Lithium mining and processing at Cínovec

Definitive feasibility study

– Executive summary –

This summary has been prepared based on the conclusions and available information from the definitive feasibility study (DFS). The aim is to summarise relevant information for project stakeholders.

December 2025

Abbreviations used

LCE	Li_2CO_3, lithium carbonate
CRMA	Critical Raw Materials Act
EU	European Union
DNT	Doly Nástup Tušimice
EPR1	Prunéřov 1 Power Plant (or former power plant site)
FECAB	Mechanical ore processing
LCP	Metallurgical processing of cinvaldit concentrate
DESÚ	Transport and Energy Construction Authority
ČBÚ	Czech Mining Authority

Contents

1. Project overview and significance

1.1. Strategic significance of the project

The lithium mining and processing project at Cínovec is one of the most significant investments in the field of mineral resources in the Czech Republic and is also one of the largest projects of its kind in the European Union. **The total reserves of the deposit amount to 101.3 million tonnes of ore, which corresponds to 1.01 million tonnes of lithium carbonate equivalent. The planned annual production is approximately 37,500 tonnes of lithium carbonate**, making it one of the largest confirmed deposits in Europe.

The strategic importance of the project for Europe and the Czech Republic lies primarily in strengthening raw material self-sufficiency and reducing dependence on imports of critical raw materials from non-European countries. Given the rapidly growing demand for lithium, particularly in connection with the production of batteries for electric vehicles and energy storage systems, this project has the potential to become a key link in the European supply chain for the battery industry.

Since 2025, the project has been classified as a strategic project under the EU Critical Raw Materials Act (CRMA), which sets out a framework for ensuring secure, resilient and sustainable supplies of critical raw materials in the EU. **Since 2025**, **the Cínovec deposit has also been officially classified as a deposit of strategic importance**, confirming its crucial role in meeting the Czech Republic's raw materials policy objectives.

Both of these statuses not only bring international recognition of the project's importance but also streamline permitting processes and access to selected forms of support.

The implementation of the project will contribute to the economic development of the region, the creation of skilled jobs and the strengthening of the Czech Republic's position as a major producer of critical raw materials in the EU.

1.2. Project location and map

The deposit is located in Sedmihůrky near the village of Cínovec in the north-western part of the Czech Republic on the border with the Federal Republic of Germany. An access portal will be located at this site, from where the extraction of lithium-containing ore will commence.

The mined ore will not be processed directly at the mining site, as this process requires sufficient industrial facilities and enough free space for technological units and for the safe handling of by-products. The Sedmihůrky site is therefore not suitable for this purpose in terms of capacity or acceptable in terms of impact on the surrounding area. For this reason, **the processing plant will be located in Prunéřov, in an area with sufficient infrastructure, a railway connection and the possibility of effectively integrating equipment for mechanical and metallurgical ore processing**.

The project consists of three main operational units:

- **an underground mine with an access portal** in Sedmihůrky,
- **a transshipment point** in the Dukla industrial zone, and
- **a processing plant with a tailings storage facility** in Prunéřov.

These parts form a comprehensive production chain from mining to the final product. A combined transport system will be used to connect them – an aerial conveyor to move the ore from the portal to the transshipment point and then rail transport to move the raw material to the processing plant.

Underground mine with portal (Sedmihůrky, Cínovec)

The ore will be extracted from an underground deposit in the Sedmihůrky area through underground mine tunnels connected to the portal. This method ensures minimal surface interference and limited impact on the surrounding landscape.

Transport – aerial conveyor (Sedmihůrky → Dukla)

The mined ore will be transported from the portal to the Dukla industrial zone using an overhead transport system (continuous belt conveyor). This method of transport will enable the efficient and energy-saving transfer of material over a distance of several kilometres without the need for road transport.

Transshipment point (Dukla, Újezdeček)

In the Dukla zone, the ore will be transferred from the overhead transport system to railway wagons. This transshipment point will serve as a logistics hub for coordinating transport between the portal and the processing plant.

Transport – railway (Dukla → Prunéřov)

From the transshipment point, the ore will be transported by rail to the processing plant. The use of rail transport contributes to minimising the project's carbon footprint and reduces the traffic load on the road network in the region.

Processing plant (Prunéřov)

At the processing plant, the ore will undergo mechanical and metallurgical processing to produce lithium carbonate (LCE), the final product intended for battery production.

The by-products of processing will consist of **residues** from the metallurgical part of production and **tailings** from mechanical processing. These materials will be used for mine backfilling, with residues accounting for the larger share.

Railway wagons will be used to transport them back to the mine to the Dukla transshipment point and then by an above-ground transport system to the portal.

Storage facility (Doly Nástup Tušimice)

The remaining residues and tailings that will not be used for backfilling will be stored at the DNT storage facility adjacent to the processing plant.

