



**SÚRAO**

RADIOACTIVE  
WASTE REPOSITORY  
AUTHORITY

# Annual Report

Radioactive Waste Repository  
Authority (SÚRAO) 2022

## **Mission and principles of the activities of the Czech Radioactive Waste Repository Authority (SÚRAO)**

The Czech Radioactive Waste Repository Authority (SÚRAO) is a state organisational unit and, as such, its activities and management are regulated by Section 113 of Act No. 263/2016 Coll., the Atomic Act. SÚRAO's mission is to ensure the safe disposal of current and future radioactive waste in accordance with requirements concerning nuclear safety and the protection of the population and the environment.

The annual report is submitted for approval to the government of the Czech Republic via the Minister of Industry and Trade in accordance with the provisions of Section 210 b) of the Atomic Act.

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# Current situation



# Current situation concerning radioactive waste disposal

Low-level waste from the nuclear energy sector is disposed of in a surface repository located within the Dukovany nuclear power plant complex; the repository was put into operation in 1995. The total volume of the disposal space of 55,000 m<sup>3</sup> (around 180,000 waste drums) is sufficient for the waste (provided that it meets defined waste acceptability conditions) generated via the sixty-year operation of the Dukovany and Temelín power plants.

Low- and intermediate-level waste (LLW and ILW) from the industry, research and healthcare sectors is disposed of at the Richard (near Litoměřice) and Bratrství (near Jáchymov) near-surface repositories; moreover, the Dukovany repository can also be partially used for this purpose.

The Richard near-surface repository is located in the former Richard II limestone mine complex (below the Bídnice hill). In-

stitutional waste has been disposed of here since 1964. The completion of the reconstruction of the underground complex resulted in an increase in the total volume of the modified underground disposal spaces by 9,800 m<sup>3</sup> to in excess of 26,800 m<sup>3</sup>. The waste disposal capacity makes up approximately half this volume (the rest consists of service corridors). The robustness of the natural barriers of the facility and the existence of additional former limestone mining areas create ideal conditions for the disposal of radioactive waste both now and into the future.

The Bratrství near-surface repository is intended exclusively for the disposal of radioactive waste containing only naturally-occurring radionuclides. The disposal facility was created by adapting one of the mining tunnels of the former Bratrství uranium mine and comprises 5 chambers with a total volume of approximately 1,200 m<sup>3</sup>. It was

put into operation in 1974. Nearly all the capacity of the repository has now been filled and, following the filling of the access corridor with waste (currently in the planning stage), its gradual closure is anticipated.

The operation of all the repositories, including the monitoring of the now-closed Hostim repository, is ensured by SÚRAO in accordance with the relevant permits issued by the State Office for Nuclear Safety (SÚJB) and, where necessary, in full compliance with the relevant mining regulation permits.

To a lesser extent, long-term low- and intermediate-level waste is generated that is not acceptable for disposal in currently operational near-surface repositories. Requirements have been set concerning the method and quality of the treatment of such waste for interim storage and subsequent disposal in the future deep geological repository (DGR). Such waste is stored both by its producers and by SÚRAO.

High-level waste (HLW) and spent nuclear fuel (SNF) (following its declaration as waste) cannot be disposed of in existing repositories; it is expected that it will be finally disposed of in the future Czech DGR. At present, such waste is stored by its producers, all of whom are holders of an SÚJB permit for the storage of these materials.

	total disposal space
Dukovany radioactive waste repository	55 000 m <sup>3</sup>
Richard radioactive waste repository	13 400 m <sup>3</sup>
Bratrství radioactive waste repository	1 200 m <sup>3</sup>





**Richard radioactive waste repository**



**Dukovany radioactive waste repository**



**Bratrství radioactive waste repository**

# Operation of the Dukovany radioactive waste repository





# Operation of the Dukovany radioactive waste repository

The operation of the Dukovany radioactive waste repository (a nuclear facility and a category IV workplace) is ensured by ČEZ, a.s. However, the acceptance of waste at the repository and certain other activities, particularly inspection and monitoring, are the responsibility of SÚRAO. The disposal of radioactive waste disposal packages was carried out during the year in accordance with the limits and conditions for the safe operation of the Dukovany radioactive waste repository and other documents issued by SÚRAO and the waste supplier, ČEZ, a.s.

As part of the standard operation of the repository, an inspection was conducted during the year of the condition of the buildings and technological equipment, and maintenance work was carried out on the buildings, land, machinery and electrical equipment at the site. In accordance with the relevant SÚJB permits, the levels of nuclear safety, radiation protection and technical safety were reviewed, and the monitoring of the radiation situation and the management of radiation emergencies were ensured at the required standard and, in some cases, enhanced.

In 2022, a total of 1,448 waste disposal packages (WDP) (318,7 m<sup>3</sup>) with a total

weight of 411 tonnes were disposed of at the facility. They were disposed of in chambers D1 and D4. In autumn 2022, disposal chamber D1 was permanently closed and the disposal of waste continued in chamber D4.

In 2022, the Dukovany nuclear power plant (EDU) delivered a total of 1,084 radioactive waste disposal packages (237,6 m<sup>3</sup>) for disposal, of which 159 packages with unsolidified waste, 466 packages with bituminised items and 459 packages with used ion exchangers and sludges consolidated in an aluminosilicate matrix.

The Temelín nuclear power plant (ETE) delivered a total of 277 radioactive waste disposal packages (61,2 m<sup>3</sup>) for disposal, of which 60 packages with unsolidified waste, 2 packages with used ion exchangers and sludges consolidated in an aluminosilicate matrix and 215 packages with bituminised items.

In 2022, 87 waste disposal packages (19,9 m<sup>3</sup>) were delivered from the institutional sphere, of which 83 packages solidified in a cement matrix and 4 packages containing non-solidified waste.

In 2022, the tendering process was under

preparation for enhancing the level of security at the repository. A preliminary investigation of potential suppliers was conducted and the expected value of the order was verified. The tendering procedure for a contractor for the reconstruction of the perimeter fencing and the provision and installation of security equipment will be conducted in 2023.

The regular monitoring of the repository and its surroundings in accordance with the approved monitoring programme revealed no exceeding of the operating limits and safety conditions of the Dukovany repository during the year.

The SÚJB conducted 3 inspections of the Dukovany repository in 2022. The detected partial deficiencies concerning the updating of documentation were duly resolved.



Basic information on the waste disposed of in 2022 at the Dukovany repository is provided in the following table:

**Dukovany repository** / Operation in 2022

Volume of disposed of waste	m <sup>3</sup> /waste disposal package (WDP)	318,7 / 1 448
Of which from EDU	m <sup>3</sup> /WDP	237,6 / 1 084
Of which from ETE	m <sup>3</sup> /WDP	61,2 / 277
Of which institutional waste	m <sup>3</sup> /WDP	19,9 / 87
Weight of the received waste	tonnes	411

# Operation of the Richard and Bratrství repositories and the monitoring of the now-closed Hostim repository





# Operation of the Richard and Bratrstvi repositories and the monitoring of the now-closed Hostim repository

In 2022, SÚRAO ensured the operation of the Richard repository nuclear facility and category IV workplace and the Bratrstvi repository category IV workplace fully in accordance with the relevant SÚJB and Czech Mining Authority permits. As part of the normal operation of the repositories, the inspection was performed of the condition of the mining areas, and the routine maintenance of buildings, technological systems, machinery, electrical equipment and surrounding land was conducted. In accordance with the relevant SÚJB permits, the levels of nuclear safety, radiation protection and technical safety were reviewed, and the monitoring of the radiation situation and the management of radiation emergencies and security were ensured at the required standard and, in some cases, enhanced.

In 2022, 627 WDPs (135,4 m<sup>3</sup>) with a total weight of 184 tonnes were disposed of at the Richard repository and 40 WDPs with waste with a volume of 8,6 m<sup>3</sup> were accepted for interim storage. No radioactive waste was received at the Bratrstvi repository in 2022.

The geotechnical and hydrogeological parameters of both facilities were monitored during the year and the operating equipment was maintained in accordance with safety at work and state professional supervision institution requirements. The radiation monitoring of the repositories and their surroundings was performed in accordance with the respective approved monitoring programmes. The surroundings of the now-closed Hostim repository were also monitored.

SÚRAO's activities were inspected in 2022 by the SÚJB (6 inspections at the Richard repository and 2 inspections at the Bratrstvi repository) and the mining supervisory authority (1 comprehensive review of the Richard repository). The SÚJB inspectors discovered a number of non-updated documents, which are currently being revised.

