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SIA AC KONSULTĀCIJAS

AC Konsultacijas, Ltd.

Development of the Jekabpils Municipal Natural and Environmental Emergency Managemenst Plan and Elaboration of Guidelines and Recommendations for the Development of Cooperation Models on Emergency Situation Management in the Zemgale Region

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Summary

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Summary

1. Purpose of the Project

Efficiency improvement of the Jekabpils Municipality CP system in the management of various natural disasters and accidents, update of the action plans contained in the CP plan and development of proposals for the improvement of local government cooperation in the Zemgale region.

2. Project tasks

According to the technical specification of the Project, the following were intended during the implementation of the Project:

1. Examination, compilation, as well as analysis of the regulatory enactments adopted by the Republic of Latvia and the Zemgale Planning Region[1] (Regulation No. 391 of the Cabinet of Ministers of the Republic of Latvia regarding the territories of the planning regions), which defines the management of natural and environmental emergency situations.
2. Performing an analysis and a study of the municipality binding documents (planning documents, local government regulations, Civil Protection Plan) and providing conclusions and proposals for supplementing and improving them, in conformity with the results of the study.
3. Carrying out an examination of the current situation and providing a description of the management of natural and environmental emergencies in the Jekabpils Municipality (statistics must be provided for a period of not less than 5 years), including identification of the existing problems.
4. Development of practical recommendations to reduce or eliminate problems/risks identified in connection with the management of natural and environmental emergencies in Jekabpils Municipality and the consequences thereof.
5. Development of the Jekabpils Municipality risk management (action) plans for at least the following risks: (1 practicable action algorithm for each of the risks):

[1] https://likumi.lv/ta/id/191670-noteikumi-par-planosanas-regionu-teritorijam

5.1. flood situations, river pollution, rupture of the Daugava dam – risk maps, floodplain maps, risk zones, flood modeling, notification System; development of an action plan, involvement of resources;

5.2. electrical grid damage – an action plan in the event of damage to electricity grids (in various situations like snow, storm), modeling of emergency situations for a residential area, development of an action plan, involvement of resources (including connections, generators), notification system;

5.3. accidents, pollution in water supply and sewer systems – modeling of emergency situations for a residential site, development of an action plan, involvement of resources, notification system;

5.4. accidents and pollution in heating systems – modeling of emergency situations for a residential area, development of an action plan, involvement of resources, notification;

5.5. accidents in the a natural gas supply system – damage to main pipelines, gas leakage, combustion – modeling of emergency situations for a residential site, development of an action plan, involvement of resources, notification;

5.6. significant transport accidents – modeling of emergency situations for a residential site, development of an action plan, involvement of resources, notification;

5.7. collapse of structures – modeling of emergency situations, development of an action plan, involvement of resources, notification.

6. Playing out at least one risk situation. During training, an exercise scenario close to the risk situation is played out, modeling situations with a view to acquiring and improving practical skills in case of non-standard occurrence.
7. Development of guidelines for the inspection of the municipality machinery and equipment (machinery, generators, water pumps, etc., according to the list submitted by Jekabpils Municipality); including documentation of the inspections, their frequency; identification of responsible persons; update of information in the registers; training of specialists; other relevant information at the discretion of the Performer.
8. Development of practical recommendations for public education activities in Jekabpils municipality.

Since the project task did not include an update of the entire CP plan, the Action Plans for the management of risks defined in the project task were updated keeping the structure of the CP plan, the risk identification arrangements and the results of the risk assessment. Moreover, in

updating the action plans, the new preventive, preparedness and operational actions were structured in the format of the tables used in the previous version of the plan.

3. Specialists involved in the Project

The project involved two consultative companies – *AC Konsultacijas, Ltd.* and *Estonian, Latvian & Lithuanian Environment, Ltd.* (*ELLE, Ltd*.). *AC Konsultacijas* carried out the Project coordination, prepared an overview of the requirements of key regulatory documents, carried out an analysis of the initial state, and developed the Guidelines and Recommendations for the Development of Collaborative Models for Emergency Management in the Zemgale Region and Recommendations for Public Education Activities. **Inguna Tomsone**, with many years of experience in project management, was involved in the Project on the side of the *AC Konsultacijas*.

The specialists from the *Estonian, Latvian & Lithuanian Environment, Ltd*. chaired the working group meetings, evaluated the existing practice of the Jekabpils Municipality CP system, developed improvement proposals, updated the Action Plans defined in the project task, and conducted the CP commission training. Specialists from *ELLE, Ltd*. prepared Guidelines for Inspections of Municipal Machinery and Equipment. On the part of the *Estonian, Latvian & Lithuanian Environment*, the Project involved the following risk management professionals:

- Senior adviser **Andris Maurans** with over 30-year experience in the fields of risk management and civil protection.
- Senior adviser **Janis Prindulis** with over 20-year experience in the fields of risk management and civil protection.
- Adviser **Dainis Macs** with over 15-year experience in the fields of risk management and civil protection.