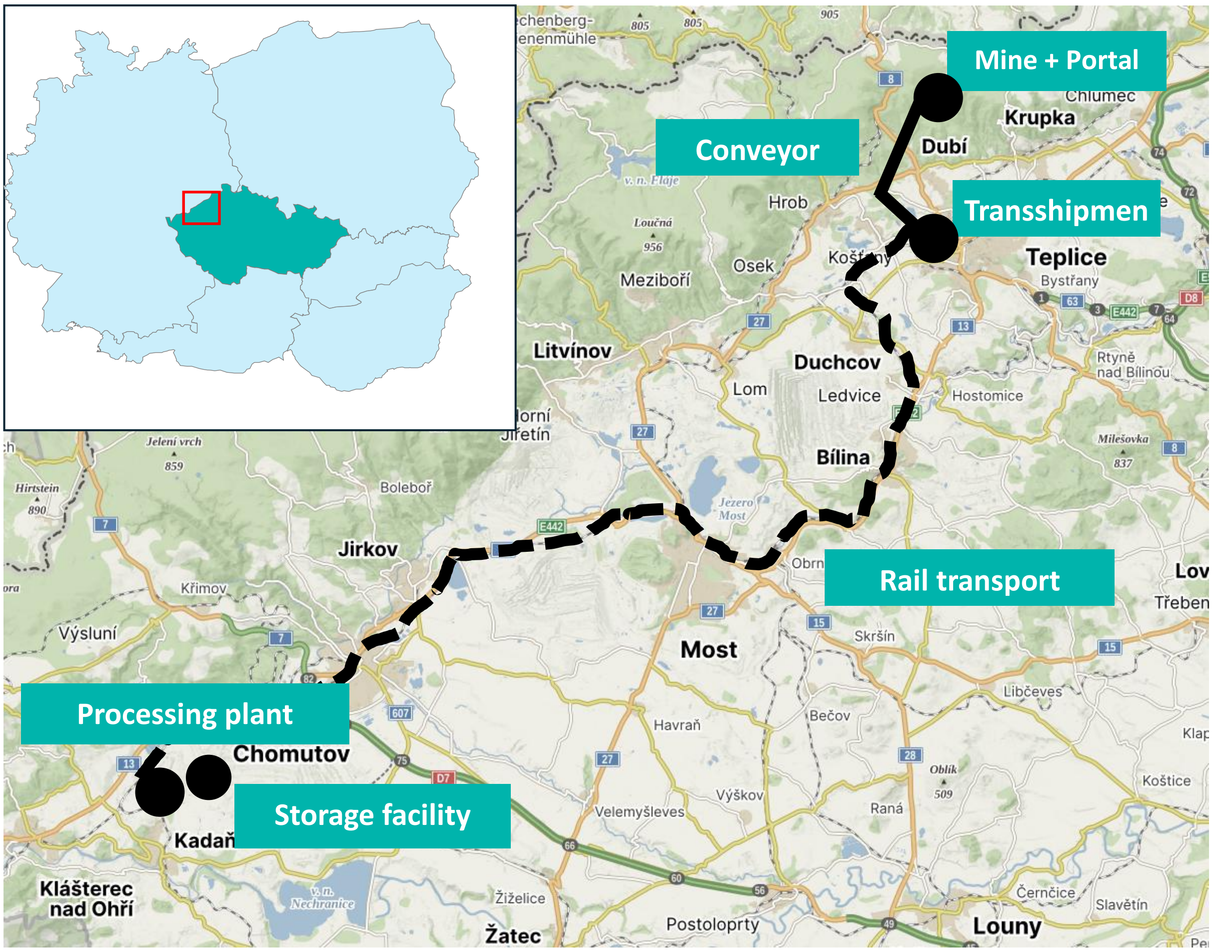

Figure 1: Project location map

1.3. Mining and production volume

During full production, approximately **3.2 million tonnes of ore** will be mined. The volume of mined waste will gradually decrease from approximately **400,000 tonnes,** and from the 20th year of mining, the volume of waste will be zero. Ore processing will generate approximately 38,000 tonnes of LCE per year. In addition, **approximately 800,000 tonnes of residues** will be produced from the metallurgical part of production and **2.6 million tonnes of tailings** from the mechanical part of production (FECAB). These materials will be partially used for mine backfilling. Unused residues and tailings will be stored in a DNT storage facility adjacent to the processing plant. The feasibility study anticipates a mining period of **27 years**.

Item	**Value**	**Unit**
Total amount of waste rock	**5,269,105**	t
Amount of unused waste rock	**1,251,913**	t
Amount of ore from tunnels	**16,532,008**	t
Average lithium content (mining in tunnels)	**0.247**	% Li
Amount of ore from chambers	**56,869,232**	t
Average lithium content (chamber mining)	**0.284**	% Li
Total ore quantity	**73,401,239**	t
Average lithium content (total)	**0.276**	% Li
Amount of lithium	**202,542**	t
Total amount of feedstock	**16,856,780**	m^3

Table 1: Basic capacity data for the project

2. Technical aspects of the project and proposed process

The diagram in Figure 2 illustrates the process of mining, transporting and processing ore to produce the final product – LCE. The diagram also shows the sections (**2.1 – 2.5**) in which the individual parts of the process are described in more detail in this document. Section **2.6** describes road transport, which will be used mainly during construction, and section **2.7** describes the related infrastructure that needs to be built for the project to be implemented.

Mining takes place underground with access via a portal in the Sedmihůrky area. The mined ore is first crushed and then transported by an above-ground system to the Dukla transshipment point, from where it continues by rail to the processing plant in Prunéřov. Until 2023, a processing plant in the Dukla area was planned. After discussions with the Ústí nad Labem Region, local municipalities and citizens, it was decided to seek an alternative solution, which led to the selection of the Prunéřov site in 2024.

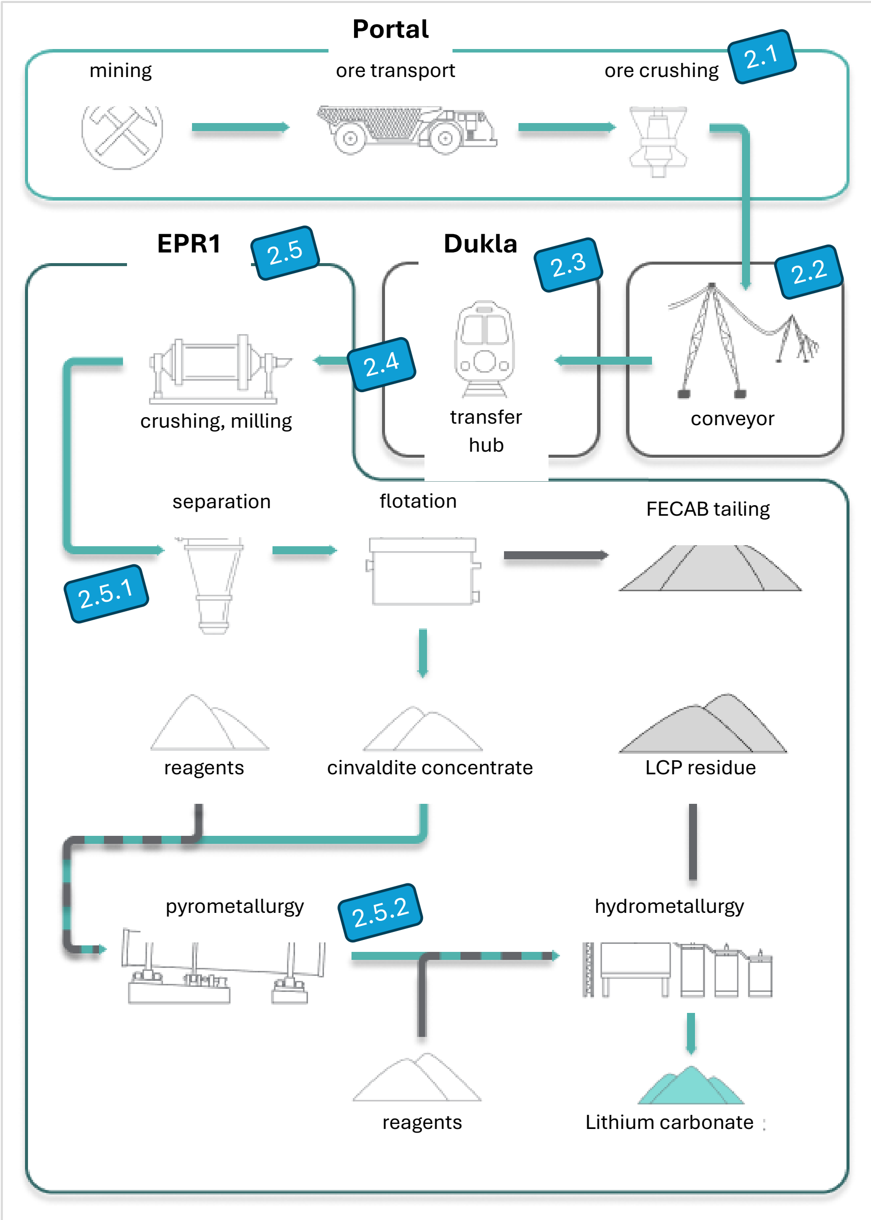

Figure 2: Technological diagram of mining and processing

In the processing section, the ore first undergoes mechanical preparation, including grinding, crushing, sorting and flotation, which produces cinvaldit concentrate. This is further processed by pyrometallurgical and hydrometallurgical processes using reagents.

