if double lockers for street and work clothes are already available.
- The frequency of cleaning bathrooms, changing rooms, offices and common areas is to be increased.
- Clean and disinfect the interior of the vehicles (especially the steering wheel, gear lever, handles and accessible areas of the interior) using biocides and/or disinfectant gel or similar, at the beginning and end of each work shift. Cleaning shall be carried out with disposable paper that can be discarded afterwards.
- As far as possible, keep doors open on the premises in order to minimise contact. Ventilate rooms sufficiently by opening windows to refresh the air and minimise or disable the air conditioning.
- Areas where aggressive biological material is presumed or may be assumed to be present should be adequately disinfected.
- All material and tools that have been in contact with wastewater should be carefully washed and cleaned after each use.
- Clothes that are splashed or stained should be washed immediately. It is recommended that work clothes be washed at 60-90 °C and with detergent. A third-party washing machine should be used for washing heavily stained or splashed clothing.

Personal protection measures

- Personnel who do not belong to the facilities, offices and laboratories but have to be involved in the delivery of material, supply of reagents, documentation, or in the waste collection, shall reduce their stay to the minimum necessary. Own staff shall maintain the minimum safety distance from external personnel and wear a mask or face shield.
- For Covid-19, the WHO recommends the use of the following disinfectants: 70% ethyl alcohol to disinfect tools and reusable equipment, after each use; 0.5% sodium hypochlorite (equivalent to 5000 ppm) for surface disinfection.
- The use of Personal Protective Equipment (PPE) is still mandatory for WTPs (clothing, gloves, boots, goggles and face shields and masks), depending on the work to be carried out.
- In the handling and removal of waste and in the unloading of sewage tankers and septic tanks, special attention will be paid and safety equipment and PPE used.

6.6. Dealing with externals (service providers, suppliers, and customers)

It is recommended to minimise dealings with external product and service providers, bearing the operational considerations in mind. Contact with customers should also be minimised as much as possible and corresponding measures therefore taken. These include the enablement of phone or internet payments, the deferral of payments until after the pandemic – taking the analysis from chapter 5.3.3 into consideration. Other measures may also be conceived of such as the setting up of facilities for payment of bills outside company premises.

The following measures are of utmost importance to protect the health of both in-house and external employees.

Restrictive measures applied to the dealings with the personnel of external suppliers and providers

- Reduce contact with customers or suppliers to phone or email.
- Access to the company's premises must be restricted for outsiders. If externals must enter the premises (e.g. for official sampling and disposal of sludge/wastewater or cleaning staff), they have to keep their distance. The necessary delivery of operating materials should be carried out outdoors, if possible.
- Delivery notes must be delivered outdoors and at a distance, as must the signing of delivery papers.
- The duty to monitor the delivery of dangerous goods (usually coagulants) can only be carried out with appropriate hygiene measures.
- The joint use of rest rooms with external persons is not permitted.
- Service and maintenance work must be postponed, if possible.
- Strict hygiene measures must be followed when clearing faults with the help of external personnel.
- It is recommended that a self-declaration form be obtained from external suppliers and service providers who are required for operational activities on the company's premises.
- Ask external subcontractors to communicate promptly in the event of infections among their personnel.
- Always wash your hands after dealing with externals.

Box 6-3. Restrictive measures applied to the dealings with the personnel of external suppliers and providers

6.7. Dealing with public events and business trips

Participation in or the realisation of public events shall be limited to the minimum necessary for the company's operations.

Restrictive measures for public events and travel

- Participations in public events that are not essential for business operations (e.g. training courses, congresses, conferences, trade fairs, future days, plant tours, etc.) must be cancelled as a matter of principle.
- Participating in events necessary for business operations (e.g. council meetings, awarding procedures for tenders, important discussions with municipalities (customers), etc.) is only permitted in isolated cases if strict hygiene measures are observed and after consultation with the manager.
- Business trips are to be reduced to a minimum necessary for operations and coordinated with the manager. Travels to endangered areas are to be avoided!