4. Project implementation methodology

An assessment of the existing situation was carried out before the Project activities were started. As part of it, advisers evaluated the existing Jekabpils Municipality civil protection plan, related documents, historical experience and regulatory framework. The first meeting of the working group was devoted to clarifying the existing situation, in which the employees responsible

for the Jekabpils Municipality explained their experience and practice in managing the risks covered by the Project.

The implementation of the Project was mainly based on active meetings of the working groups. Each type of risk was discussed at a number of meetings of the working group. Initially, the existing action plans, practices and issues were analyzed. The next meeting of the working group discussed the proposals and comments made by the advisers involved in the Project. At the closing meeting, the updated action plans were adopted conceptually.

Between the meetings of the working groups, the responsible employees of Jekabpils Municipality compiled the technical information needed to describe the significance of the risk, to determine the priorities of risk management and to develop appropriate action plans.

During meetings between the working groups, the employees responsible for Jekabpils municipality gathered the technical information needed to describe the importance of risk, to identify priorities for risk management and to develop appropriate action plans. Throughout the implementation of the Project, active communication took place with the responsible national and municipal authorities, as well as with the commercial operators in the processes of which large-scale accidents are possible.

Ivars Osma, the commander of the Akniste post, VUGD (State Fire and Rescue Service), who prepared a number of presentations on the information and resources at VUGD, was actively involved in discussing issues relevant to the Project. In view of the fact that the risk profile of chemical accidents was found to be insufficient in the existing action plans, the Project promoters decided to prepare information on the possibilities of detecting the harmful effects of chemical accidents.

In the course of the Project implementation, the advisers prepared and presented information on modern modeling possibilities of the harmful effects of chemical accidents. Areas threatened by accidents potentially occurring in the railway and road transportation of typically dangerous goods were demonstrated and the factors affecting the extent of the consequences of accidents were described to the members of the working group.

In the course of the Project execution, the advisers proposed to discuss a number of key conceptual issues related to the functioning of the CP system. Firstly, the consultants involved in the Project suggested reviewing the information and actions contained in the CP plan in order to

highlight the fact that the Jekabpils municipal CP system operates in the management of regional-level accidents and disasters. It was conceptually supported by the working group.

Secondly, the consultants proposed to use scientifically justified criteria for the harmful effects of technological accidents, which allows for an objective identification of emergency-threatened areas and a more targeted planning of the use of available resources to carry out the evacuation of people. This suggestion was also conceptually supported by the Working Group.

5. Description of the existing situation

Evaluation of the existing situation was initially performed by studying the national level normative and the Zemgale Planning Region documents. Compliance with these requirements was further evaluated in the existing Jekabpils Municipality civil protection plan and in the operation of he former Jekabpils Cooperation Territory Civil Protection Commission.

Main national standards and documents for which analysis was carried out:

- National Security Law (NSL).
- Civil Protection and Disaster Management Law (CPDML).
- National Civil Protection Plan, which is the planning document of measures for the provision of the national civil protection system specified in the National Security Law and in the CPDML.
- Cabinet Regulation No. 341 “Regulations Regarding the Types and Procedures for the Organizing of Civil Protection and Disaster Management Exercises”.
- Other Cabinet regulations that will be relevant to the analysis.
- Current State Fire and Rescue Service documents (e.g. National Fire and Rescue Service Annual Public Review, State Fire and Rescue Service Operational Strategy 2020-2022) and studies (e.g. Awareness of the Latvian Public about Preparedness and Action in Emergency Situations and Situations of Catastrophe or Threat Thereof).

Zemgale Planning Region documents included in the analysis:

- STUDY and ACTION PLAN “Improving Co-operation Between Latvian and Lithuanian Border Municipalities in Ensuring the Public Safety” (2020).
- Zemgale Planning Region Sustainable Development Strategy 2015-2030 and Zemgale Planning Region Development Programme 2021-2027 (in particular, sections concerning the management of natural and environmental emergencies, such as the Public safety

section 1.7. and its subsection 1.7.2. Risk management and civil protection within the Existing Situation chapter, will be evaluated).

Upon consulting the information provided by the civil protection specialist from Jekabpils, the following facts are compiled for the efficiency assessment of the operation of the civil protection system and its compliance with the regulatory enactments:

- A civil protection plan for the Jekabpils Municipality (CPP) has been developed and approved by the Chairman of the Jekabpils Municipality Council in 2021.
- Jekabpils Municipality CPP structure is formed and complies with the Cabinet Regulation No. 658 of November 7, 2017, on the structure of civil protection plans and the information to be included in them.
- A civil protection commission is established in the municipality, which operates in accordance with the by-law of the Jekabpils Cooperation Territory Civil Protection Commission.
- The Jekabpils Cooperation Territory Civil Protection Commission convenes one to twice a year, or more frequently if it is necessary (no evidence of meetings within the framework of the Project is available). According to the information submitted, the Civil Protection Commission last came together to discuss flood hazards, the fire-threat period in forests, as well as to make changes to the structure of the Civil Protection Commission and the Regulation, or to consider and approve the CPP.
- In the last 5 years, the only disaster involving the Jekabpils Cooperation Territory Civil Protection Commission has been the Covid-19 pandemic.
- No training in civil protection has taken place in the last 5 years, including:
  - The State Fire and Rescue Service have not performed the training of the Jekabpils Cooperation Territory Civil Protection Commission, as specified in Section 10, Paragraph 1, Clause 5 of the Civil Protection and Disaster Management Law.
  - Civil protection training of the local government has not been organized, as specified in Section 11, Paragraph 1, Clause 7 of the Civil Protection and Disaster Management Law.
- CPP maintenance and review are not carried out regularly and systematically, as the plan has been revised twice over the last 5 years and both in 2021.

- Procedures and principles for cooperation with civil protection commissions of other municipalities have not been established. Cooperation is organized upon necessity and is mainly limited to the exchange of information.
- Information on the hazards expected in the identified emergency scenarios needs to be improved in the CPP. At present, for some scenarios, the possible effects of accidents has been described in general terms, at national level, without examining the specificities of Jekabpils Municipality.
- No information for all objects of increased danger is available to the local government regarding the potential and preparedness for emergency situations. Of the 11 highly sensitive areas present within the municipality, 5 have agreed CPPs with the VUGD and submitted them the local government.
- Preventive, preparedness and emergency response measures include actions also performed by the State and the local government operational services and other actors involved in the emergency response and mitigation, which are not managed by the Civil Protection Commission and control of the operational actions of these services at the level of the CPP of the municipality cannot be ensured. The operational services act in accordance with their instructions and action plans, the duplication of which is not necessary in the civil protection plan and may create contradictions between documents. Recommendation: The preventive, preparedness, response and mitigation measures should be reviewed to include in the CPP actions and measures directly managed by the municipality or those where communication between the municipality and the executives involved in higher or lower-level emergency management is ensured.

6. Task accomplishments

Project tasks were scheduled to be carried out, taking into account the risk significance and the amount of information available. In view of the flood risk significance for the city of Jekabpils and the rural municipalities located on the banks of Daugava, the Project was launched directly around the updating of the action plans for flood risk management.

Preparedness for chemical accidents, which may occur in the railway and road transportation of dangerous goods, as well as in stationary high-risk areas and on the main gas pipelines or on the oil pipeline, was recognized as the next priority. Of the high-risk facilities, special attention was paid to those involving LPG operations.

Action plans for damage to utilities and infrastructure were further developed.

6.1.Action plans for flood risk management

The Action Plan describes the causes of the floods and the risks they pose. Ice congestion formation is assumed to be the main cause. The Action Plan contains a link to the Latvian Flood Risk and Flood Hazard Map prepared by the Latvian Environmental Geology and Meteorology Centre.

Update of the action plan also included actions in the event of a damage to flood protection structure, which had not previously been addressed. The action plan has been supplemented by a zoning map of the sites that can be flooded in the event of a damage to flood protection structure.

Given that flooding is a predictable risk, action plans define 3 levels of threat related to monitoring actions that correspond to the level of threat. There are a number of criteria for each level of threat that can be used for their identification.

The Action Plan defines the main types of resources that could be involved in flood risk management and population evacuation, as well as the responsible services.

The Action Plan includes preventive actions aimed at identifying flood risk and assessing preparedness, actions ensuring preparedness, including maintenance of the necessary resources and organization of periodic training for the services involved in risk management, as well as the algorithms for the actions of the Civil Protection Commission in the event of flood risk occurrence. The response and mitigation measures algorithms have been developed separately for flooding of sites and for risk of a dam rupture.

6.2.Action plans for river pollution cases

The Action Plan describes the causes of river pollution and the risks they pose. There can be a great variety of reasons for such an accident, ranging from problems in urban waste water treatment plants to unauthorized releases of chemicals into the environment. Unfortunately, all identified reasons have been registered in Latvia. This accident may also have the potential for an emergency at national and international level.

The main activities of the Action Plan are aimed at informing the population and providing drinking water.

6.3.Action plans to manage risks for the transportation of dangerous goods by rail

Dangerous goods are transported in large quantities through Jekabpils Municipality by rail. Most of them are petroleum products and liquefied petroleum gas. Ammonia and acrylonitrile are the chemicals transported to Ventspils Port in large quantities.

The Action Plan sets out scientifically justified levels of exposure to chemicals and calculates their distribution distances. The exposure zones are defined for the substances transported more frequently, assuming that a single railway tank is completely released. Depending on the hazardous properties of the substance, the following distances are calculated:

- Distances of toxic effects of chemical vapours.
- Distances of heat radiation from fires.
- Distances of the hazards caused by explosions from excess pressure and flying debris.
- Distances for the spread of explosive concentrations of vapours of fire-hazardous substances.