FECAB tailings are a by-product of mechanical processing, while the metallurgical part of production generates LCP residues. Both of these by-products will be partially used for mine backfilling, and the unused volume will be stored in a DNT storage facility adjacent to the processing plant. The final product is battery-grade LCE.

2.1. Underground mine and portal (Sedmihůrky)

The project involves the construction of an underground mine for the extraction of lithium-bearing rock, with an annual production capacity of approximately 3.2 million tonnes of ore. The ore consists mainly of lithium-bearing granite. Mining will be supplemented by the extraction of approximately 5 million tonnes of waste rock (rhyolite and granite) over the entire life of the mine.

In recent years, the deposit has been thoroughly explored through exploratory drilling, which has been used to design an optimal mining method focused on extracting rock with the highest lithium content. Between 2014 and 2022, Geomet carried out a total of 67 exploratory drillings with a total length of 21.3 km. Figure 3 shows a map of the wells drilled – historical wells from 1940 to 1984 are marked in red, while Geomet's recent wells are marked in black.

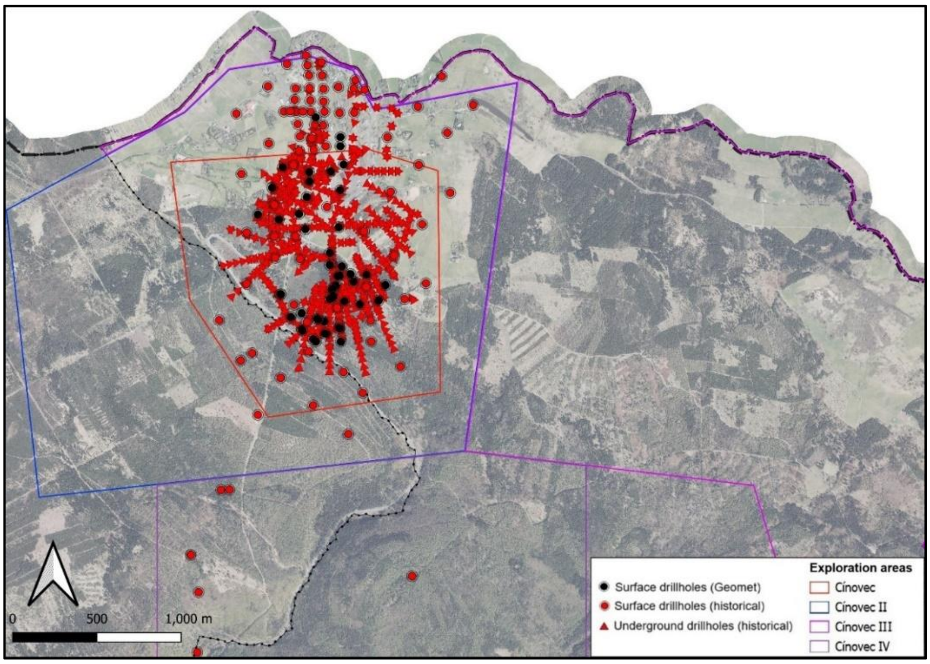

Figure 3: Map of completed boreholes

Exploration work will continue, primarily in the form of exploratory tunnel excavation. These will be located at the planned decline shafts, which will provide access to the deposit. This procedure will verify and refine the knowledge gained from the boreholes to date and, at the same time, thanks to the location of the tunnels in the route of future decline shafts, effectively minimise the scope of subsequent excavation work. Access to the mining areas will be provided through a portal in the Sedmihůrky locality, from where a pair of decline shafts with a profile of 5.0 x 6.5 m and a length of 1,600 m will lead. These tunnels will provide access to the southern part of the deposit, where the first stage of mining will begin and where an underground crushing station will be built. In a later phase, mining will also move to the northern part of the deposit (blue part in Figure 3), where a second crushing station will be located, also with a pair of access tunnels.

The mined ore will be crushed primarily and secondarily underground in the mine. Further (tertiary) crushing will take place at the processing plant in Prunéřov.

Figure 4 shows a diagram of underground mining with the progress of work marked in colour – from red in the early years to green and purple in the final years of mining.

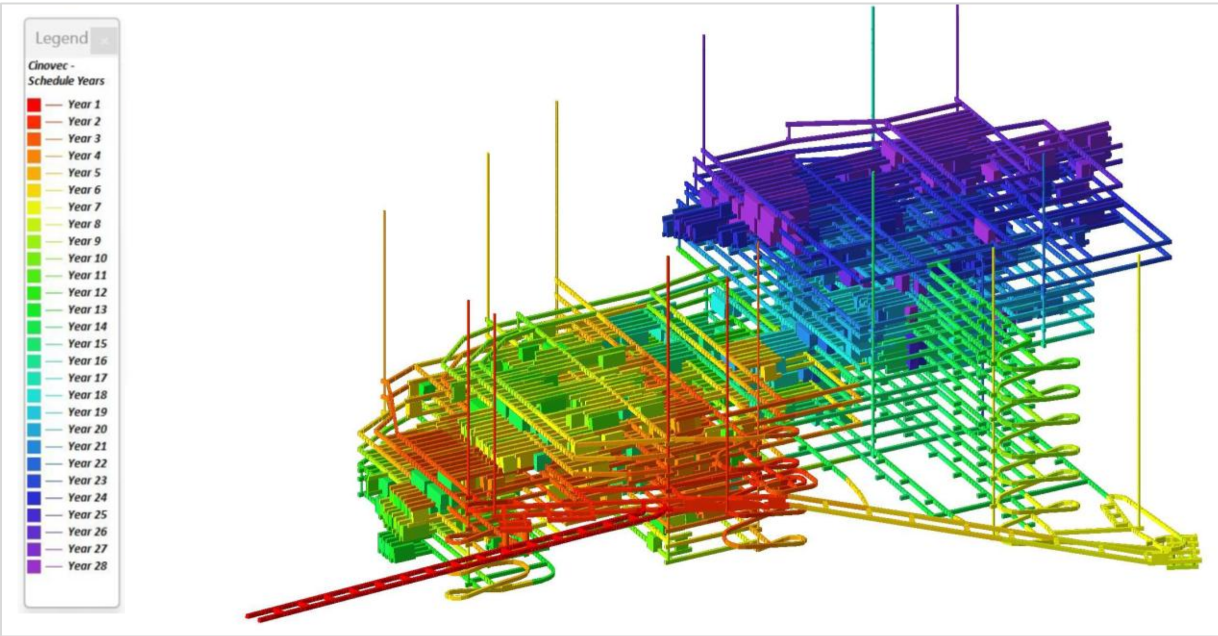

Figure 4: Diagram of underground mining

Mining method

The mining chambers will be 20 m high, 16 m wide and up to 50 m long. These mining chambers are connected into blocks four mining chambers high and five mining chambers wide, creating a nominal block measuring 80 m x 80 m x 50 m.