Box 6-4. Restrictive measures for public events and travel

7. Phase 3: Taking Extended Action

The activation of this phase is dependent on evaluations of the pandemic's development. This phase calls for measures that go even further, necessary in more extreme circumstances. Several reasons may give rise to the activation of this phase of extended response, for example:

- It turns out that a virus transmission via wastewater is possible and thus WWTP workers are at risk,
- The numbers of available staff reach critical levels that require adjustments guaranteeing the functioning of the most vital processes,
- The operation of vital processes is endangered by the lack of sufficient chemical supplies needed for guaranteeing good drinking water quality

Once again, the measures listed here below are non-exhaustive and but a guidance for the PRT. By taking the national, regional and local situation into the account, measures should be dynamically evaluated and adapted accordingly.

If the situation becomes even more serious and your own staff are unable to operate the key processes of the company, it is recommended that you approach national authorities for assistance.

7.1. Analysis of the increased risk of infection

If new scientific studies have identified an increased risk of infection from wastewater, the following measures, among others, are recommended:

- Identifying activities that present a particular infection risk, in particular work involving aerosol formation in wastewater and mixed waters
- Special needs assessment and storage of personal protective equipment
- Reducing activities that are particularly exposed to the risk of infection, while at the same time ensuring the operation of wastewater facilities by adopting a reactive risk management strategy (instead of managing the risk proactively by carrying out maintenance, failed systems or defective components are instead only to be repaired after the damage has occurred).

7.2. Setting up an emergency service

The PRT, together with the company's general management, should decide which operational areas should be closed or continue to operate with a smaller staff (in emergency operations). The focus must be on the company's key processes and resources, which were previously analysed (see chapter 5.3).

7.2.1. Preliminary analysis

Before installing an emergency service, the following questions should be answered:

- Are enough personnel available?
- Are the communication channels known to all participants, especially in case of sudden failures or exchange of duty hours?
- What strategies are taken when employees are not available for emergency operations (sufficient substitutes within, or outside, the company)?
- Should different working hours and alternating shifts be established for the duration of the pandemic? (Here the staff council and the HR department must be involved in any case)
- How can it be guaranteed that the shifts can work physically separated in order to avoid infection among the shifts/teams?

7.2.2. Additional emergency measures

Following the preliminary analysis, the planning of personnel and necessary supplies is reorganised to uphold the functioning of key processes. In this emergency phase, work hours may be extended for a limited time for key personnel. Furthermore, in extreme cases, possible measures for voluntary on-site quarantine/shift operation should also be examined and set up on all sites, if necessary.

These include:

- The installation of cots or bunk beds
- Supply of necessary hygiene equipment and food by the employer
- Provision of medical supplies (vitamins, nasal sprays, pills etc.) after consultation with the company doctor
- What support can the families and relatives of employees in the emergency operation receive?
- Can the supply of necessary operating supplies, e.g. precipitants, fuels, emergency power systems, be guaranteed in order to maintain operations?

As a last resort, the possibility of letting sick people with only mild symptoms work can also be considered, provided that they are able to work and have taken all reasonable precautions to protect themselves and others. The plant operator or service provider should provide all necessary personal protective equipment.

7.3. Activation of short-term consents by the staff council

In the extended action phase, personnel matters must be decided and implemented at short notice, e.g. changes in working hours, quartering, etc. The staff council must be able to give its approval at short notice. The staff council is to be set up in such a way that short-term approval can be given by the chairman alone, acting as its representative.

7.4. Updating communication

It is of great importance to communicate clearly to the employees - but also, and more sensitively, to the external public - detailing in a very transparent way the reasons for the measures taken and their consequences. In addition, trends should be reported, if possible, even when emerging or critical measures are applied and when an improvement in the operation can be expected.