On the basis of the estimated exposure distances, endangered areas have also been identified, which are added on a scale to the Action Plan. The probability of rail accidents is not very high, but the risk of the consequences of the accident is very high. Human lives can be threatened several hundred metres from the accident site, but the number of people to be evacuated could reach several thousand.

In the event of a chemical leakage, CPC has to deal with a number of complex challenges:

- The area at risk must be assessed.
- The ways of informing residents should be defined.
- Demarcation plan should be drawn up.
- Strategy for the evacuation of residents should be developed.
- Evacuation of people must be prepared.
- Evacuation of people must be carried out.
- The evacuated area must be guarded.

6.4.Action plans to manage risks for the transportation of dangerous goods by road

In the transportation of dangerous goods by road, petroleum products and LPG are most frequently transported to petrol stations. These substances may cause:

- Heat radiation.
- Risk of overpressure and flying debris as a result of explosions.
- Spread of explosive concentrations of vapours of fire-hazardous substance.

Action plans provide distances for the spread of harmful effects of potential accidents and identify the areas at risk, taking into account the same principles as for the transportation of dangerous goods by rail. The accident rates of a road tank are slightly lower than those of a railway tank, but the areas threatened by the accident are still large enough and may cause difficulties in rapid localization and effective protection of people.

6.5.Action plans for risk management of high-risk facilities

There are 11 high-risk facilities in Jekabpils Municipality. Most of them are petrol stations. The operation of 10 high-risk facilities is connected with liquefied petroleum gas. All high-risk facilities must have CP plans developed that are agreed with the VUGD and submitted to the municipality. At the time the Project implementation, Jekabpils Municipality had at its disposal only CP plans for 5 high-risk facilities.

In view of the fact that fuel leakages in the process of filling customers' cars can lead to small fires in the area of a petrol station, petroleum storage tanks are located underground, while gas is stored in tanks of less than 30 m^3, the Project identifies threatened zones around petrol stations, caused by fuel supply road accidents (the capacity of road tankers is greater than the capacity of individual storage tanks).

The biggest challenge for rescue services and the CP system in accidents at facilities where LPG technology equipment is located is to prevent LPG tanks from overheating, which could cause a fireball fire. It can develop if the LPG tank is heated for some time. As a result of such accident, human life is endangered in a distance of more than 500 m from the exploding LPG tank. To avoid large casualties, municipal and state police officers must alert nearby people immediately and remove them to a safe distance.

In the development of the Jekabpils Municipality CP action plan for the event of an accident, it was taken into account that the localization work at the emergency site will be started by the site employees in accordance with the actions specified in their CP plan, and by the VUGD according to their internal procedures. The responsibility of the Jekabpils Municipality CPC arises

when it is necessary to attract local police for informing people in a large area and carrying out the evacuation of people.

6.6.Emergency in main pipelines

Jekabpils Municipality area is crossed by the main gas pipeline of the *JSC Conexus Baltic Grid* and the main petroleum product pipeline of the *LatRosTrans, Ltd*. The main gas pipeline "Riga–Daugavpils" has a branch "Dikeris–Aiviekste", which has been established as a backup pipeline for crossing the river of Aiviekste. A gas-regulating station "GRS Jekabpils" is located near Jekabpils.

In the development of the Jekabpils Municipality CP action plan for the event of an accident, it was taken into account that the localization work at the emergency site will be started by the site employees in accordance with the actions specified in their CP plan, and by the VUGD according to their internal procedures. The responsibility of the Jekabpils Municipality CPC arises when it is necessary to attract local police for informing people in a large area and carrying out the evacuation of people.

The Action Plan provides spread distances of heat radiation from the gas jet fire for accidents on the main gas pipeline, the gas pipeline branch to the "GRS Jekabpils" and in the technological installations of the GRS. Major distances are possible in the event of an emergency of the main gas pipeline.

In the event of an accident in the main petroleum pipeline, ground and surface waters are expected to be contaminated with petroleum products. In view of the fact that the probability of ignition of diesel fuel is very low, the calculation of the prevalence of heat radiation within the Project was not performed.

6.7.Electricity supply disorders

In the event of an interruption of electricity supply, the supply of many utilities will be paralyzed in full or in part:

- Heating.
- Drinking water Supply.
- Drainage and treatment of waste water.

Cases of long-term electricity supply interruptions will also have a significant impact on many economic activities, on the activities of agricultural and public facilities. The main task of the Jekabpils Municipality CPC is to communicate with employees responsible for the *JSC Sadales tīkls* ('Distribution Network') about the planned electricity recovery deadlines, to identify the priority sites that should be supplied with mobile electricity generators.