SÚRAO also operates a testing laboratory at the Richard repository site for the testing of so-called special form waste packages used for the transport, storage and disposal of radioactive and fissile materials up to a total weight of 3,200 kg, as well

as for the testing of special form radioactive materials according to the relevant test procedures. Three waste package tests were performed in 2022.

As part of the operation of the Richard repository, the management of abandoned radioactive sources and waste was ensured in accordance with Section 91, paragraphs 2b) and 3) of the Atomic Act. SÚRAO fulfils this obligation on the basis of a notification from the SÚJB that the owner of the abandoned source/waste could not be found within the statutory period. The costs of the processing of such waste into a form suitable for storage and subsequent safe disposal are met by the Ministry of Industry and Trade.

Basic information on the waste disposed of in 2022 is provided in the following tables:

**Richard repository** / operation in 2022

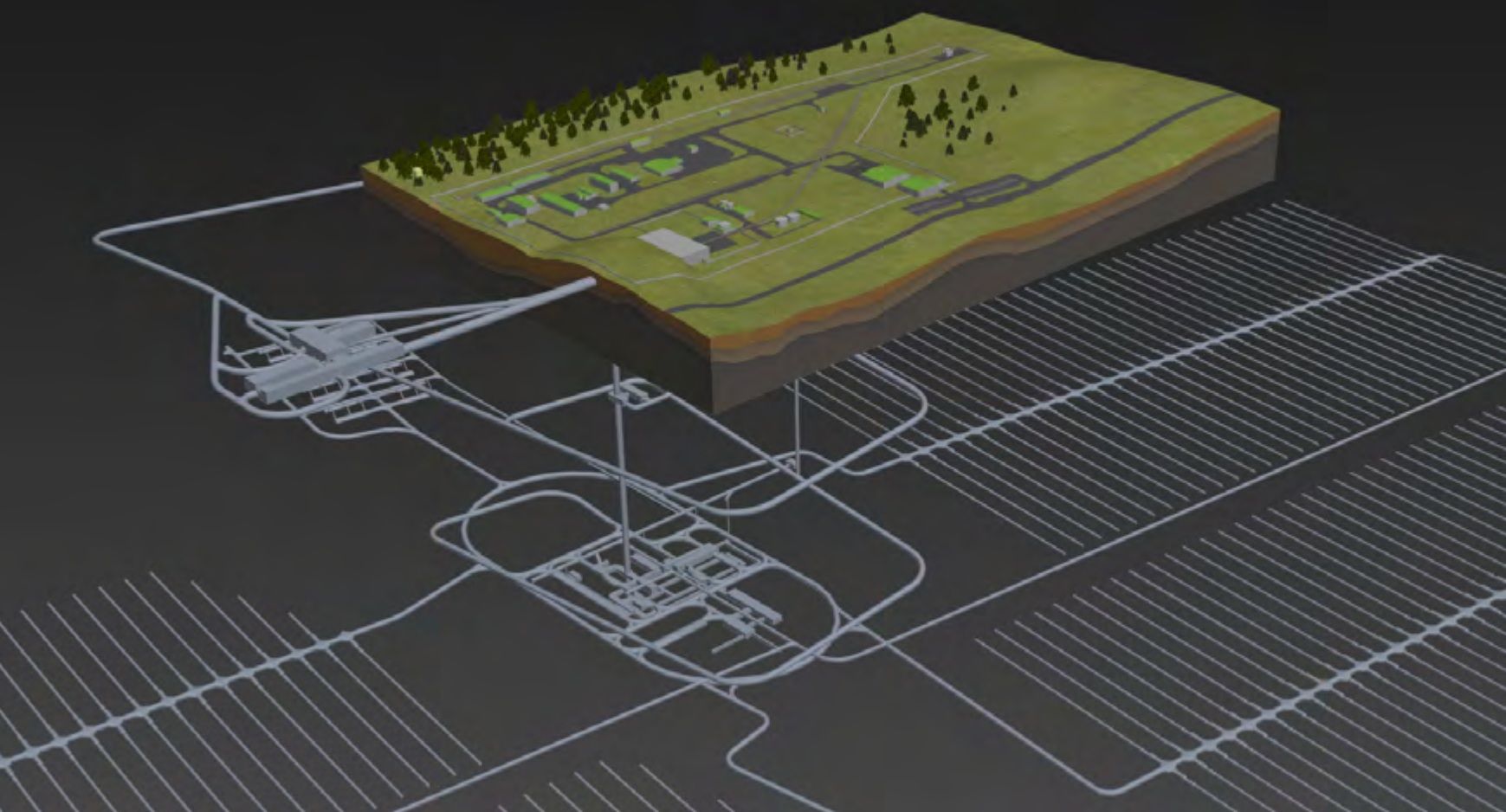
Volume of disposed of waste	m³/WDP	135,4/ 627
Weight of the received waste	tonnes	184
Number of waste containers accepted for interim storage	no.	40

**Bratrství repository** / operation in 2022

Volume of disposed of waste	m³/WDP	0 / 0
Weight of the received waste	tonnes	0



# Development of the Czech deep geological repository



# Development of the Czech deep geological repository

The aim of the work conducted in 2022 with concern to the development of the deep geological repository (DGR) concerned, following the reduction in the number of sites in 2020, the realisation of the R&D programme for the period 2020–2025. The main aim of the programme is to prepare a safety report on the disposal concept (a previously decided combination of engineered barriers and the rock environment) for the conditions pertaining in the crystalline rock environment of the Bohemian massif. The second aim is to initiate a programme concerning the characterisation and evaluation of the four candidate locations for the selection of the final and backup sites. Prepara-

tions for the related geological survey and research work have already begun and the work proper will begin in 2023.

One of the most important milestones in 2022 concerned the preparation of a study entitled The Evaluation of the Impact of the EU Taxonomy Commission Regulation for the Field of Nuclear Energy on the Radioactive Waste Management System in the Czech Republic with respect to SÚRAO's activities. The study assessed the requirements of the technical criteria for a sustainable approach from the point of view of impacts on the climate. As far as SÚRAO is concerned, the most relevant aspects of

the study comprised the conditions related to the schedule for the preparation of the Czech deep geological repository and the capacity available for the handling of low-level waste from the operation of nuclear power plants. The study presents the conditions for fulfilling the proposed criteria, i.e. the commencement of operation of the deep geological repository in 2050 and the provision of sufficient capacity for the storage of low-level waste from the operation of existing and new nuclear sources.

The government of the Czech Republic duly took note of the study and subsequently adopted Resolution No.24 of 11 January 2023.





## DGR site selection

The Czech Geological Institute selected potentially suitable areas for the location of the deep geological repository as early as in 1992. Following the further assessment of the selected areas in terms of exclusionary and conditional criteria set out in the then valid SÚJB Decree No. 215/1997 Coll. and related legal and other requirements (e.g. the Nature and Landscape Protection Act), 11 potential sites in three different types of rock were selected in 2002. SÚRAO subsequently selected 6 preferred sites, all of which were located in stable crystalline bedrock areas.

Due to the overwhelmingly negative attitude of local inhabitants to the DGR project, SÚRAO suspended all geological research work at the sites until 2009 in agreement with the Ministry of Industry and Trade (the Government took note of this decision via Government Resolution No. 550 of 2 June 2004).

With this factor in mind, sites were subsequently sought where more favourable conditions could be expected in terms of public acceptance. At the end of 2008, based on a government-approved action plan (Government Resolution No. 1315 of 20 October 2008), SÚRAO initiated the study of a number of military areas in terms of the siting of the deep geological repository. The Boletice military area, in which the Chlum reserve site was defined, was then assessed in more detail. It was subsequently decided that no further research would be conducted at this site and, according to the Site Management

Concept, it remains a potential backup site. In 2011, a further site, Kraví hora, was defined in the vicinity of the Dolní Rožínka uranium mine.

Based on requirements set out in the Concept, work commenced in 2014 on the “Assessment of Geological and other Information on selected Parts of the Moldanubian in terms of potential Suitability for the siting of the DGR” project aimed at determining suitable rock blocks for the siting of the DGR in the vicinity of the Czech Republic’s two nuclear power plants. In 2017, the field research work was completed and potentially suitable rock blocks were identified near to both nuclear power plants.

The selection of a site suitable for the construction of the deep geological repository involves a number of phases via which the candidate sites are assessed according to a set of criteria and indicators as defined in the SÚRAO MP.22 document. The criteria are based on both the requirements of Czech legislation and IAEA recommendations. The methodology for the application of these criteria was developed in the final stage of the assessment process, and was subsequently applied in the assessment and comparison of the sites.