8. Phase 4: Returning to Normality

The return to normality will be decided following observation and assessment of the development of the pandemic at the local, regional and national levels. The General Management should be supported in its decision by the PRT, in particular with its health manager. It is important to bear in mind that pandemics usually occur in waves, so the disease can spread over many weeks or months. Therefore, close contact with health authorities such as the public health department at the national and sub-national levels is necessary.

8.1. Defining processes and measures for the return to normality

Once the decision to return to normality has been made, the PRT presents a proposal on how to bring the key and non-key processes back to normal over a period of one to two weeks.

It must be defined which measures will be eliminated and which will remain in force, such as personal hygiene measures, which may eventually be continued for a little longer.

The general management approves this process and gives the green light to the communication team to notify both inside and outside the company.

8.2. Defining the “new normality”

Currently, we suggest using as working assumption that a vaccination for the coronavirus will be developed earliest in 2021 and widely in use in 2022. But it seems possible that the development of a vaccine might take several years.

Adjusting all operations to social distancing regulations will require adjusting the whole enterprise starting with design and use of office workspace, increase in remote control systems, backup systems, strengthening the human resources by hiring more staff, enabling online payments, etc.

It is possible that the “new normality” will include routines and regulations that were implemented during the response.

8.3. Communicating the return to normality

The decision to return to normality is first announced in the circle of managers and the PRT, to be sure of their decision and to include all the important aspects of communication, to avoid misunderstandings and rumours. After a consensus process at management and PRT level, the return process is communicated to all employees.

Users, external organisations (customers, suppliers and authorities) are then informed about the return to normal operation phase and its effects in the future.

It is worth mentioning that the messages should raise awareness among users that during this pandemic phase, the drinking water and wastewater services provided by the company have been a huge sacrifice and a major factor in saving lives. For this reason, consumers must comply with its obligations to pay their tariffs to ensure the continued operation of producing and providing quality drinking water and sanitation services in the future.

8.4. Rescheduling personnel and vacation planning

After the pandemic phase, many people have reached their limits because of the extra work effort. Others are still sick, but there is also a group of employees who have benefited from a reduced workload. In any case, this period has affected all employees psychologically and requires an individual analysis of each person's situation.

Based on the goal of continuing to provide water and sanitation services, workloads, outstanding vacations, and awards should be rescheduled to thank outstanding employees.

8.5. Evaluating the Pandemic Response Plan

The company's pandemic plan was developed to minimise the economic impact of a pandemic on the company and to protect its own employees from infection as far as possible. Therefore, it is particularly important to critically examine this pandemic plan and the operational processes during the pandemic:

- Has the pandemic plan been practical or was it planned in disregard of reality?
- Has the pandemic plan been adhered to? If not, what are the reasons for this (e.g. failure to comply because it was not sufficiently known, ignorance, spontaneous solutions have proven to be more appropriate to the situation, etc.)?
- Were there problems that were not included in the pandemic plan?
- Conversely, were there any regulations that were not implemented and could be dispensed with?
- Were the planned material resources realistically estimated and should there be a change in storage?
- Was staff training sufficient?
- Has communication with external organizations such as the company doctor, authorities, customers worked?
- What improvements have been made in dealing with external organizations such as suppliers and service providers?

8.6. Optimising the Pandemic Response Plan

At the end of the pandemic it is important that lessons learned are reflected in the plan to optimise processes and strengthen established tools and procedures. For this reason, it is recommended that, after a period of no more than three months from returning to normal, the General Management dedicates itself to optimizing the Plan, focusing on three specific areas:

- Procedures for updating information and coordinating between management and teams
- Optimization of the communication strategy and semi-standardized messages or information
- Optimization of the data platform and exchange of information and communication, including a list of hardware and software to be acquired.

8.7. Dissolving the Pandemic Response Team

The General Management of the company officially informs of the dissolution of the PRT.