On both sides of the mining block there is a 10 m high pillar separating the mining blocks horizontally. The pillar will be mined once the adjacent mining blocks have been mined and backfilled.

Access to the mine will be via two parallel adits. The portal on the south side of the deposit will allow mining both upwards and downwards, which increases planning flexibility. At the point where the adit connects to the infrastructure, there will be equipment for stacking ore and a crusher, which will send the crushed ore to a conveyor leading out of the mine.

Mining will be fully mechanised using drilling rigs, loaders and other auxiliary machinery and vehicles.

Geotechnical conditions and stability

The rock environment of the Cínovec deposit is rated as "good" to "very good" according to Barton's Q-index. Stability is ensured not only by the natural quality of the rock, but also by the design of the mine with barrier and crown pillars and the use of cemented backfill, which minimises the volume of voids after mining is completed.

Depending on the importance and use of the space, three levels of reinforcement will be applied:

- Main areas (entrance portals, main intersections, crushing stations, workshops, substations) – full anchoring with resin rope anchors, steel reinforcement and concrete lining.
- Enhanced standard – full anchoring with steel mesh and 75 mm of shotcrete.

- Standard reinforcement – anchoring with cemented rope anchors, supplemented with mesh and spraying where necessary.

Thanks to these measures and geotechnical conditions, long-term stability of the mine areas and minimal impact on the surface environment are expected.

Ventilation

The main mining machinery will be diesel-powered in the initial years of mining, while ore crushing and transport to the surface will be carried out using electrically powered crushers and belt conveyors. In the future, electric mining machinery will also be considered when replacing mining machinery.

The ventilation design therefore takes into account, in particular, the dilution and removal of emissions from diesel engines, heat removal and radon content control.

Nine intake pits and three exhaust pits will be constructed.

The main components that must be effectively diluted and removed by ventilation are heat and exhaust gases from diesel operation – in particular particulate matter, carbon monoxide (CO) and nitrogen oxides (NO_x) – as well as radon. To ensure safe conditions, air exchange is designed to take place every 3–4 minutes in production areas and every 15 minutes at most in less frequented areas.

The assessment of emissions and gases discharged into the atmosphere will be detailed and evaluated in the EIA documentation.

Portal

The portal area includes comprehensive facilities for the management, support and operation of mining activities. The portal complex and related infrastructure will cover an area of approximately 23 hectares. Due to the slope of the land, the terrain will be terraced.

The upper terrace of the portal complex will house **an administrative complex** with a control room and management facilities, including a reception, server room and social facilities. The control room for continuous operation has a separate entrance and is designed for up to four operators. **Changing rooms** are located directly adjacent to the control room.

The lower terrace is used for **service and technical operations**, including workshops for the maintenance of mobile and auxiliary machinery, the main machine shop, a spare parts warehouse and facilities for the reception and distribution of diesel fuel and lubricants. Northwest of the box cut, on a separate terrace, there is a paste backfill plant with an access road, a binder warehouse and a filling station for tankers.

Storage areas with a capacity of up to 530,000 tonnes per year are available for waste rock handling and equipped with technology for reloading onto transport vehicles. The water management system includes **a reverse osmosis drinking water source**, raw water and fire water tanks, pumping stations, sedimentation tanks, sludge ponds and, if necessary, water treatment facilities prior to discharge.

A comprehensive hydrogeological model shows that the mine's water balance will be positive. This means that the inflow of mine water will be higher overall than the consumption of process water in the mine (especially for backfilling). Surplus mine water will be stored in reservoirs and used to compensate for possible seasonal fluctuations. There are also plans to build a water pipeline between the portal area and the Dukla transshipment point. In the event of a large surplus of water, this will ensure that water is drained from the portal. In the event of unexpected seasonal water shortages, on the other hand, it will be possible to supply the portal area via the water pipeline.

The construction of terraces for the portal is based on **a cut/fill balance** with a net need for material replenishment covered by waste rock generated during the excavation of access tunnels. In total, it will be necessary to excavate and store approximately 1 million m^3 of material and use the same volume for backfilling, with a reserve of up to 300,000 m^3 of waste rock for possible replenishment. The surplus waste rock is planned to be used as aggregate for customers in the Ústí nad Labem Region.