The number of sites was reduced in 2020 based on an assessment conducted according to the following criteria: technical feasibility, long-term and operational safety and the potential impacts of the construction and operation of the repository

on the environment. The output of the assessment comprised the recommendation of the following preferred sites: Březový potok, Horka, Hrádek and Janoch (ETE-south) for the next assessment phase. The other sites (Čertovka, Čihadlo, Na Skalním (EDU-west), Kraví hora and Magdaléna) are considered backup sites.

The next stage of the research will focus on obtaining knowledge from the expected depth of the repository and the wider surroundings of the four sites, and the interpretation of the data aimed at determining the final and backup sites for the potential location of the DGR. A deeper knowledge of the sites based on information obtained via the conducting of technical research and development will then enable the evaluation and comparison of the two sites and the subsequent recommendation of which site will be the final and which will be the backup choice. The work conducted in 2022 concerned the preparation of projects related to the geological characterisation of the four candidate sites, the commencement of the initial research on the geological mapping of the sites and activities connected with the selection of locations for long-term hydrogeological monitoring. Projects were also launched concerning descriptions of the environmental characteristics and the biological screening of the candidate sites.

## Research of engineered barriers

The technical design concept of the DGR, including an estimate of the construction and operation costs, formed part of the DGR Reference Project and the update thereof. One of the most important engineered barriers comprises the waste disposal package (WDP). Work commenced in 2013 on a project, the final output of which in 2021 comprised a proposal for the materials and design of a disposal package for spent nuclear fuel, including the production of a prototype. The WDP programme currently involves preparations for the conducting of a detailed safety evaluation of the WDP concept and the implementation of a related follow-up R&D programme.

Issues surrounding the other engineered barriers, i.e. the filling and sealing materials for the disposal boreholes and corridors, are being addressed under both laboratory and real rock research conditions. The key project in this research area concerns the “Filling and other engineered components of the DGR” project that commenced in 2021. This project is focusing on the selection of the barrier materials (the filling of the disposal boreholes and corridors, plugs, the filling of the caverns that will house other RAW in the DGR and the other engineered components) and the basis for the safety assessment thereof. The aim is primarily to verify the stability of Czech bentonites and to determine their behaviour under DGR conditions.

Other projects currently underway include the Pilot Corrosion Experiment and the Interaction Experiment at the Bukov underground research facility (URF), the Dismantling of Mock-up Josef and the EPSP plug experiments at the Josef underground laboratory, the HotBent and MaCoTe international experiments at the Grimsel underground laboratory, Switzerland, the EURAD international project and other TAČR-related projects for which SÚRAO is the application guarantor. Furthermore, other in-situ projects to be conducted at the Bukov URF will be announced in 2023.

## Project design activities

The deep geological repository will consist of two separate disposal units – the spent nuclear fuel and other RAW repositories. The first technical design proposal for the deep geological repository was published in the DGR reference project of 1999, followed by its updating in 2011, individual site studies in 2012 and site suitability studies for 7 sites (Čertovka, Čihadlo, Hrádek, Horka, Březový potok, Kraví hora and Magdaléna) and feasibility studies for the Janoch and Na Skalním sites in 2020.

In 2015, the “Research Support for the Project Design of the Deep Geological Repository” project was announced. As

part of this project (that was underway from 2016 to 2020), research was conducted aimed at optimising the technical design of the most important technological components of the DGR with regard to technical feasibility, operational safety and economic considerations. The project was completed in 2020. This was followed by preparations for the subsequent stage of DGR-related research. Other project design work included a study on the long-term storage strategy for the Skalka site accompanied by an evaluation of the effectiveness of this facility in terms of the development of the DGR.

In 2022, the “Research Support for the Project Design of the DGR for the Safety Assessment of the Disposal Concept” project was launched, as part of which research has commenced on the economic and socio-demographic benefits and risks of the DGR at the candidate sites in terms of the overall development of the affected regions, as well as the updating of the DGR life cycle schedule with respect to the conditions set out in the EU Taxonomy. The project will continue with the optimisation of the surface areas of the DGR at the 4 sites and the research of the other technical challenges posed by the project.

## Activities concerning the safety assessment of the DGR

In accordance with the Medium-Term Research and Development Plan for the requirements of the siting of the DGR, the six-year “Research Support for the Safety Assessment of the Deep Repository” project was completed in 2020. The main output of this project, which was launched in 2014, concerned the interpretation of primary data obtained from the geologi-

cal characterisation of the candidate sites and the gathering of information, models and arguments for the preparation of safety analyses for the assessment of the long-term safety of the siting of the DGR at all of the candidate sites. In 2021, a follow-up project entitled “Research support for the Safety Assessment of the technical design of the DGR” was launched, the main aim

of which concerns the safety evaluation of the current DGR technical and safety concept based on the disposal of SNF in steel WDPs, the use of Ca-Mg bentonite and disposal in a crystalline rock environment. Particular attention will also be devoted to the repository for other RAW. The project continued in 2022.

## Domestic R&D and demonstration research in underground laboratories for the needs of the DGR programme

The research programme addresses the need to obtain data, arguments and other input documents so as to prove both the feasibility of the DGR at the candidate sites and the long-term safety of the facility via research under both laboratory and underground in-situ conditions. It should be noted that the unique data required for the development of the DGR cannot be obtained other than through underground laboratory research. The success of DGR development programmes finally depends on the results of experiments and the data obtained in laboratories in the country for which the DGR is envisaged.

SÚRAO has obtained significant methodological experience from participation in a number of projects conducted in foreign underground laboratories and in its own underground facilities in the Czech Republic. SÚRAO's long-term support of research at the Bedřichov tunnel site ended recently and support for a number of in-situ ex-

periments continues in the Josef underground laboratory; however, most SÚRAO research projects are now conducted at the Bukov Underground Research facility (URF). The URF is owned by SÚRAO and it serves for the conducting of research and development projects and demonstration experiments connected with the DGR development programme. The laboratory is located in the former Rožná I uranium mine and makes use of the pre-existing mine infrastructure. The laboratory tunnels and niches are located on level 12 of the mine near to the B-1 pit beneath the village of Bukov, at a depth of around 550 m. The excavation of a new complex of corridors near the B-2 and R7-S pits on level 12 (Bukov URF II) is currently underway.

The main experimental programme has been underway since the commissioning of the Bukov I complex of the URF in 2017. The various internal research programme areas were defined on the basis of strate-

gic documents compiled by SÚRAO: the Medium-term research and development plan for the needs of the DGR in the Czech Republic 2015–2025 and Requirements, suitability indicators and site selection criteria for the siting of the DGR, as well as on the basis of legislative requirements (the Atomic Act) and international recommendations. Details of the research programme were subsequently set out in the SÚRAO R&D plan (TZ SÚRAO 525/2020) and the R&D plan for the Bukov URF (TZ SÚRAO 546/2021). A total of ten related research projects were underway at the Bukov URF in 2022.

In 2022, work continued on the reconfiguration of the existing mine infrastructure with the aim of optimising the range of the underground spaces for current and future laboratory needs; the work was completed on 31 December 2022. Research activities will continue in the future at the Bukov URF focusing on topics related to



the DGR development programme as defined in the SÚRAO Medium-term research and development plan for the period 2020-2030. The objectives are: 1. Determination of the transferability of knowledge obtained from the surface parts of the rock environment of the Bukov URF to deeper sections for the prediction of the properties of the candidate sites at repository depth, 2. Verification of the propagation of temperature in the repository from sources that simulate disposed of spent nuclear fuel, 3. Verification of the prediction of the transport of mobile radionuclides in the isolation part of the repository, 4. Verification of the properties of the waste disposal package materials in the real conditions of the rock environment, 5. Verification of the prediction of THMC (thermo-hydro-mechanical-chemical) processes in the real conditions of the repository, 6. Verification of the influence of excavation methods on the extent of the damage to the rock (EDZ area) and the isolation capacity of the rock mass.

Government Resolution No. 50/2016, dated 25 January 2016, point IV, paragraph 1, whereby the Minister of Industry and Trade is instructed to ensure the fulfilment of the tasks specified in Chapter 8 of Part III of document No. 1617/15 sets out, inter alia, the following:

a) SÚRAO shall inform the Government on an annual basis via its Annual Report of the securing of financing for construction purposes for the upcoming period from the relevant operational programme.

No funds were drawn from the Enterprise and Innovation for Competitiveness operational programme in 2022.

b) Ensuring that SÚRAO is the established owner of the Bukov URF and entrusting SÚRAO with its management, with the responsibility of meeting set objectives in compliance with the relevant Act and associated regulations. Informing the Government via SÚRAO's Annual Reports on the progress of URF construction and operation.