6.8.Action plans for the management of public utilities and infrastructure risks

Within the framework of the Project, action plans for accidents in the following utility infrastructure sites have been updated:

- Heating facilities.
- Drinking water supply facilities.
- Waste water treatment plants.

Interruptions of centralized heating facilities may be basically caused by a variety of technical problems. Short-term disruption of heating reduces the household amenities of the population and may affect the functioning of schools, nursery schools and other public institutions while long-term heating problems during the winter in high-frost conditions may threaten the safety of the heating system. As part of the Project, all centralized heat supply facilities in Jekabpils Municipality have been identified.

Supply of drinking water may also be affected by a variety of technical damage. Major drinking water supply facilities are provided with stationary power generators that would provide water supply in cases of electricity interruption. In cases of electricity interruption, it is possible to bring the mobile electricity generators being at the disposal of the Jekabpils Municipality CPC to the minor populated areas. As part of the Project, all centralized water supply facilities in the Jekabpils Municipality have been identified and the most vulnerable ones, with the least chance of reservation, were identified. It is possible to bring drinking water to small populated areas with a specialized transportation tank.

Damage to waste water treatment plants may not only cause household inconvenience, but also environmental pollution. Failure to comply with the technological process of waste water treatment may influence the progress of the technological process. Further, increased waste water pollution can kill bacteria, resulting in the waste water treatment process being completely stopped

for some time and untreated waste water is discharged into the environment. Waste water treatment plants may also be threatened by floodwaters.

In the event of all accidents at public utilities and their infrastructure, the municipal public services and contracting organizations will basically operate. The Jekabpils Municipality CPC will be involved in informing and evacuating the population.

6.9.Collapse of buildings

Collapse of buildings can be caused by the loss of structural elements of the building, the explosion of gas and external factors such as hurricanes, falling trees and driving off the road. In the event of the collapse of buildings, the rescue of people and the search for survivors will be carried out by the VUGD employees. The role of Jekabpils Municipality CPC will be the involvement of specialized techniques, the evacuation of people, their accommodation and the provision of psychological assistance.

6.10. Training of the Civil Protection Commission

Training of the Civil Protection Commission of the Jekabpils Cooperation Area was organized as theoretical desk training, in which CPC members, according to the description given in the work task, analyzed the disaster, made decisions on the necessary actions and issued orders to the responsible services.

The training included an accident in the transportation of dangerous goods by rail with a chemical leakage. The training exercise was examined in two parts, in the first of which the State Fire and Rescue Service presented their actions and readiness, while in the second, the same was performed by the members of the Civil Protection Commission of the Jekabpils Cooperation Area.

The training was filmed to allow the material to be used for re-training the members of the CPC and executives.

As a result of the training, it was concluded that the preparedness of the Civil Protection Commission of the Jekabpils Cooperation Area for chemical accidents was generally to be assessed as weak. During the accomplishment of the task, information from the Civil Protection Plan of the municipality and other sources of information related to civil protection, including cartographic material, was not used. Inaccurate information was provided on the potential of hazards in the accident under consideration, as well as the available resources for carrying out the

planned tasks were not evaluated. Several decisions taken could lead to threats to the health and life of the population.

After the training, the following measures to improve the efficiency of the CPC were recommended:

- CPC members should be more closely acquainted with the information and action algorithms contained in the CP plan;
- CPC training should be organized at regular intervals in order to raise awareness of potential hazards and to ensure the most effective functioning of the CPC in the event of emergency.
- Considering the possibility of growing the capacity of the municipality in the area of CP by keeping 2 staff members able to quickly provide the CPC with the information contained in the CP plan in the event of emergency.
- Start entering and maintaining information relevant to the CP system in the geospatial information system module.
- Examine the possibility of acquiring one of the computer programs for modeling the chemical accidents in Jekabpils Municipality.
- Encourage centralized acquirement and usage of chemical accident modeling computer programs by the VUGD to assess and forecast the occurrence of the consequences of an accident.

7. Guidelines for technical equipment and public education

7.1.Guidelines for technical equipment

Guidelines describe the principles for documenting the performance of Equipment inspections and maintaining up-to-date information, as well as describe the principles for determining responsibilities and providing appropriate professionals for working with the equipment. As far as possible, common inspection parameters for similar installations have been identified and uniform requirements for inspections, including periodicity, have been defined.

The need for the equipment and resources necessary to overcome an emergency situation, the quantity shall be determined in the Civil Protection Plan of the municipality on the basis of the identified risk, its manifestations and the extent of its consequences.

Critical infrastructure facilities shall develop emergency prevention plans and determine the necessary resources for ensuring the continuity of their operation, the available material reserves, and shall submit them to the Head of the Civil Protection Commission or to the municipal civil protection expert.

The list of equipment and resources shall be grouped by type of application, such as evacuation transport, freight vehicles, equipment for information, notification and alert, electrical generators, etc.