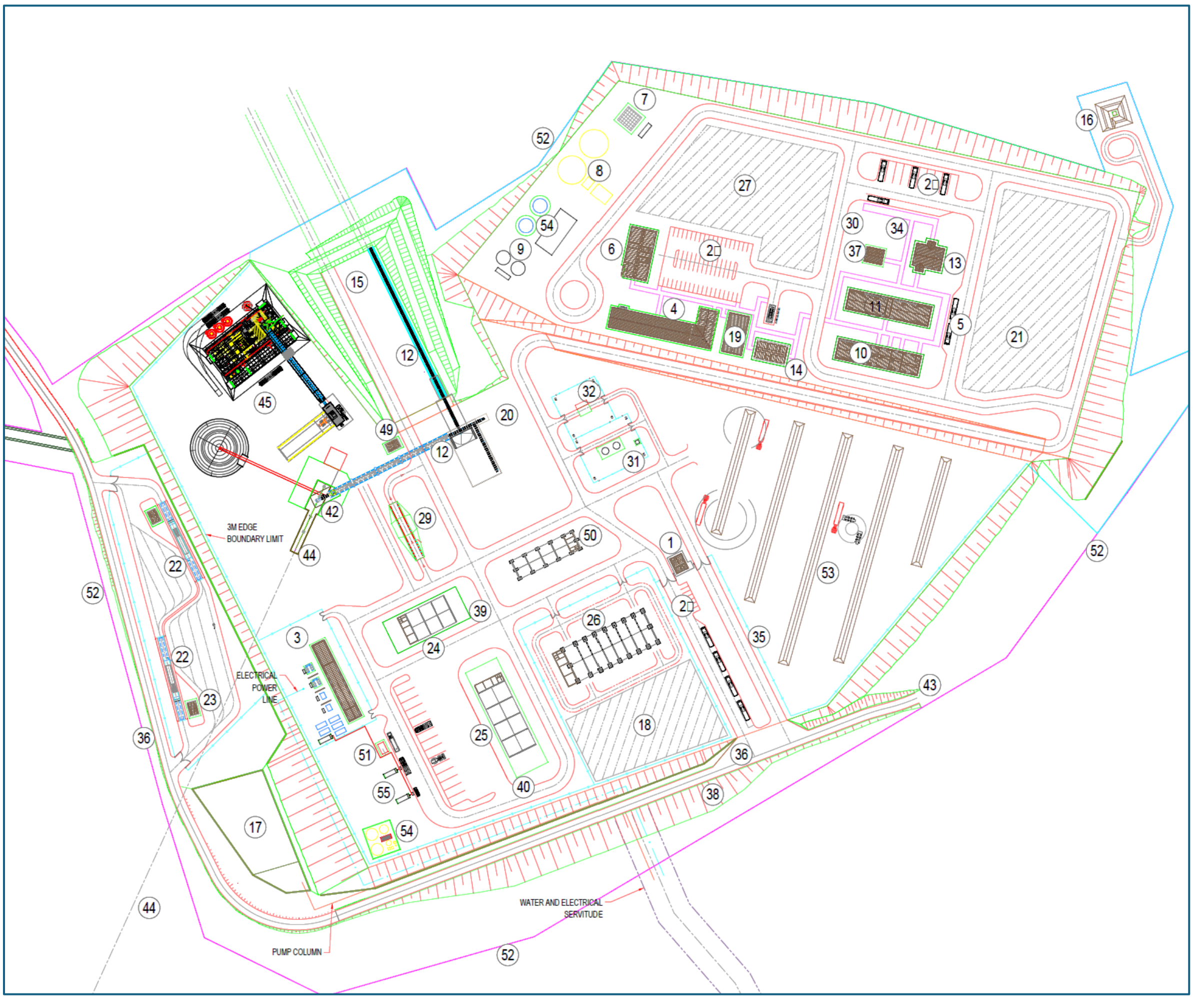

Figure 5: Sedmihůrky portal area

Captions for Figure 5:

1	Security office at main gate
2	Parking
3	Sub-station
4	Office complex
5	Drop-off zone
6	Safety and induction centre
7	Potable water tank
27	Topsoil stockpile
28	unallocated
29	Brake test ramp
30	Boilers
31	Emulsion receiving/holding tank
32	Explosive delivery
33	unallocated

8	Raw water reservoir	**34**	Platform for mining workers boarding vehicles
9	Firewater tanks	**35**	Haul road
10	Change house (block 1)	**36**	Access road
11	Change house (block 2)	**37**	Proto room
12	Conveyor belt	**38**	New forest road
13	Lamp room and crush	**39**	Ancillary vehicle wash bay
14	First aid	**40**	Mining vehicle wash bay
15	Decline portal boxcut	**42**	Conveyor transfer tower
16	Explosives distribution bunker	**43**	Existing forestry road
17	Settling ponds	**44**	Rope conveyor
18	General storage yard	**45**	Backfill plant
19	Dining room	**48**	unallocated
20	Mud press	**49**	Security office at portal entrance
21	Contractors laydown area	**50**	General workshops
22	Weighbridge	**51**	Diesel off loading transfer pump
23	Weighbridge office	**52**	Property boundary
24	Mine ancillary vehicle workshop	**53**	Waste handling & loading area
25	TMM workshop	**54**	Water treatment plant
26	Main store	**55**	Diesel / refuelling station

Foundation

The primary objective is to maximise the use of residues from metallurgical processing (LCP) for underground backfilling, with a minimum amount of residues stored in DNT. The material transported by an overhead conveyor will be stored, mixed with a binder (3–6% cement) and water at the portal site, and then transported to the excavated chambers using the proposed piping system.

The foundation will consist of LCP residues and FECAB tailings in the following ratio:

- 85-75 (LCP) : 25-15 (FECAB)
- + 3–6% cement.

2.2. Aerial conveyor system (Sedmihůrky → Dukla)

The transport of mined and crushed ore from the portal area to the Dukla transshipment point will be carried out using an aerial conveyor system. This is a suspended belt conveyor that transports material on a flat belt with corrugated edges. The belt performs the transport function and is driven or rotated by a shaft at the terminal stations. It is attached at regular intervals to axles, which also perform a load-bearing function, with running wheels located at the ends of the axles. These run along firmly anchored suspension cables and guide the belt. The suspension cables are laid on supports.

The system will consist of two separate sections connected by a transfer station located at the break point of the route. This station will serve to redirect material from the first section of the conveyor to the second, thus ensuring an uninterrupted flow of ore towards Dukla. The station will include unloading equipment for the first part of the route and loading equipment for the second part.

The advantage of the system is that, in addition to transporting ore out of the mine, it will also enable the transport of feed back to the portal – this will be done by the lower, so-called return belt, onto which the material will be loaded by connecting conveyors.

At the terminal station in the Dukla complex, the ore will be unloaded from the upper belt directly onto the appropriate handling equipment. To prevent material loss during operation, the entire system will be equipped with additional conveyors that will catch any material that may fall off the main belt. This material will first be collected on a horizontal conveyor, then moved to a vertical conveyor, and finally returned to the main belt.

This solution will ensure maximum efficiency and prevent losses during transport. The transport system will thus enable a two-way flow of materials – ore will be transported by the upper belt from the portal to Dukla, and the feed will simultaneously return to the mine via the lower belt.

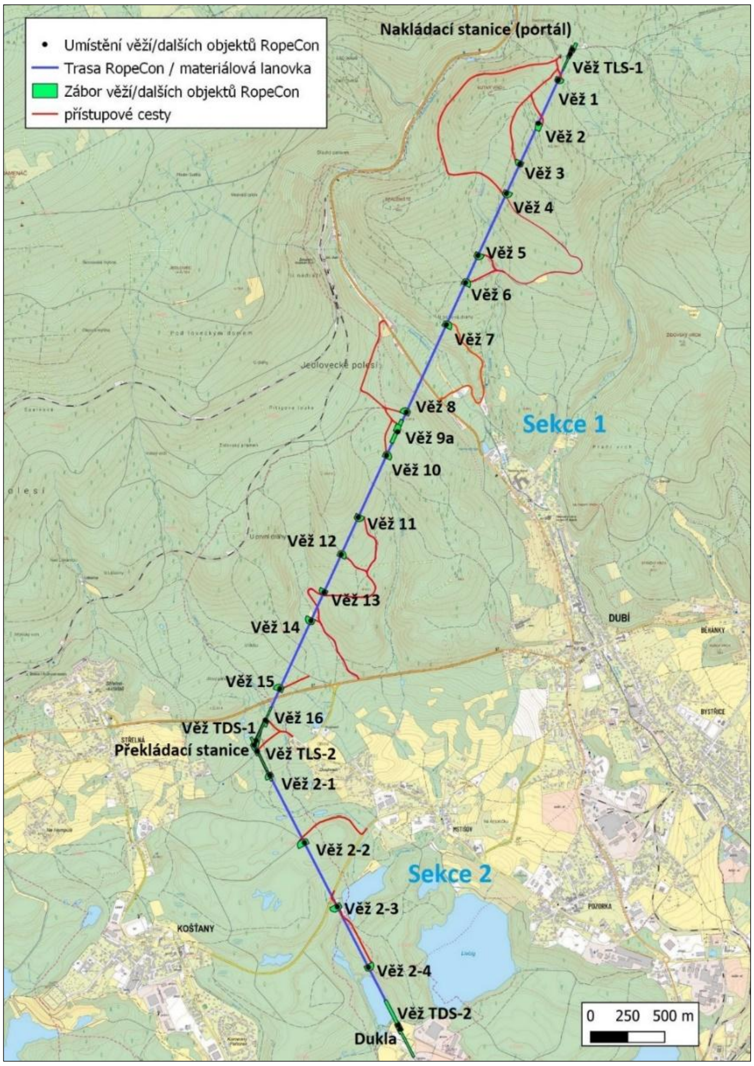

Figure 6: Schematic diagram of the aerial conveyor system between the portal and the transshipment point

2.3. Dukla transshipment point

A total of seven tracks are planned to be built at the Dukla transshipment point. These will include two loading tracks for raw materials and one for unloading feedstock. The track for loading raw materials will be located on the southern part of the central branch of the siding, while the track for unloading feedstock will be located to the north (see figure below). Four additional short tracks will be located in the north for parking, routine maintenance and refuelling of shunting locomotives. Two will lead to a workshop where more complex locomotive maintenance will be carried out.