As part of the process surrounding the termination of mining activities at the Rožná mine, a contract was concluded in 2017 between SÚRAO and DIAMO (state enterprise) aimed at ensuring the operability and routine maintenance of the Bukov URF. This contract thus guaranteed the operation of those parts of the Rožná mine essential for the operation of the URF and formalised relations between the owner of the URF (SÚRAO) and the mine operator (DIAMO). The contract was concluded for the period up to November 2019 and was subsequently extended via an amendment to the contract up to 2020. In 2020, a detailed review was conducted of the operation of the Bukov URF followed by negotiations between SÚRAO and DIAMO, the result of which was the conclusion of a contract for the operation of the facility until 2030 with the potential for its extension up to 2035.

c) Informing the Government via SÚRAO's Annual Reports on the financing of the construction and operation of the underground research facility

for which it is not possible to utilise funds from the relevant operational programmes from the Nuclear Account held with the Czech National Bank, accompanied by an evaluation of the effectiveness and efficiency of the use of funds provided in previous years and a statement justifying the funding required for the subsequent period.

In 2022, based on long-term contracts, all the construction and research activities at the URF were financed from the nuclear account. In 2022, a total of CZK 54.3 million was spent on the expansion of the Bukov URF (including preparatory work, the excavation/construction work itself and the related technical work) and CZK 244.57 million on its operation, including the re-configuration of the mine complex. The results of contracted research concerning SÚRAO's internal research projects are fully compatible with the requirements of the Medium-term Research and Development Plan.

## International cooperation

International institutions play a number of important roles in the field of radioactive waste management, including the initiation of legislative and regulatory changes and the creation of the conditions for experts to meet and exchange information. It is, therefore, of the utmost importance to maintain international contacts and to participate in the activities of such institutions to the maximum extent possible. SÚRAO's international activities can be divided into three categories.

The first category comprises the membership of international organisations such as the International Atomic Energy Agency and the Nuclear Energy Agency (NEA) of the OECD, both of which have European and non-European member countries such as the USA, Canada, Japan, South Korea, China, the UK and Switzerland. In 2017, a SÚRAO member of staff was elected chairman of the Crystalline Club expert group (part of the NEA/OECD), the membership of which comprises more than 30 experts from 6 countries whose DGR programmes are considering crystalline rocks as the potential host environment. Participation in the IGD-TP (Implementing Geological Disposal - Technology Platform) technology platform is also of significant importance for SÚRAO. The IGD-TP identifies strategic research and development priority areas with the vision of the commissioning of the first deep geological repositories in the EU by 2025 (Sweden, Finland, France). SÚRAO has its own representative in the IGD-TP Executive Group.

The next category consists of cooperation on international projects that are organised and financed by the European Commission as well as international consortia set up to address particular issues. These projects mostly concern research and development. The EU EURAD project, with the participation of more than 100 organisations, is one of the most important projects in which SÚRAO is involved. The project commenced in 2019 and the first phase is scheduled to last up to 2024. EURAD will address a wide range of topics related to the disposal of radioactive waste. The European Commission attaches particular importance to the project; hence, the participation of organisations from the Czech Republic is seen as both beneficial and of particular significance. The second phase of the EURAD project is also currently underway. SÚRAO is both actively involved in the project and coordinates the activities of the various Czech third-party participants (Czech Technical University, Charles University, ÚJV, a.s., the Institute of Geonics AS CR and the Technical University of Liberec). A further EU project in which SÚRAO is involved is PREDIS, which is concerned primarily with the treatment of radioactive waste prior to its disposal.

The conducting of joint experiments in foreign underground laboratories (for example the Grimsel Test Site (GTS) laboratory in Switzerland) also yields very valuable research results. The main aim of such experiments is to form an understanding of the processes that will occur in DGRs

located in crystalline rocks and to obtain data for safety analysis purposes. Such experiments are usually long term and focus on retarding the transport of radionuclides via diffusion from fractures into the crystalline rock matrix (the LTD – Long Term Diffusion experiment. This experiment is unique internationally in terms of its use of radionuclides in a natural environment. The MaCoTe (Material Corrosion Test) experiment, which also involves the participation of SÚRAO, is concerned with the long-term assessment of the rate and mechanism of the corrosion of waste disposal package (WDP) materials under real rock mass conditions. The experiment involves the testing of materials designed in the context of the WDP research and development programme. A further important project underway at the GTS comprises the Hotbent experiment involving the construction of a bentonite barrier at the real DGR scale and the production of barrier components from Czech bentonite (at the industrial scale). The main benefit of the experiment comprises the evaluation of the behaviour of Czech bentonite in a real rock environment and the verification of the corrosion properties of the materials that will make up the Czech waste disposal package under real conditions; the results can only be expected following the dismantling of the experiment (post 2025).

SÚRAO is also active in many other international projects including: TDB 6 (Thermochemical Database Project), SKB Task Force EBS, SKB Task Force GWFTS, DECO-VALEX 2019 and CIM.

The final category consists of bilateral cooperation, via which SÚRAO shares its know-how with other European and global organisations active in the field of RAW management (waste management organisations - WMO) through the conclusion of memoranda of cooperation.

One example of such cooperation comprises an agreement with the Finnish

consortium Posiva Oy/Saanio & Riekkola Oy. The aim is to strengthen the Czech DGR development management structure via the maximum involvement of foreign experience, including ensuring the conditions for related research and development work and the development of technical solutions that demonstrate the feasibility and safety of the DGR at the potential sites considered in the Czech Re-

public. Memoranda of understanding have also been concluded with several other organisations similar to SÚRAO aimed at promoting the sharing of best practice in the relevant issues between the respective partners.



# Communication with the public



# Communication with the public

One of SÚRAO's long-term aims is to increase the general awareness of the existence of radioactive waste and the methods available for its safe disposal in the Czech Republic and abroad. The availability of information on radioactive waste and its management forms a prerequisite for discussions between all the various stakeholders on the method eventually applied for the final disposal of radioactive waste and spent nuclear fuel in the Czech Republic.

Therefore, as every year, SÚRAO's communication activities in 2022 focused on raising awareness of the existence of radioactive waste in the Czech Republic and its safe disposal. Communication activities during the year were significantly affected by the ongoing case surrounding the former director of SÚRAO, which was widely reported in the media.

With respect to the operation of the Richard, Dukovany and Bratrství repositories, communication concerned primarily the provision of information on the safe operation of these facilities. As previously, the Richard repository open day attracted considerable interest from the general public.

SÚRAO is a member of the Dukovany Civil Safety Committee, and SÚRAO repre-

sentatives regularly attend meetings of the committee. In recent years, SÚRAO initiated the establishment of so-called civil control committees for its two operational near-surface repositories, Bratrství and Richard. The motivation for the establishment of these committees concerned efforts to strengthen the level of trust between local inhabitants and SÚRAO. The main task of these committees is to conduct independent inspections of the operation of the repositories, to compare them with the relevant international practice and to inform the local public of their findings. The members of the commissions comprise representatives from the affected and surrounding municipalities and the respective regional authorities, as well as experts from SÚRAO and the Czech Mining Authority.

A further key task for the SÚRAO communications department concerns the provision of information to the sites that have been selected for the potential location of the future Czech deep geological repository for the permanent disposal of high-level waste and spent nuclear fuel. In order to increase awareness, SÚRAO offered all four candidate sites the opportunity to establish local working groups, i.e. information-sharing platforms composed of rep-

resentatives from SÚRAO, the Ministry of Industry and Trade and the affected local and regional authorities. The main areas of discussion concern informing the municipalities of developments and addressing their concerns, as well as participation in designing the repository surface area concept, the submission of comments etc. The municipalities that make up the Janoch site and two municipalities and the region at the Březový potok site accepted invitations to set up such groups. In addition to the local working groups, SÚRAO also participated in other meetings held at the four sites during the year.

Communication with the public concerning the development of the DGR focused mainly on providing information on the planned facility and the various stages of the process. SÚRAO also focused on international cooperation in the DGR development process and related international projects in which SÚRAO is involved. In this context, SÚRAO organised an excursion to Sweden for journalists where they had the opportunity both to visit a facility that is involved in the development and production of waste disposal packages and to learn more about the final DGR site in Sweden.

SÚRAO hosted its fifth summer school

during the year - a week-long event for students studying technical and natural sciences subjects; once again, the event attracted a high level of interest from students. This year's theme concerned the DGR project design.

SÚRAO continued to publish its quarterly "News from SÚRAO" newsletter, which is distributed directly to all the inhabitants of the candidate DGR sites and the respective municipal authorities.

SÚRAO employs a variety of communication channels including its website and social networks (Facebook, LinkedIn, Instagram, YouTube), and communicates regularly with the media.

SÚRAO also provides lectures for schools so that even the youngest generations are made aware of radioactive waste issues.

In 2022, following the end of the Covid-19 pandemic, the provision of lectures, which remain popular with schools throughout the country, was reintroduced.