Ownership of the technical means and other resources included in the municipal Civil Protection Plan:

- municipal resources;
- resources of municipal capital companies;
- resources at the disposal of other legal persons with which an agreement has been concluded on the use of resources in the event of risk management.

The inspection and maintenance of equipment shall be ensured by the possessor of the equipment in accordance with the technical regulations and the operation manual. The possessor of the equipment may appoint responsible persons for the maintenance of the equipment and machines. Equipment tests, inspections and service shall be recorded in the log.

The local government shall appoint a responsible person to regularly maintain and update the database of the local government, municipal authorities and capital companies included in the Civil Protection Plan, as well as the technical equipment of merchants every six months, if the responsible person updates the availability of resources, or more frequently if there is information on potential hazards or changes in the provision of resources, availability of resources or readiness for operational work.

The municipal authorities and the responsible persons of the municipal capital company shall ensure the conformity, qualification and medical examinations in accordance with the requirements of regulatory enactments of an employee working with the equipment or vehicle.

The municipal authorities and the responsible persons of the municipal capital company shall carry out staff training for the performance of job security, civil protection and work duties.

The possessor of the equipment shall provide the necessary personal protective equipment for the servicing of the equipment in accordance with the risk assessment of the work environment.

7.2.Recommendations for public education

In Jekabpils Municipality, several measures are already carried out to educate the residents of Jekabpils in the field of civil protection:

- The Jekabpils Municipality "News" website summarizes all current and up-to-date information about the events in the municipality. Information articles are also published in this section: "Current information on water level in the Daugava", "State Fire and Rescue Service informs!", which provides current information on the rise in water levels in the Daugava, ice movements and possible threat of floods. The section "National Fire and Rescue Service informs!" provides information on safety measures and reminders of action to avoid accidents.
- The information provided on the website of Jekabpils Municipality is also partly published on the following social networks: *Twitter*, *Facebook*, *Instagram*, *YouTube*, *Linkedin* and *Friends*, thereby also informing the younger part of the community.
- Similarly, 2 local municipality newspapers are available in Jekabpils Municipality, i.e. *Jekabpils novada vestis* ('Jekabpils Municipality News'), which is an informative edition of the municipality, and *Briva Daugava* ('Free Daugava'). Jekabpils Municipality also provides access to its own television – *Vidusdaugavas televīzija* ('Vidusdaugava TV').
- Information on warning and informing the population in the event of a disaster or threat thereof is also available in the brochure "Do you know how to deal with an emergency?" issued by the VUGD, which is available here: https://www.vugd.gov.lv/lv/media/1351/download. It summarizes all necessary information on possible types of emergency and on the behaviour of the population in specific emergency situations.

In order to improve the existing quality of the information provision in Jekabpils Municipality on the actions in the event of emergency situation, emergency preparedness, civil protection or other relevant areas, it is recommended to display the information using graphical elements and/or visual elements that are easily perceivable to the public.

Information booklets are recommended to be easily available in a separate section of the webpage. For instance, "Security" or "Emergency Events" section can be created that is located on the left or right of the website and is well visible to the user. In this section, it is recommended to provide informative phones and links to the websites of other authorities and assistance providers, including the State Fire and Rescue Service, the Emergency Medical Service, the

municipal police, the Gas Emergency Service, etc. It is also recommended that guidelines and booklets on public notification, preparedness and emergency procedures be inserted in this section, as well as the current Jekabpils Municipality Civil Protection Plan. The summary of information on national recommendations to the public can be found below. Internet links to other websites, such as the "Security Board" section of the State Fire and Rescue Service website (https://www.vugd.gov.lv/lv/drosibas-Board), which comprises the information necessary for the public on how to prepare for emergencies before the threat, what is the action during the threat, as well as after the threat. Information on flood risks and information provided by the State Fire and Rescue Service and other operational services for Jekabpils Municipality may also be summarized in this section.

Examples of good practice from other local governments of Latvia:

- Bauska municipality home page, section "Emergency helplines" https://www.bauska.lv/lv/jaunumi/kur-zvanit-avarijas-situacijas-gadijuma-8178;
- Riga City Municipality home page, section "How to deal with emergencies" https://www.riga.lv/lv/arkartas-gadijumi;
- Home page of Valmiera municipality, section "Society/ Security" https://www.valmierasnovads.lv/sabiedriba/sabiedribai/drosiba/.

Besides the improvement of the Jekabpils Municipality website and theoretical knowledge, it is recommended to strengthen the practical skills of society, thereby improving and strengthening the ability of the public to prepare for and act in emergency situations.

Recommendations for strengthening the practical skills of Jekabpils Municipality residents:

- Setting up Jekabpils Municipality Safety Day in order to increase population awareness of possible types of emergency, emergency preparedness and appropriate action.
- Production of training video materials which can be easily placed on social networks and/or can also be demonstrated on local television.
- In cooperation with the operational services, carrying out additional reminders of potential imminent emergency situations, such as:
  - before the beginning of the flooding season,
  - hazards of forest and peat fires during the summer dry period,
  - hazards of turf fires which, in the short term, may cause serious damage not only to the environment but also to the property of the person,

- other hazards, such as leakage of dangerous chemicals in the event of a railway accident.