9. Further considerations: Measures concerning the services' users

All of the guidelines presented in the previous chapters are strategies and actions designed to protect the health of the workforce and thus ensure the continuity of operational actions so that users can be assured of the continued availability of services.

Yet, while companies must plan specific measures and actions to guarantee the continuous supply of drinking water, in sufficient quality and quantity, to the sectors that provide essential services to the population during the pandemic, they should ideally also be attentive to the situation of people in situations of social and economic vulnerability and communities in situations of socio-environmental risk. During pandemics, clean water is a key element in reducing the chances of infection, as is the case with Covid-19.

In some cases, the assessment of their demands may require inter-institutional cooperation, organizing measures within the competencies of the respective institutions. If these elements are then to be taken into account, companies should coordinate their PRPs with those of the public authorities and other sectoral plans.

9.1. Measures targeting users who provide essential services to the population

In their PRPs, companies should guarantee the access to water in particular for hospitals, health centres and establishments prepared for care and hospitalization during the emergency. When necessary, the responsible authorities from the health sector should indicate the location of such facilities and the minimum amount of drinking water required for adequate care so that the water service operator can prepare actions necessary for supplying water in case of emergency.

Similarly, access to water should be ensured for establishments for the care of groups at risk and the socially vulnerable, emergency shelters for the homeless, refugee camps, and prisons, among others.

9.2. Measures targeting users in a situation of social vulnerability

During the pandemic, users from vulnerable sectors see their incomes further reduced due to measures of isolation and physical distancing.

Companies should consider emergency measures to help the poorest users, especially avoiding cuts in access to the service and restoring access to those who have been cut off.

When these measures are adopted pursuant to government resolutions, it is necessary for operators to implement the relevant financial and administrative mechanisms in coordination with regulatory bodies.

9.3. Support measures to enable emergency access to drinking water in communities at socio-environmental risk

Although water and sanitation are basic services, there are communities within the companies' areas of operation where the water supply is not yet adequate, even in normal times. In these areas in particular, users are still awaiting improvement plans or connection works but are in need for water to cope with the pandemic.

- Companies must develop mechanisms so that urban communities in situations of socio-environmental vulnerability with difficulties in accessing drinking water or that are not yet part of the supply system may be temporarily provided with it in order to deal with the pandemic.
- Companies may consider, in appropriate cases, adopting technical and financial assistance measures for rural communities within the municipalities where they operate that do not have access to formal supply systems so that they can access water to deal with the pandemic.

10. Annex

10.1. List of the Pandemic Response Team (PRT) members

Filled in/last updated on:

Role		Name	Work and Private Phone Nr.	E-mail address
Coordination of the PRT	PRT Coordinator			
	1. Substitute			
	2. Substitute			
	Communications and PR Manager			
PRT	General Manager			
	Technical Operations Manager			
	Financial Resources Manager			
	Occupational Safety Engineer			
	Procurement Manager			
	Human Resources and Administrative Manager			
	Health Manager			
	Elected Employee Representative			

10.2. Checklist for the individual PRP phases

These checklists reflect the recommended measures of this PRP but, just like the plan itself, they are not exhaustive. Similarly, the persons in charge of each measure, as named below, are just suggestions and may require adaptation to the respective realities in each company.

10.2.1. Checklist Phase 0: Pre-Pandemic

Ch.	Measure	Person in charge	accomplished by	Status	Comment
4.1	Naming a Coordinator of the Pandemic Response Team (PRT) and her/his Substitutes	General Manager		<input type="checkbox"/> started <input type="checkbox"/> finished	
4.1	Naming a Communications Manager	General Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
4.1	Naming of the remaining members of the PRT	General Manager, PRT Coordinator		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
4.1	Initial revision of the PRP	PRT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
4.2	Developing a Communication strategy	Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
4.3	Preparing and setting up a data platform for the PRT	PRT, Head of IT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