SÚRAO is obliged to provide information to the public pursuant to Act No. 106/1999 Coll. on free access to information. In 2022, SÚRAO received 4 requests for the provision of information according to the Act.

**Provision of information to the public during 2022 according to Act No. 106/1999 on free access to information:**

Number of applications for information under Act No. 106/1999 Coll.	4
Number of decisions issued on the rejection of applications	0
Number of appeals against a ruling	0
Conclusions of proceedings on sanctions for infringement of the Act	–
Other information concerning the implementation of Act No. 106/1999	–

**Provision of information to the public during 2022 according to Act No. 123/1998 on the right to information on the environment:**

Number of applications for information under Act No. 123/1998	0
Number of appeals against a ruling	0
Conclusions of proceedings on sanctions for infringement of the Act	0
Other information concerning the implementation of Act No. 123/1998	–



# Managerial, technical, legal and administrative issues



# Managerial, technical, legal and administrative issues

In addition to those outlined above, SÚRAO is involved in a wide range of additional activities either in connection with its main area of business or as required by the relevant legislation.

## Licencing procedures and radiation protection

The main aim of activities related to the licencing procedure and radiation protection is to ensure repository operation and radioactive waste management compliance with the provisions of the Atomic Act (263/2016) and relevant regulations; changes in documentation primarily concern Regulation No. 377/2016 on requirements for the safe management of radioactive waste and on the decommissioning of nuclear facilities and category III and IV workplaces, as well as Decree No. 422/2016 Coll., on radiation protection and the safety of radionuclide sources.

The licencing procedure for the operation of the Richard, Bratrství and Dukovany repositories previously covered a period of five years. Licences issued by the State Office for Nuclear Safety under previous legislation are valid until the end of 2026; documentation describing exposure situations was adapted to the new legislation in 2017 and management system

programmes and other documentation were harmonised in 2019. Documentation requiring approval pursuant to the Atomic Act was duly approved by the SÚJB. In 2022, SÚRAO held a total of 11 permits for activities pursuant to Section 9 of the Atomic Act.

In June 2022, the SÚJB approved a new version of the Limits and Conditions of the Richard repository document and in September approved the new wording of the Internal emergency plan of the Richard repository document.

The safety report makes up the basic document which proves the safety of the repository in terms of the staff employed at the facility, the general public and the environment. The scope of the safety report is specified in methodological instructions issued by the SÚJB and based on recommendations from the International Atomic Energy Agency (IAEA) in Vienna. The radi-

ation burden of staff members, the public and the environment is assessed using regularly verified procedures and as part of a number of international programmes. Standardised computing tools and computer programs are used for safety analysis purposes.

The radiation protection of repository personnel, local inhabitants and the repository surroundings is ensured through fulfilling set limits and criteria for the safe operation of such facilities and/or the safe management of radioactive waste, based on the results of safety analyses and approved by the SÚJB.

Radiation protection activities make up one component of the system for the protection of persons and the environment against the potentially detrimental impact of ionising radiation, the main reason behind which is to prevent the release of radionuclides into the environment and

the occurrence of radiation emergency situations. A specially-designed system made up of a range of technical and organisational measures is applied for this purpose. The risk of danger to human life and health and the environment must be kept as low as possible with reasonable consideration for the economic and social aspects involved. The maximum acceptable level of risk corresponds to dose limits and other dose restrictions defined by SÚJB Regulation No. 422/2016, on radiation protection.

The fulfilment of requirements relating to radiation protection as defined by Regulation No. 422/2016 on radiation protection

and the safety of radionuclide sources has been verified during the monitoring of all the repositories including the now-closed Hostim repository. The personal dosimetry of SÚRAO's radiation workers was ensured during the year, the professional and medical fitness of category A workers was verified, and records were maintained of the doses received by workers and sources of ionising radiation in SÚRAO's premises. No significant issues were identified in 2022 in terms of radiation protection. Cooperation with suppliers with concern to radiation protection was ensured at SÚRAO's workplaces via the provision of training on radiation protection and the management of radiation emergencies

and via regular inspections of compliance with radiation protection requirements.

With respect to the fulfilment of its responsibilities regarding radiation protection, SÚRAO cooperated closely with the SÚJB during regular inspections of its facilities and concerning the fulfilment of SÚJB requirements concerning adherence to the limits and conditions of the safe operation of its repositories, RAW management and radiation protection. The requirements of the Atomic Act and related legislation were met in full.

No radiological emergency event occurred during the year at any of SÚRAO's facilities.

## **Maintaining records of accepted radioactive waste and nuclear materials**

SÚRAO maintains records on accepted radioactive waste and its producers as stipulated by the Atomic Act. Such records are maintained in both paper and electronic form. SÚRAO holds an SÚJB licence for the management of nuclear materials. Records of nuclear materials were maintained in full compliance with SÚJB Reg-

ulation No. 374/2016, on the registration and control of nuclear materials and the reporting of data on such materials, and other European Community regulations. Nuclear materials are stored at the Richard repository at which the appropriate physical protection level is ensured as required by SÚJB Regulation No. 361/2016. SÚRAO

submits to the European Commission, on a monthly basis, reports on the amount of radioactive materials disposed of, and copies of these reports are submitted to the SÚJB. An inspection of the physical inventory of nuclear materials is held once per year with the participation of SÚJB, EC and IAEA representatives.



# Management of fees paid to the nuclear account

The management of fees paid to the nuclear account was governed in 2022 by the Atomic Act, Sections 118-135 and Government Decree No. 35/2017 Coll. on the one-off payment tariff for radioactive waste disposal and on the amount of contributions to local communities as well as the manner of payment, and by Act No. 280/2009, the Tax Code.

## Regular payments by producers of radioactive waste from nuclear and research reactors

Pursuant to the Atomic Act, Section 122, ČEZ a.s. contributed CZK 1,706,143 thousand in 2022 and the yearly contribution

made by the Research Centre Řež s.r.o. amounted to CZK 1,135 thousand. Both amounts were paid in the form of regular monthly instalments which were deposited directly into the Nuclear Account.

## Payments by other radioactive waste producers

Other waste producers paid their charges on a one-off basis following the acceptance of their waste for disposal by SÚRAO. Payment notices were issued to each waste producer based on a contract between SÚRAO and the respective waste producer on the acceptance of the radioactive waste accompanied by the rele-

vant waste acceptance documentation. The total sum paid in 2022 amounted to CZK 27,056 thousand. The one-off charges were paid in accordance with the payment assessments.

Nuclear Account assets as at 31 December 2022 amounted to CZK 36.56 billion in cash and the nominal value of Government bonds. Disposable funds in the Nuclear Account were invested by the Ministry of Finance in the financial market in compliance with the Atomic Act, Section 116.

# Verification of the estimates of the costs of the decommissioning of category III and IV workplaces

In 2022, SÚRAO conducted a total of 11 verifications of cost estimates for the decommissioning of category III workplaces relating to 9 holders of permits to operate such workplaces in accordance with Annex 1, paragraph 2b, item 11 of the Atomic Act and the provisions set out in section 13, paragraph 4 of SÚJB Decree No. 377/2016 Coll., on requirements for the safe man-

agement of radioactive waste and the decommissioning of nuclear facilities and category III and IV workplaces, and taking into account section 3 of Ministry of Industry and Trade Decree No. 250/2020 Coll., as amended. No cost estimates for the decommissioning of category IV workplaces were submitted for verification in 2022.

The verification of these estimates was performed on the basis of documentation submitted by the various permit holders, in particular so-called plans for the decommissioning of (related) workplaces.

# Auditing of licence holder reserves for the decommissioning of their facilities

SÚRAO is responsible for the inspection of the creation of decommissioning reserves as set out in the Atomic Act. In accordance with Section 113 (4g) of the Atomic Act, SÚRAO inspects the creation of the decommissioning reserves of those licence-holders who are obliged to create such reserves.

## Initial conditions for initiating an inspection:

→ the organisation is subject to the requirement to create a reserve accord-

ing to the Atomic Act,

→ the verified decommissioning cost estimate exceeds CZK 300,000,

→ the organisation is in possession of certification verifying its decommissioning cost estimate,

→ the organisation is an SÚJB licence holder and its proposal for the method to be employed for the decommissioning of the respective facility has been approved.

Audits were conducted of 10 licence holders covering a total of 33 facilities in 2022. The required cooperation was provided by all the inspected organisations; no serious irregularities were detected during the inspections. Reports were compiled for each permit holder on the performed inspections. A comprehensive report on the inspections was subsequently submitted to the SÚJB in accordance with the respective SÚRAO Statute.