- Organization of workshops, lectures or practices in cooperation, for example with operational services, for different age groups of Jekabpils Municipality.
- Carrying out public surveys or interactive tasks with feedback from residents on the knowledge that needs to be improved in future training.

Besides the involvement of national and municipal authorities in ensuring the municipal civil protection, any natural or legal person may also be involved. Such involvement of a legal or natural person is determined Cabinet Regulation No. 131 of 2017 on the „Involvement of the Resources of Legal or Natural Persons in Response and Elimination of Consequences Measures or Fire-fighting or Rescue Operations and Procedures for the Calculation of Compensation for the Incurred Expenditures and Losses". This Regulation states that the resources of legal persons and natural persons involved in response and mitigation measures shall be compensated in full in accordance with the application attached to Annex 2 to this Regulation.

Other possibilities for the residents of Jekabpils to be involved and to help the national and municipal authorities are:

- continued follow-up to TV, radio and other social media on up-to-date information and further action in the event of threats;
- listening to and executing the loudspeaker statements provided by police and the State Fire and Rescue Service staff;
- providing further information to the next-door neighbours immediately;
- provision of assistance to those who need it;
- if possible, evacuation should be carried out by means of the person's own transport and in the direction indicated;
- in the event of an evacuation, taking personal identification documents, cash, valuables, food reserves, drinking water and only the necessary clothing.

8. Guidelines and recommendations for developing cooperation models for emergency Management in the Zemgale Region

The most important conclusion reached within the Project regarding emergency management in the Zemgale Region is that it is desirable to continue developing the Jelgava

Municipal Operational Information Centre (POIC) as an operational management centre for the Zemgale Region. Accordingly, in each of the six municipalities in the region, including Jekabpils, the development of municipal operational information centres, including the integration of civil protection.

Monitoring of day-to-day systems in the municipality, such as video cameras, street lighting system, public infrastructure networks in the geospatial information system, as well as monitoring of information relevant to the field of civil protection, such as an interactive flood map, etc. should be an important function of the municipal operational information centre. The establishment of an operational information centre in municipalities makes sense to start on the basis of the municipal police, and there are a number of reasons for this. First of all, civil protection is the responsibility of the municipal police. Secondly, municipal police are developing video camera monitoring systems and this is a good basis for establishing and starting the centre. However, it is further important that operational information centres combine different information bases in a digital format. Currently, Jelgava POIC has around 16 different systems that are monitored and followed-up. It is an important database for day-to-day management and at the same time also serves as an important Database and a platform for civil protection.

The Jelgava Municipal Operational Information Centre (POIC) has been purposefully built in the Zemgale Region since 2010 and has gained significant experience and an intellectual basis for the creation and operation of such a centre. During the work meeting organized within the Project activities (21.02.2022.), which discussed the experience of the Jelgava Municipal Operational Information Centre (POIC), the participants unanimously expressed the view that each municipality of Zemgale does not need to create an equivalent centre to Jelgava, but, in cooperation with Jelgava, needs to create a modular network, i.e. an operational information centre is established in each municipality, with the primary objective of day-to-day monitoring of municipal systems, while at the same time ensuring the possibility of joining the single network of the region, particularly in civil protection situations with a wider territorial impact than the territory of the municipality.

It is important to emphasize that the Latvian Union of Local Governments (LPS), which in the letter of 5 October 2020 to the Ministry of Interior,[2] expressing their opinion, "consider that a discussion on the scope of the civil protection (CP) commissions is necessary, agreeing that the CP commissions are set up either on regional principles – by determining the responsibility of the state cities and regions, or according to the principles of the Operational Control Centre for the VUGD". At the same time, the LPS letter highlights another issue, i.e. improvements in communication between public and local authorities are needed to ensure effective crisis management in emergency situations.

The move towards a regional level civil protection system as the next phase of development is also reflected in its presentation of February 5, 2021, by the State Fire and Rescue Service[3], where a proposal for a possible legal framework for regions and municipalities is presented.

For a detailed description of the activities and experience of the Jelgava Municipal Operational Information Centre (POIC), see the section "Guidelines and recommendations for the development of cooperation models for emergency management in the Zemgale Region" of this document.

9. Summary of the results achieved

In the course of the Project implementation, all Project tasks were accomplished: drawing up Action Plans, preparing the planned guidelines and recommendations, and conducting the training of the Civil Protection Commission of the Jekabpils Cooperation Area.

9.1.Accomplishment of the Project tasks

The following works have been performed according to the Project tasks:

- An assessment of the initial situation has been prepared.
- Action Plans for managing the risks identified in the Project have been updated.
- Development of Guidelines for inspections of municipal technique and equipment.