Train operations and loading/unloading of wagons at the Dukla transshipment point will take place on weekdays during daytime hours, i.e. from 6:00 a.m. to 10:00 p.m. On Saturdays from 6:00 to 18:00, with unloading and loading of trains possible until 20:00. There will be no train operation on Sundays and public holidays, but the maximum time is limited to a cumulative 48 hours due to the limited capacity of the ore storage and loading facilities.

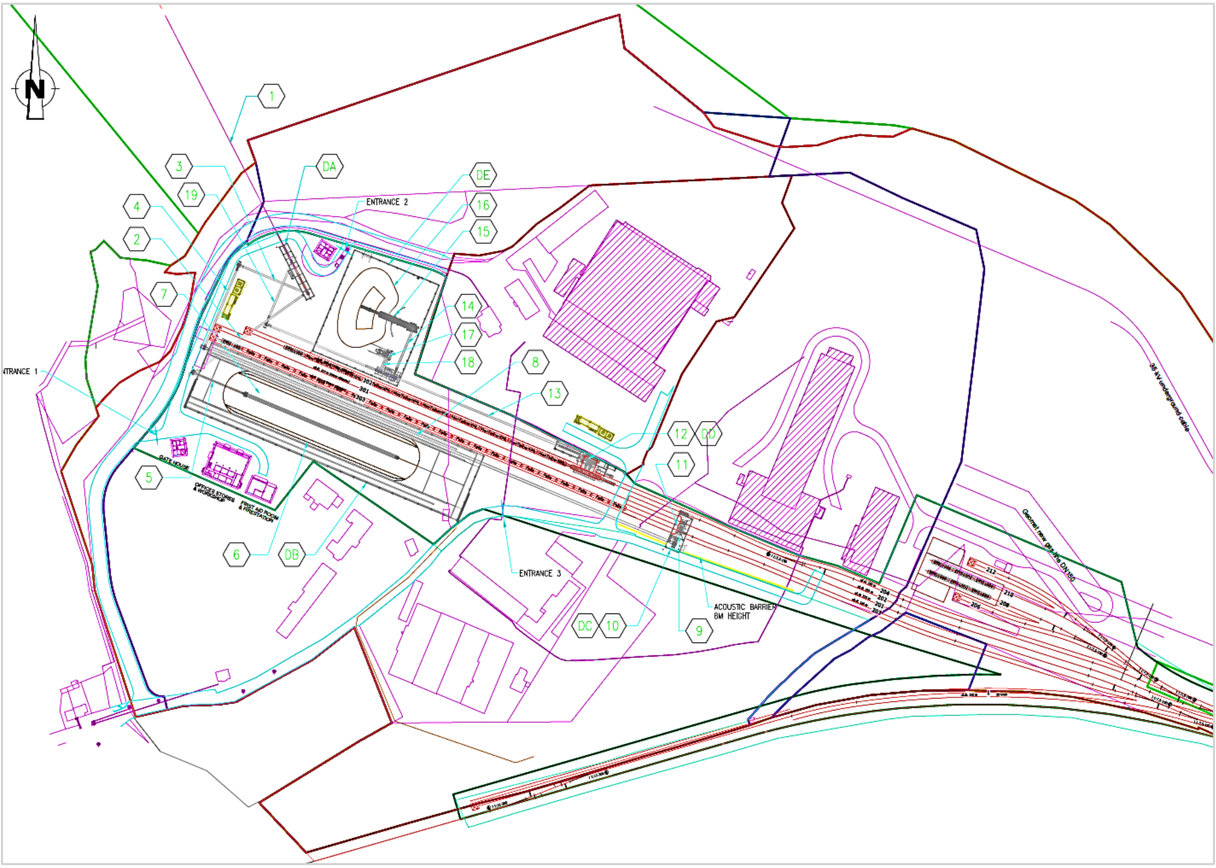

Figure 7: Situation diagram of the Dukla transshipment point

Captions for Figure 7:

1	Transport system – lower section
2	ROM stockpile conveyor
3	ROM bypass conveyor 1
4	ROM bypass conveyor 2
5	Dukla skyline tripper
6	Dukla rom stockpile
7	Dukla stockpile reclaimer

8	Dukla reclaim conveyor
9	Dukla reclaim conveyor
10	Dukla rail loadout
11	Rail loadout bin
12	Tailings offloading system
13	Backfill stockpile conveyor
14	Backfill stockpile conveyor
15	Backfill stockpile stacker
16	Backfill stockpile
17	Backfill stockpile reclaim bin
18	Backfill stockpile conveyor
19	Backfill stockpile conveyor
DA	Conveyor building
DB	Ore stockpile & reclaimer building
DC = 10	Ore rail loadout system building
DD = 12	Wagon discharge building
DE	Backfill tailings stockpile & stacker building

2.4. Rail transport

Rail transport will be used both for transporting materials, equipment, reagents and ore to the plant and for returning backfill material to the transhipment point, as well as for distributing product to customers.

Within the Dukla transshipment area, it is planned to build a new siding rail system with a connection to the existing line leading to the Oldřichov u Duchcova station. The existing line to which the new line will be connected will require certain costs for its renovation and extension, including the Oldřichov u Duchcova station; this part should be provided by SŽ. According to consultations with Správa železnic, it is realistic to consider the reconstruction of the Oldřichov u Duchcova – Teplice-Lesní Brána section and an increase in the track load class to level C (20 t/axle).

At the other end of the railway line, trains will arrive at the processing plant, where part of the new siding system will also be completed.

Figure 8 shows the planned railway transport route on a map. Table 2 shows the planned intensity of railway transport.