10.2.2. Checklist Phase 1: Analysis and Planning of Actions

Ch.	Measure	Person in charge	accomplished by	Status	Comment
5.1	Convening the PRT	General Manager		<input type="checkbox"/> finished	
5.1	Activating Phase 1	PRT Coordinator		<input type="checkbox"/> finished	

5.2	Establishing an interface with external (public) crisis committees	Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3	Defining critical processes	PRT, supported by Heads of Departments		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.1	Analysis of stocks of/demands for critical supplies	Technical Operations Manager, Procurement Manager, supported by Heads of Departments		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.2	Analysis of critical contractors	Technical Operations Manager, HR Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.3	Analysis of critical personnel and preparing a personnel plan	Technical Operations Manager, HR Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.3.1	Analysis of the minimum necessary staff	Technical Operations Manager, HR Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.3.2	Involving employees in measures taken by the PRT	General Manager, PRT coordinator		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.4	Analysis of the pandemic's impact on the water demand	PRT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.5	Analysis of the financial and economic situation	Financial Resources Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.3.6	Planning of protective and auxiliary supplies	Technical Operations Manager, Procurement Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

5.4	Determination and application of rules and restrictions	General Manager, Occupational Safety Engineer, Health Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.4.1	Defining and disseminating rules of personal hygiene and conduct	General Manager, Health Manager, Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.4.2	Defining and disseminating rules for business operations	General Manager, PRT Coordinator, Technical Operations Manager, Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.4.3	Defining and disseminating rules on the dealings with external service providers	General Manager, HR Manager, Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
5.4.4	Defining and disseminating rules on handling of public events and business trips	General Manager, PRT Coordinator, Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

10.2.3. Checklist Phase 2: Taking Action

Ch.	Measure	Person in charge	accomplished by	Status	Comment
6	Activating Phase 2	General Manager		<input type="checkbox"/> finished	
6.1.1	Adapting internal communication	Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.1.2	Adapting external communication	Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

6.2	Adapting the planning of personnel	HR Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.3	Activating remote working (home office)	General Manager, PRT coordinator, HR Manager, Head of IT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.4	Strengthening compliance with rules of hygiene and conduct	General Manager, HR Manager, Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.5	Enforcing restrictions to company operations	General Manager, Technical Operations Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.5.1	Enforcing measures for drinking water treatment plants	General Manager, Technical Operations Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.5.2	Enforcing measures for wastewater treatment plans	General Manager, Technical Operations Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.6	Applying rules on the dealings with external service providers and suppliers	PRT Coordinator		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
6.7	Dealing with public events and business trips	PRT Coordinator		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

10.2.4. Checklist Phase 3: Taking Extended Action

Ch.	Measure	Person in charge	accomplished by	Status	Comment
7	Activating Phase 3	General Manager		<input type="checkbox"/> finished	
7.1	Analysis of the increased risk of infection	General Manager, PRT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

7.2	Setting up an emergency service	General Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
7.2.1	Preliminary analysis for the setting up of an emergency service	PRT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
7.2.2	Implementing additional emergency measures	General Manager, PRT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
7.3	Adapting company rules to allow short-term consents by the staff council	General Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
7.4	Updating communication	Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

10.2.5. Checklist Phase 4: Returning to Normality

Ch.	Measure	Person in charge	accomplished by	Status	Comment
8	Activating Phase 4	General Manager		<input type="checkbox"/> finished	
8.1	Defining processes and measures for the return to normality	General Manager, PRT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
8.2	Defining the “new normality”	General Manager, PRT coordinator		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
8.3	Communicating the return to normality	Communications Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
8.4	Rescheduling personnel and vacation planning	HR Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
8.5	Evaluating this Pandemic Response Plan	PRT		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

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8.6	Optimising this Pandemic Response Plan	PRT	max. 3 months after return to normality	<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
8.7	Dissolving the Pandemic Response Team	General Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