[2]Letter of October 5, 2020, from the Latvian Local Government Union (LPS) to the Ministry of Interior of the Republic of Latvia regarding the draft law "Amendments to the Civil Protection and Disaster Management Law". Available: https://www.lps.lv/uploads/docs_module/VSS-795.pdf

[3]State Fire and Rescue Service "Civil Protection", Feb. 5, 2021. Available: https://www.lps.lv/uploads/docs_module/2021_02_05_1_3_1_CA.pdf

- Development of Guidelines and recommendations for the development of cooperation models for emergency management in the Zemgale Region.
- Recommendations for public education activities have been prepared.

9.2.Solutions of the related issues

In the course of the Project implementation, the advisers developed scientifically justified criteria for determining the harmful effects of technologic accidents:

- Risk determination of toxic effects.
- Exposure to heat radiation from fire.
- Exposure to the excess pressure and fragments caused by the explosion.
- The growth of explosive concentrations of vapours of fire hazardous substances and the criteria for determining the zones at risk.

In order to determine the toxic accident hazard zones and PAC (Protective Action Criteria), threshold values characterizing the substance concentration in the air are used:

Zone 1 – from the epicenter of the accident to the zone where the concentration of the chemical is equal to the concentrations of PAC-3;

Zone 2 – from PAC-3 to PAC-2 concentrations;

Zone 3 – a zone where the concentration of the substance in the air is lower than the concentrations of PAC-2.

The hazard zones determined in the event of fire:

Zone 1 – from the epicenter of the to a distance where the heat exposure intensity is equal to 10 kW/m^2;

Zone 2 – from the distance at which the thermal radiation intensity of 10 kW/m^2 is reached to the distance at which the thermal exposure intensity of 2 kW/m^2 is reached;

Zone 3 – zones below 2 kW/m^2 of thermal exposure intensity.

The hazard zones determined in the event of proliferation of explosive gases or vapours:

Zone 1 – from the epicenter of the discharge to the zone where the vapour concentration of the chemical is 50% of the lowest explosive threshold value;

Zone 2 – from e zone where the vapour concentrations of the chemical do not exceed 50% of the lowest explosive threshold value to a zone where the vapour

concentrations of the chemical represent 25% of the lowest explosive threshold value;

Zone 3 – from a zone where the vapour concentrations of the chemical are 25% of the lowest explosive threshold value and away from the epicenter of the discharge.

The hazard zones determined in the event of an explosion threat:

Zone 1 – from the point of release to the distance where the explosion wave reaches an excess pressure of 0.1 bars;

Zone 2 – from the distance at which the explosion wave reaches an excess pressure of 0.1 bar to the distance where the explosion wave reaches an excess pressure of 0.07 bar;

Zone 3 – an area further than the excess pressure of 0.07 bar caused by an explosion wave.

In order to plan and implement more effectively the population protection against various technologic accidents and natural disasters, the advisers developed recommendations for the division of endangered zones into 3 zones. The risk level differs in zones as well as the strategy for rescuing people to be applied.

Emergency action shall be organized according to the level of exposure in 3 zones:

- Zone 1, where human life is actually threatened. People from this zone cannot evacuate themselves, or it is very dangerous.
- Zone 2, which is dangerous for people. People from this zone can basically evacuate themselves.
- Zone 3, where territory demarcation and movement regulation units may operate for a certain period. Operational services, support units of emergency rescue teams and human gathering sites may be deployed in this area.

9.3.The problems raised

Many issues were discussed in the working groups in relation to the acquisition, maintenance and periodic updating of the information required for planning the CP actions. One of them was the acquisition of mapping material of flooding areas with water depth markings in the flooding areas. In the course of the Project implementation, flood risk and flood threat maps prepared by the Latvian Environment, Geology and Meteorology Centre have been aligned with

the critical flood markings of Jekabpils. Unfortunately, the Project failed to adapt these flood maps to the event of a rupture of the protective dam.

For planning the CP measures, it is very important to store and periodically update technical information on hazardous and sensitive sites. Within the framework of the Project, templates were prepared for the collection of the necessary information, which was already partially accomplished in the course of the Project implementation.

9.4.Recommendations for further Development of the CP plan and CP system

Technical and financial feasibility of setting up an operational centre should be considered. The activities of such centres in Jelgava and Bauska have already proved their usefulness. In order to increase the added value of the operation of an operational centre, besides the technical provision of the CP System, its tasks should also include daily household problems and public order maintenance tasks. In view of the potential for large-scale chemical leakage accidents in Jekabpils, the operational centre should also include computer modeling capabilities for the harmful effects of chemicals in real time. This would allow for more objective identification of areas at risk and for more targeted information and evacuation of population.

The regulations of the CP Commission should provide for the possibility of organizing CPC work remotely by using modern communication tools. This will allow the CPC to start working more operatively, thereby increasing the efficiency of the CPC in managing various risks.

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