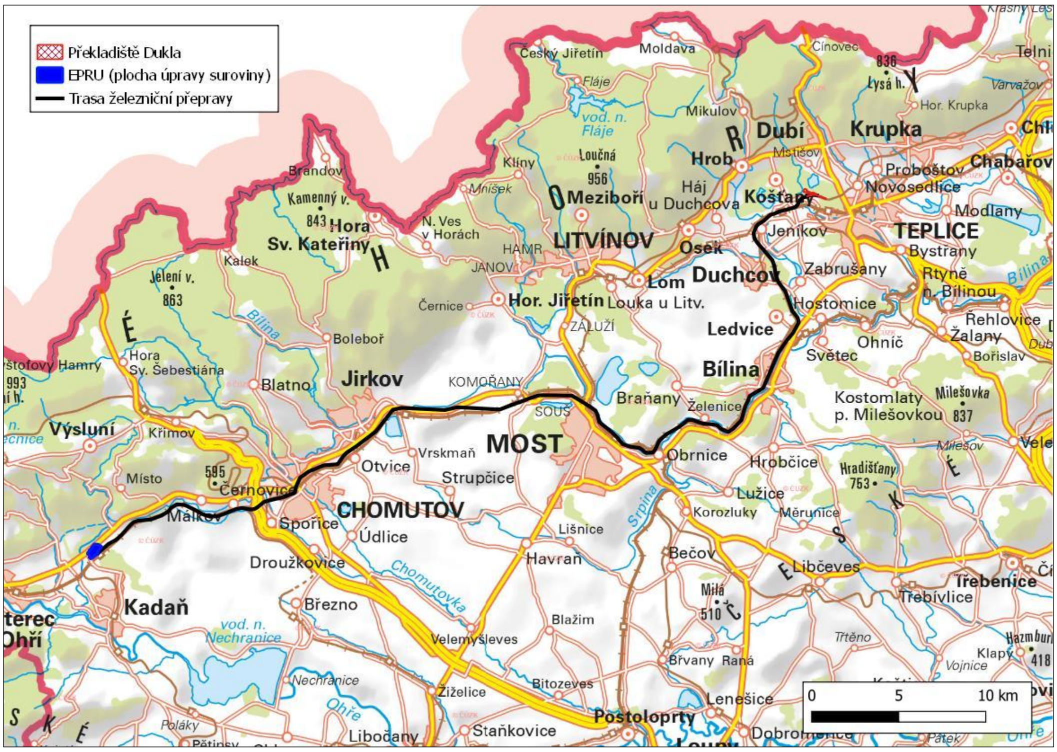

Figure 8: Planned railway transport route

Type of transport	Number of trains/week – average	Number of wagons/train	Length of train set without locomotive [m]
Ore (Dukla → Prunéřov)	60	22	297
Backfill (Prunéřov → Dukla)	30	9	202.5
Transport of reagents to Prunéřov	20.2	11.4	169.5
Shipment of products from Prunéřov	8	11	255.86

Table 2: Estimated intensity of rail transport

Rail sidings will be built at the Dukla transshipment facility and the Prunéřov processing plant to connect the existing state railway lines with industrial facilities. The proposed rail sidings at the facilities are shown in Figures 9 and 10.