10.2.6. Checklist: Further Considerations/Measures towards the services' users

Ch.	Measure	Person in charge	accomplished by	Status	Comment
9.1	Measures for users in sectors providing essential services to the population	PRT Coordinator		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
9.2	Measures for users in a situation of social vulnerability	PRT Coordinator, General Manager		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	
9.3	Support measures to enable emerging access to water in communities at high socio-environmental risk	PRT Coordinator		<input type="checkbox"/> started <input type="checkbox"/> finished <input type="checkbox"/> not relevant	

10.2.7. Calculation example for the quantities of protection gear and hygiene products

For people without contact with the public	Quantity [/person * day]	Quantity [/person * 3 months]	Number of people	Total quantity for 3 months
Bin bags	1	90		
Paper towels	20	1,800		
Liquid soap		1,500 ml		
For people with contact with the public	Quantity [/person * day]	Quantity [/person * 3 months]	Number of people	Total quantity for 3 months
Bin bags	1	90		
Paper towels	30	2,700		
Liquid soap		3,000 ml		
Disinfectant for Hands		1,500 ml		
Mouth/Nose protection	3	270		

Disposable gloves	3	270		
Protective glasses		7		
Disinfectant for surfaces		1,500 ml		

10.3. Examples for posters on individual hygiene and interpersonal conduct



HANDWASHING

Clean hands protect you against COVID-19 infection.

Protect yourself by:

- 1 Washing your hands with soap and water for at least 20 seconds as frequent as possible
- 2 Use an alcohol-based hand rub if you don't have immediate access to soap and water.

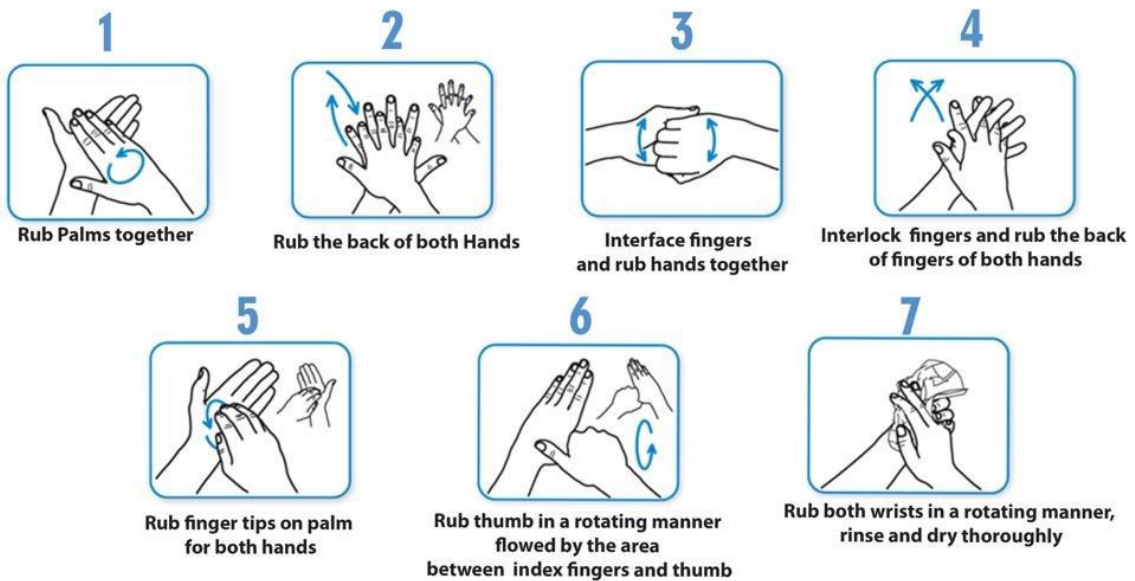


Figure 10-1. Handwashing (Source: Ministry of Health, Republic of Uganda)



We are not rude, only careful
For our health we avoid shaking hands
Thank you for your understanding

Figure 10-2. No handshakes poster