## Internal control system

The internal control system was introduced in accordance with Act No. 320/2001, on financial control in the public administration sector and Decree No. 416/2004. The structure of the internal control system respects the specific activities of SÚRAO, the structure of the organisation in relation to the services provided and the approved number of employment positions.

The internal control system serves to verify the adherence of the management and responsible senior employees of the organisation to internal regulations, i.e. the so-called management control system, and covers the activities of authorised employees that are organisationally separated from the management and executive structures, i.e. the internal audit system.

The introduction of the internal control system was in compliance with SÚRAO Directive S.28, the “Internal Control System” which defined the basic procedures of internal control management. The integrated management system is defined in the form of basic management regulations, the most important of which consist of the “Management System Policy” and the “Management System Description”. Follow-up management documents included the “Organisational Code”, the “Employment Code” and the “Managing Director Decision Authorisation Procedure” that provides for the performance of this function under the Financial Control Act. These documents define the responsibilities of individual departments and set out the responsibilities and powers of senior and executive staff and the guiding control principles and procedures exercised by

the management. These documents were followed by the compilation of a number of internal work procedures which set out the activities of individual work areas and complemented the management control process.

The economic management system is set out in the following regulations: “The Preparation of Plans and the budget”, “Tendering management”, “Asset Management”, “The Management of Budget Funding and the Circulation of Documents” and “Accounts processing”.

The “Security Policy” regulation and the setting of rules for the maintaining of documentation in the “Filing Rules” procedure, including the “Filing and Shredding Plan” constitute integral elements of the management system.

Other management documents set out the requirements for the implementation of basic processes concerning the management of radioactive waste and repository operation in terms of ensuring and enhancing the level of nuclear safe-

ty, radiation protection, technical safety, radiation situation monitoring, radiation emergency management and security, integrated management and environmental protection, and the approach to the fulfilment thereof. These basic requirements

are based on the provisions of the Atomic Act and related decrees.

## Internal audit

The SÚRAO internal audit system was established in accordance with the provisions of Act No. 320/2001 Coll., on financial inspection in the public administration sector. Internal audit activities are performed in accordance with Decree No. 416/2004 Coll., which implements the provisions of the Act on Financial Inspections, and fully respect the International Framework for the Professional Practice of Internal Auditing and International Standards for the Professional Practice of

Internal Auditing. Internal audit activities were conducted during the year in accordance with the approved annual plan, the internal audit manual and the procedures specified in the internal audit department's programme for securing and improving the quality of internal auditing internal document.

In addition to the internal audit agenda, the internal audit department is also responsible for verifying the creation of de-

commissioning reserves according to the Atomic Act, the internal anti-corruption programme agenda and, as of June 2022, the agenda for the protection of persons who report violations of EU legislation (whistleblowing). An extensive internal audit was performed during the year on the SÚRAO personnel agenda.

## Implementation of the internal anti-corruption programme and measures for the protection of whistleblowers

In line with the obligations set out in the Framework Departmental Anti-corruption Programme, the Internal Anti-corruption Programme was updated and published on the SÚRAO website. The obligations set out in the Action Plan for the Fight against Corruption, i.e. the publication of details on advisers and advisory bodies, as well as on the sale and lease of state property, the professional CVs of senior employees from specified management levels and contacts to senior employees, were addressed on a continuous basis.

In 2019, Directive (EU) 2019/1937 of the European Parliament and of the Council of 23 October 2019 on the protection of persons who report violations of Union legislation was adopted at the European Union level. According to the directive, the effective and comprehensive protection of whistleblowers, i.e. persons who report illegal acts, must be guaranteed. The main objective of the protection of whistleblowers is to enable the detection of illegal acts that take place in the workplace or during the performance of work (or other similar activ-

ities). The directive should have been transposed into Czech national legislation by 17 December 2021. Although the state failed to meet this deadline, following its expiry obligations arose concerning state authorities, including SÚRAO. The most important obligation under the directive concerned establishing an internal notification system for receiving, recording and processing the notification of illegal acts. The Ministry of Justice outlined methodology in this respect based on which organisations could initiate the addressing of this responsibility.

Aimed at the fulfilment of the conditions of the EU directive, Methodological Instruction MP.57 on the transposition of Directive (EU) 2019/1937 of the European Parliament and of the Council on the protection of persons who report violations of EU legislation

was prepared and issued. In addition, a document entitled Information on measures for reporting suspected illegal acts was published on the SÚRAO website. SÚRAO received no notifications in 2022 that required investigation in this respect.

## Integrated management system

Aimed at ensuring the efficient functioning of the main management and support processes and activities, SÚRAO has introduced an integrated management system that fully takes into account the obligations arising from SÚRAO's management system policy. The management system covers SÚRAO's processes, activities, relationships and employee obligations as well as those suppliers whose products or services impact safety. The integrated management system is maintained and enhanced on a continuous basis and is set up so that the various processes and activities concerned and changes thereto are accounted for in a controlled and verifiable manner.

The main priorities of the integrated management system concern primarily nuclear safety, radiation protection, technical safety, the monitoring of radiation situations, the management of radiation

emergencies, and ensuring the quality of the outputs of the various processes and activities, pursuant to the Atomic Act.

The requirements of the integrated management system are applied via a hierarchical approach according to the significance of the respective processes and activities, with the aim of deploying adequate financial and human resources according to the extent of the risk associated with the failure or malfunctioning of a product supplied or with an inappropriately performed activity. The main activities concerned comprise the following:

- RAW management at the three operational repositories
- the operation of the Richard and Dukovany repository nuclear facilities
- the operation of category IV workplaces at the three operational repositories

→ the management of nuclear materials at the Richard repository

for which SÚRAO holds the relevant permits pursuant to Section 9 of the Atomic Act.

The various management system programs (MSP) are valid for all the operational RAW repositories at which radioactive waste is handled. These MSPs cover the management systems of authorised holders and the processes and activities involved, including the definition of the responsibilities of the authorised holder and its suppliers. MSPs for the description of systems according to Decree No. 408/2016 Coll. employ the above-mentioned set of management documents.



## Mining safety

The operation of the Bratrství and Richard near-surface repositories is authorised based on decisions that allow “specific encroachment into the Earth’s crust” issued in compliance with the Mining Act and other decisions issued in compliance with the Mining Operations Act.

Both the Richard and Bratrství underground repositories were operated throughout 2022 in compliance with relevant legal regulations and licences issued

by the Czech Mining Administration and the SÚJB as well as various internal operational regulations, limits and conditions.

Emergency preparedness exercises relating to the coordination of occupational safety were held throughout the year at both the Richard and Bratrství repositories in cooperation with the mining authorities in Ostrava and Libušín and in accordance with the Emergency Plans issued by the relevant mine managers. The exercises

and inspections proved that the operation of the underground facilities was in full compliance with mining legislation and all the relevant measures and decisions concerning the safe operation of both repositories were fulfilled.

In 2022, a comprehensive review of compliance with mining regulations at the Richard repository was carried out by inspectors from the district Mining Office in Most.

## Occupational health and safety and fire protection

Compliance with occupational health and safety protection regulations makes up an integral part of the integrated management system as well as one of the professional responsibilities of senior employees at all levels of management. Such employees are required to undergo regular training on the relevant issues by specially qualified persons. The aim is to ensure the safe operation of SÚRAO’s facilities with no negative impact on the health and safety of employees in accordance with the relevant legislation and internal regulations.

Initiation and regular training courses for employees relating to occupational health and safety, and fire protection are organised at set intervals.

Fire codes have been drawn up for all of SÚRAO’s facilities which define the basic principles of fire protection. The action to be taken by employees or other persons in case of fire are defined in fire alarm directives which have been made available to all employees. The position of fire protection officer has been established at both the Richard and Bratrství repositories.

Comprehensive inspections aimed at verifying strict adherence to rules and regulations relating to health and safety at work and fire protection were conducted on a continuous basis at all SÚRAO’s facilities during the year with the cooperation of the local mining authority where relevant.

In 2022, no work-related accidents, extraordinary events or deviations from the requirements set out in generally binding regulations on occupational health and safety and fire protection occurred at any of SÚRAO’s facilities.

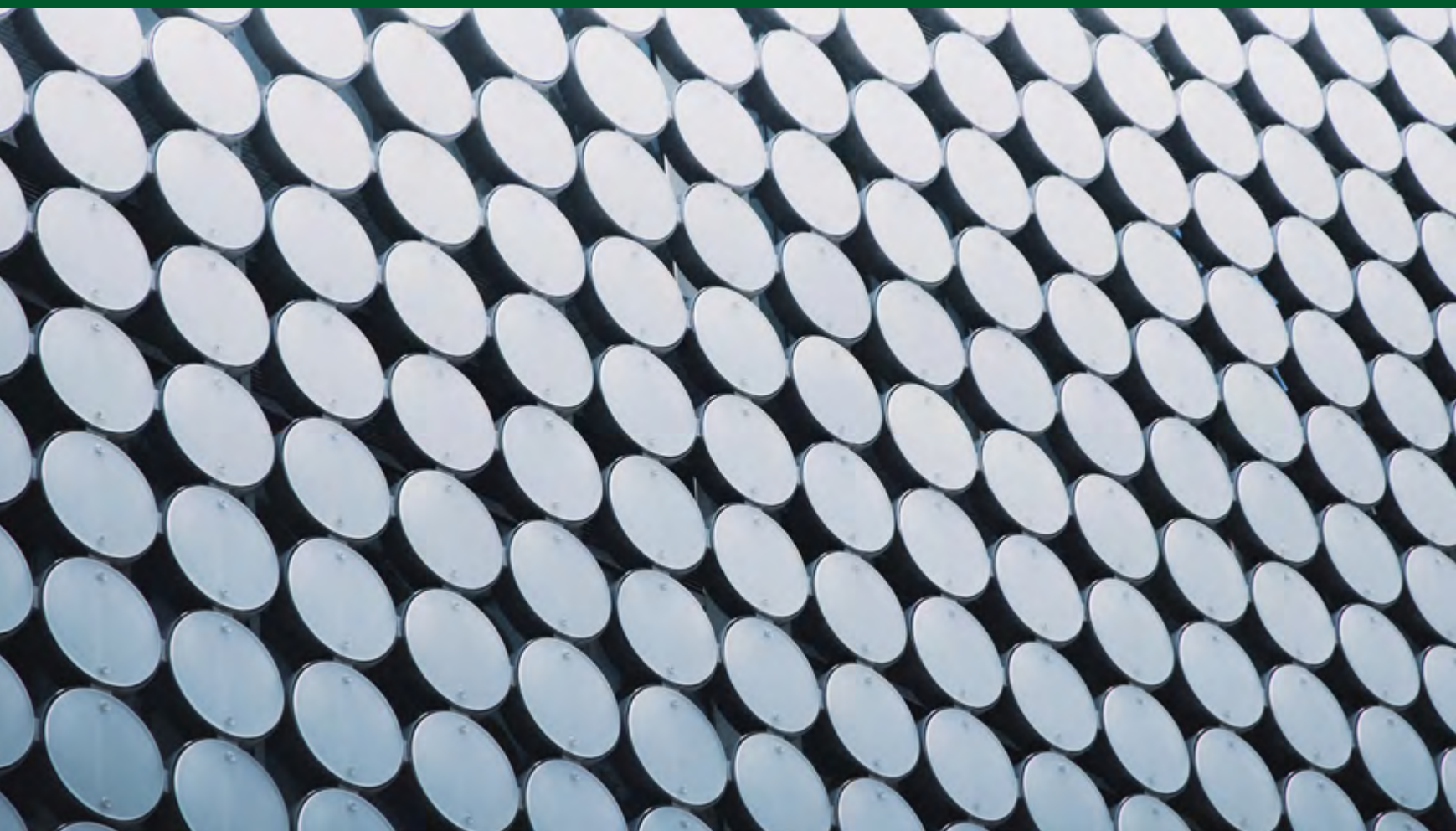
# Information and communication technology

The basic aim of activities concerning ICT was to ensure the reliable and secure operation of all the systems necessary for the efficient operation of SÚRAO. Particular attention was devoted to the implementation of measures set out in the Act on Cyber Security aimed at enhancing physical, logical, communicational, organisational and personnel security. SÚRAO's main pri-	ority is to preserve the integrity, confidentiality and availability of the organisation's data. Part of the infrastructure and user end devices were changed during the year as part of the routine maintenance procedure.	IDKM NEA project, the aim of which is to prepare general recommendations and procedures that will serve to unify the procedure for the management of data and information and knowledge on the radioactive waste disposal process and the emplacement of waste in deep geological repositories.
	With concern to data management, cooperation with the OECD continued on the	

# Personnel, material and technical issues

In 2022, SÚRAO had a total of 61 regular employment positions. When necessary, certain work for SÚRAO is supplied for the fulfilment of specific tasks or in the form of agreements to perform work and agreement to complete a job. SÚRAO's staff attended various training courses during the year in compliance with legislative requirements; these courses related to obligatory professional training, the further improvement of qualifications and language training.	SÚRAO has established a cultural and social fund in compliance with Regulation No. 114/2002, which is used to assist its employees in terms of the cost of meals, state contributory supplementary pensions and contributions to cultural and sports events.	street 1004/6, Prague 1 and, since February 2019, has also rented office space in the Timber Research and Development Institute building at Na Florenci street 7 and 9 according to a contract that authorises SÚRAO to manage this property. SÚRAO acquires the office technology and company cars required in order to meet its various responsibilities.
	Since the end of 2000, SÚRAO's headquarters have been located on one floor and part of the ground floor and basement of an Interior Ministry building at Dlážděná	

# Financial management



# Financial management

SÚRAO’s activities are financed primarily from the Nuclear Account and state budget funds in compliance with the Atomic Act, Section 113, paragraph 6 which sets out rules for the management of radioactive waste disposed of prior to 1 July 1997, i.e. old radiation exposure sources.

SÚRAO is authorised to manage state property and consequently maintains the relevant accounts in pursuance of Act No. 563/1991 on accounting and Decree No. 410/2009 that implements certain provisions of Act No. 563/1991, and according to Act No. 218/2000, on budgetary rules. SÚRAO’s budget is determined according

to a budget structure defined by Ministry of Finance Regulation No. 323/2002, as amended.

SÚRAO creates no reserves and all its revenues from services provided to radioactive waste producers are deposited in the Nuclear Account.

## Utilisation of budget funding in 2022

Item no.	Item (CZK thousands)	Approved budget	Adjusted budget	Budget utilisation	Utilisation (%)
5	Current expenses	306 898,66	390 082,84	378 855,29	97,12
6	Capital expenses	282 314,10	200 314,10	179 452,38	89,59
	Total expenses:	589 212,76	590 396,94	558 307,66	94,56

Expenses are subdivided into current expenses and capital expenses. In addition to items included in mandatory indicators, expenses concerning purchases and services relating to the operation of repositories and the Bukov URF and those ensuing from external consultancy, advisory and communications services, transfers to municipalities and administration and legal services are included in current ex-

penses. Expenses relating primarily to the DGR development programme including research and development work, the reconstruction of existing repositories and expenses resulting from other investment purchases are included in capital expenses. With concern to current expenses, no funds were used for the stabilisation of the disposal chambers at the Bratrství repository (this work has been postponed to the

following year) or expense reserves for the operation of the Bukov URF. Regarding capital expenses, the commencement of certain research projects has been postponed due to the extension of the preparation of tendering procedures. A detailed review of the utilisation of budget funding by individual item, accompanied by a commentary, was submitted to SÚRAO’s Board as required.



## Auditor's report

SÚRAO's financial statements were subjected to an external audit which was conducted by the 22Hlav, s.r.o. auditors company, registered in the list of auditing companies maintained by the Chamber of Auditors of the Czech Republic under registration number 277. The Auditor's Report is presented in Annex C.

# Evaluation of SÚRAO's performance in 2022



# Evaluation of SÚRAO's performance in 2022

SÚRAO met its responsibilities for the safe and reliable operation of Czech radioactive waste repositories during 2022 as defined in the Atomic Act. Preparations continued for the development of a deep geological repository in which high-level radioactive waste and spent nuclear fuel will be disposed of in the future. Concerning the efficient utilisation of budget

funds allocated to external subcontractors, SÚRAO complied with the provisions of Act No.134/2016, on the procurement of public contracts. Funds were employed efficiently and in compliance with the budget in order to fully meet the targets set out in the yearly plan of activities.

# Annexes

- A. Balance sheet as at 31 December 2022
- B. Profit and loss statement as at 31 December 2022
- C. Auditor's report including the auditor's opinion
- D. List of abbreviations





## Annex A: Balance sheet as at 31 December 2022 (in CZK)

		Current period		Previous period	
		brutto	Correction	Net	
<b>ASSETS</b>		<b>2 492 219 676,04</b>	<b>891 941 076,35</b>	<b>1 600 278 599,69</b>	<b>1 545 231 948,35</b>
<b>A.</b>	<b>Fixed assets</b>	<b>2 453 893 529,43</b>	<b>891 908 230,95</b>	<b>1 561 985 298,48</b>	<b>1 519 625 243,95</b>
I.	Long-term intangible fixed assets	1 607 871 387,92	678 247 103,51	929 624 284,41	934 282 318,36
II.	Long-term tangible fixed assets	846 008 181,51	213 661 127,44	632 347 054,07	585 328 965,59
III.	Long-term financial assets	0	0	0	0
IV.	Long-term receivables	13 960,00	0	13 960,00	13 960,00
<b>B.</b>	<b>Current assets</b>	<b>38 326 146,61</b>	<b>32 845,40</b>	<b>38 293 301,21</b>	<b>25 606 704,40</b>
I.	Stocks	595 112,37	0	595 112,37	446 673,26
II.	Short-term receivables	1 549 957,45	32 845,40	1 517 112,05	1 735 327,18
III.	Short-term financial assets	36 181 076,79	0	36 181 076,79	23 424 703,96
<b>LIABILITIES</b>				<b>1 600 278 599,69</b>	<b>1 545 231 948,35</b>
<b>C.</b>	<b>Own capital</b>			<b>1 533 902 289,62</b>	<b>1 499 789 274,72</b>
I.	Owned capital and adjustments			860 788 187,37	860 788 187,37
II.	Financial funds			4 428 472,91	3 727 686,60
III.	Profit/loss account (including unpaid losses from previous years)			-2 555 696 383,62	-2 030 800 948,09
IV.	Budget management income and expenditure account			3 224 382 012,96	2 666 074 348,84
<b>D.</b>	<b>Other sources</b>			<b>66 376 310,07</b>	<b>45 442 673,63</b>
I.	Reserves			0	0
II.	Long-term payables			2 548 279,53	175 236,00
III.	Short-term payables			63 828 030,54	45 267 437,63

Annex B: Profit and loss statement as at 31 December 2022 (in CZK)

Item no.	Item name	Current period Main activity	Previous period Main activity
<b>A.</b>	<b>Total expenses</b>	<b>554 883 760,98</b>	<b>500 221 066,45</b>
I.	Expenses from activities	507 894 154,65	410 662 764,66
II.	Financial activities	298 038,27	301 806,20
III.	Transfer expenses	46 691 568,06	89 256 495,59
IV.	Shared tax expenses	0	0
<b>B.</b>	<b>Total revenues</b>	<b>29 988 325,45</b>	<b>20 211 511,85</b>
I.	Revenue from activities	29 783 488,06	20 161 700,01
II.	Financial revenue	204 837,39	49 811,84
III.	Revenue from taxes and charges	0	0
IV.	Transfer revenue	0	0
V.	Revenue from shared taxes	0	0
VI.	SURPLUS/DEFICIT		
1.	Surplus/deficit before tax	-524 895 435,53	-480 009 554,60
2.	Surplus/deficit after tax	-524 895 435,53	-480 009 554,60

# Annex C: Auditor’s report including the auditor’s opinion (abridged)

## Auditor’s opinion

We have audited the accompanying financial statements of the Czech Radioactive Waste Repository Authority/SÚRAO (hereinafter referred to as the “Organisation”) prepared in accordance with Czech accounting regulations and consisting of the balance sheet as at 31 December 2022, the profit and loss statement for the year ended 31 December 2022 and the appendices to these financial statements, which provide a description of the significant accounting policies applied and other explanatory information.

In our opinion, the financial statements provide a true and fair view of the assets and liabilities of the Organisation as at 31 December 2022 and of the costs, revenues and operational results for the year ended 31 December 2022 in accordance with Czech accounting regulations.

## Basis for the opinion

We conducted the audit in accordance with the Act on Auditors, Regulation (EU) No. 537/2014 of the European Parliament and of the Council and the standards of the Chamber of Auditors of the Czech Republic, which comprise international standards on auditing (ISA), supplemented and modified by the related application clauses. Our responsibility defined by these regulations is described in more

detail in the Auditor’s Responsibility for Auditing the Financial Statements section. In accordance with the Auditor Act and the Code of Ethics adopted by the Czech Chamber of Auditors, we are independent of the Organisation and have fulfilled other ethical obligations arising from these regulations. We believe that the probative information collected provides an adequate basis for forming our opinion.

## Other Information Provided in the Annual Report

In accordance with Section 2b) of the Act on Auditor information, other information means all information provided in the Annual Report in addition to the financial statements and the Auditor’s Report. The Director of the Organisation is responsible for any other information provided.

## Responsibility of the Director of the Organisation for the financial statements

The Director of the Organisation is responsible for compiling financial statements which provide a true and fair view in accordance with Czech accounting regulations and for such an internal control system which the management regards as necessary for the compilation of financial statements that are free from (material) misstatement, whether due to fraud or genuine error.

## Auditor’s responsibility for the financial statements

Our objective is to obtain reasonable assurance on whether the financial statements as a whole are free from (material) misstatement, whether due to fraud or error, and to issue an auditor’s report that outlines our opinion.

Our responsibility is to identify and assess the risks of the (material) misstatement of the financial statements, whether due to fraud or error, to design and apply audit procedures that respond to such risks, and to obtain sufficient and appropriate audit evidence on which to base an opinion. It is also our responsibility to assess the appropriateness of the accounting rules applied and the adequacy of both the accounting estimates compiled and the respective information that the Director of the Organisation provided in the annex to the financial statements.

Prague, 11 April 2023

**22Hlav, s.r.o.,**

Czech Chamber of Auditors authorisation no. 277

**Ing. Jan Černý**

Czech Chamber of Auditors authorisation no. 2455

## Annex D: List of abbreviations

<b>AS CR</b>	Czech academy of Sciences
<b>CIM</b>	Research project on carbon and iodine migration in cement (GTS), <a href="https://www.grimsel.com/gts-phase-vi/">https://www.grimsel.com/gts-phase-vi/</a>
<b>DECOVALEX</b>	Development of Coupled models and their Validation against Experiments research project on modelling, <a href="https://decovallex.org/">https://decovallex.org/</a>
<b>DGR</b>	Deep geological repository for HLW and SNF
<b>EBS</b>	Engineered Barrier System
<b>EDU</b>	Dukovany nuclear power plant
<b>ETE</b>	Temelín nuclear power plant
<b>EU</b>	European Union
<b>EURAD</b>	Research project, programme EC H2020, <a href="https://www.ejp-eurad.eu/about-eurad">https://www.ejp-eurad.eu/about-eurad</a>
<b>GTS</b>	Grimsel Test Site, underground laboratory, Switzerland, <a href="https://www.grimsel.com/">https://www.grimsel.com/</a>
<b>HLW</b>	High-level waste
<b>HotBent</b>	High temperature effects on bentonite buffers research project, <a href="https://www.grimsel.com/gts-phase-vi/">https://www.grimsel.com/gts-phase-vi/</a>
<b>IAEA</b>	International Atomic Energy Agency, <a href="https://www.iaea.org/">https://www.iaea.org/</a>
<b>ICT</b>	Information and communication technology
<b>IDKM</b>	NEA/OECD information, data and knowledge management project <a href="https://www.oecd-nea.org/jcms/pl_29865/idkm-of-radioactive-waste-management">https://www.oecd-nea.org/jcms/pl_29865/idkm-of-radioactive-waste-management</a>
<b>IGD-TP</b>	Implementing Geological Disposal of radioactive waste Technology Platform, <a href="https://igdtp.eu/">https://igdtp.eu/</a>
<b>ISA</b>	International Standards on Auditing
<b>MaCoTe</b>	Material Corrosion Test research project, <a href="https://www.grimsel.com/gts-phase-vi/macote-the-material-corrosion-test/macote-introduction">https://www.grimsel.com/gts-phase-vi/macote-the-material-corrosion-test/macote-introduction</a>
<b>Mock-up Josef</b>	Research project, <a href="https://ceg.fsv.cvut.cz/vyzkum/projekty/2011-2015-mock-up-josef">https://ceg.fsv.cvut.cz/vyzkum/projekty/2011-2015-mock-up-josef</a>



<b>OECD/NEA</b>	Atomic Energy Agency of the Organisation for Economic Cooperation and Development, <a href="https://www.oecd-nea.org/">https://www.oecd-nea.org/</a>
<b>R&amp;D</b>	Research and development
<b>RAW</b>	Radioactive waste
<b>SKB</b>	Swedish company for the management of nuclear waste
<b>SNF</b>	Spent nuclear fuel
<b>SÚJB</b>	State Office for Nuclear Safety
<b>SÚRAO</b>	Czech Radioactive Waste Repository Authority
<b>TDB</b>	Thermochemical Database research project, <a href="https://www.oecd-nea.org/dbtdb/">https://www.oecd-nea.org/dbtdb/</a>
<b>URF</b>	Underground research facility
<b>WDP</b>	Waste disposal package
<b>WMO</b>	Waste Management Organisation





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