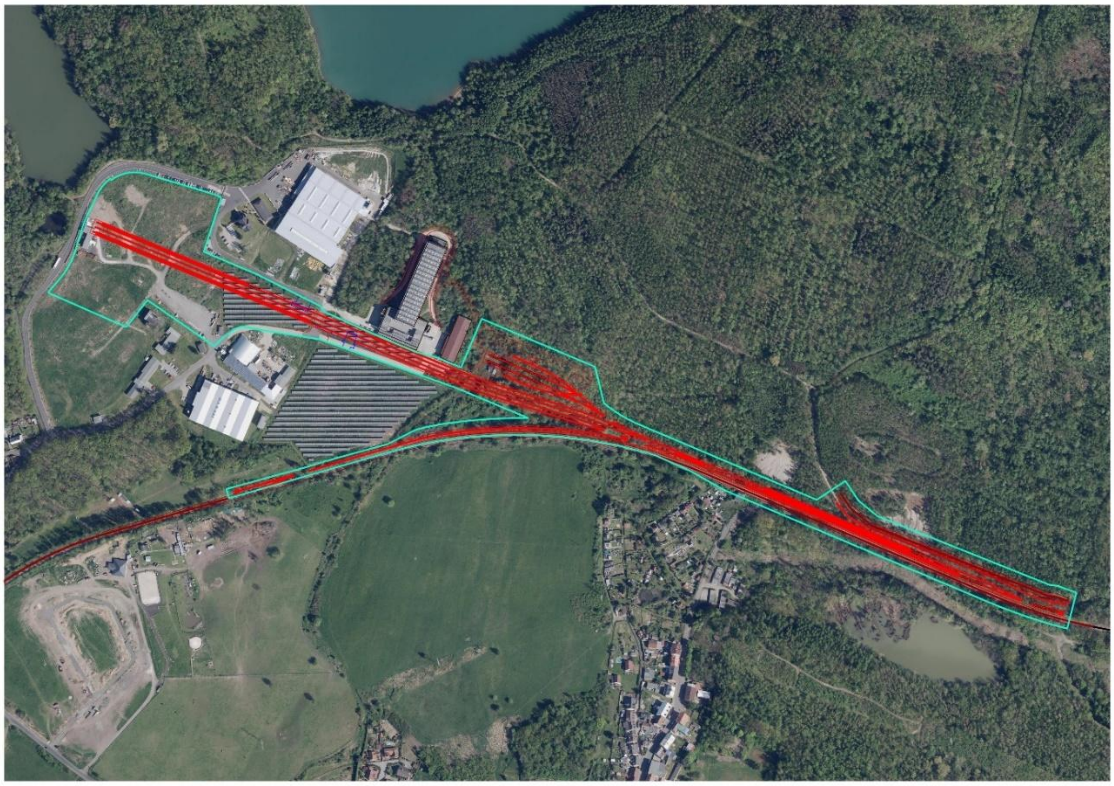

Figure 9: Railway siding at the Dukla transshipment facility

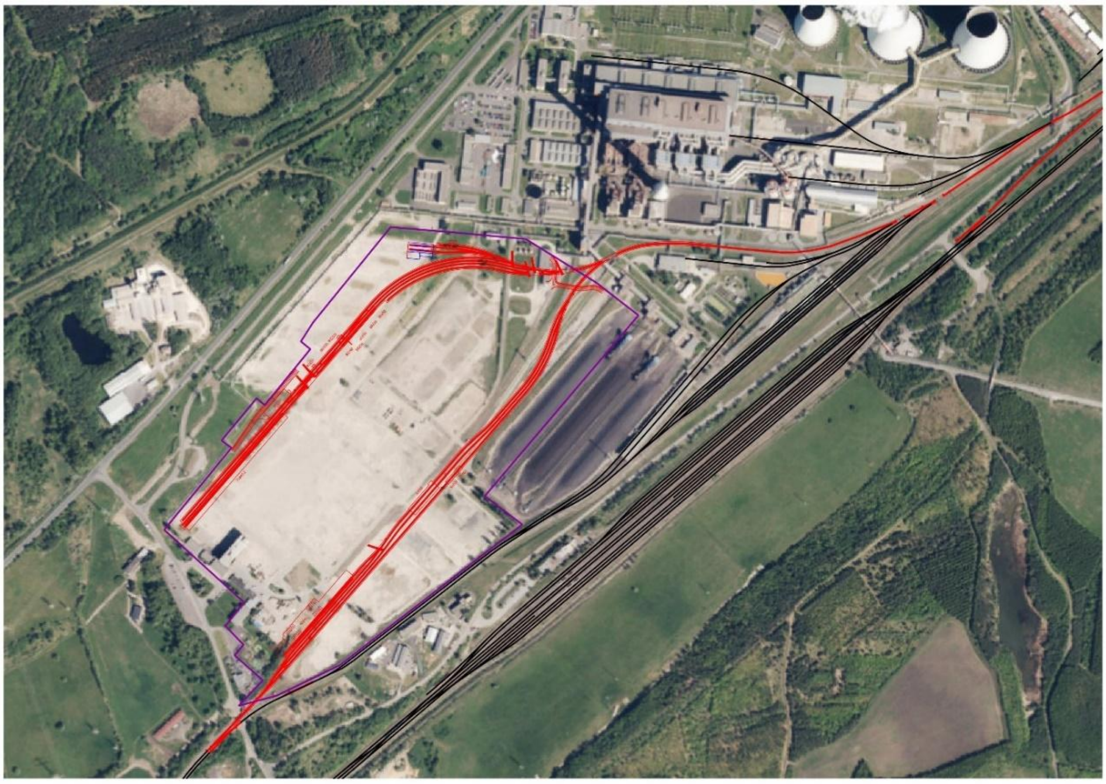

Figure 10: Railway siding at the Prunéřov processing plant

Locomotives will be powered by electricity for most of the route between the transshipment station and the processing plant.

The exception is the Dukla transshipment area and the approximately 1.8 km long track between the Dukla transshipment area and the Jeníkov-Oldřichov station. This section of the state railway is not currently electrified. Geomet is actively negotiating with Správa železnic, s.o. (Railway Administration) regarding the electrification of this section of the railway.

Another exception will be the section of the railway siding in the processing plant. This is the north-western branch of the railway siding, which will be used to transport reagents and finished products, and for safety reasons it is not possible to electrify this section of the siding. The traffic intensity on this branch of the railway siding will be significantly lower than on the other (south-eastern) branch.

2.5. Processing plant

The entire production process at the processing plant consists of two main parts. The first is the processing section for preliminary sorting and processing of the ore. This section is referred to as FECAB. The second part is the LCP metallurgical plant, where refining takes place to produce the final product in the form of a battery-grade lithium compound.

Both plants will be located on the site of the former Prunéřov I power plant, approximately 65 km from Dukla. The total area for processing the mined ore is approximately 35.8 ha. The Processing Plant itself (consisting of the FECAB and LCP sections) will be located on this site.

Plant design

Figure 11 shows the design of the entire processing plant in Prunéřov, consisting of mechanical processing (FECAB) and metallurgical processing (LCP).

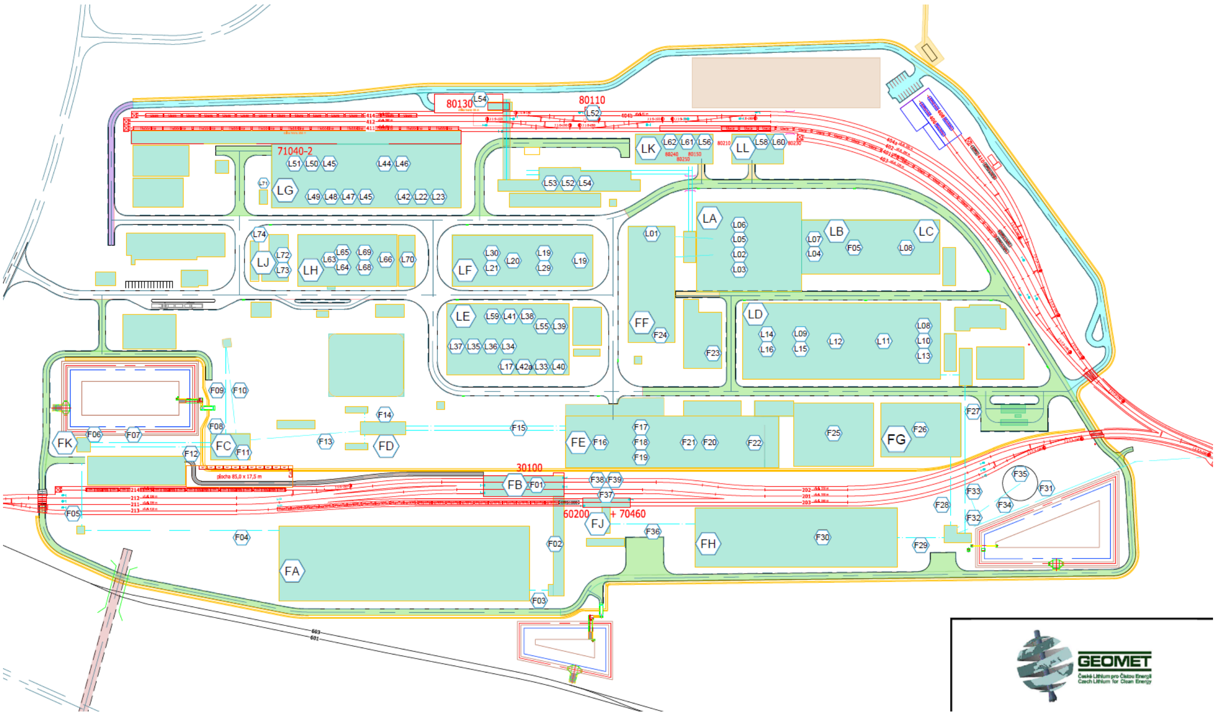

Figure 11: Prunéřov processing plant complex

Captions for Figure 11:

- **FA** Stacker reclaimer
- **FB** Rail loadout building
- **FC** Sec. screen & tert. crushing
- **FD** Mill feed bin
- **FE** Main FECAB building
- **FF** Concentrate filters building
- **FG** Tailings filter building
- **FH** Tailings stacker reclaimer building
- **FJ** Tailings rail loadout building
- **FK** Plant fed bin
- **L04** Roaster 2 and cooler
- **L05** Roaster 2 feed treatment pellitiser
- **L06** Roaster off gas treatment
- **L07** Roaster 2 and cooler
- **L08** Cooled pellet storage
- **L09** Leach solution tanks
- **L10** Leach milling
- **L11** Leach slurry tanks
- **L12** Leach filtration
- **L13** Residue belt conveyor

FL Tailings transfer building
LA Roaster feed building
LB Roaster discharge/transfer building
LC Cooler discharge building
LD Leach & ir building
LE Lithium conversion building
LF Sulphate crystallisation building
LG Bicard & lc storage building
LH Water services building
LJ WWTP & services building
LK Caustic reagents building
LL Gypsum bunkers
F01 Rail receiving bunkers
F02 Rom conveyor
F03 Stacker conveyor
F04 Reclaim conveyor
F05 Feed bin conveyor
F06 Screen feed bin
F07 Screen feed conveyor
F08 Secondary sizing screen
F09 Oversize conveyor-1
F10 Oversize conveyor-2
F11 Tertiary crusher
F12 Crushed feed conveyor
F13 Mill bin conveyor
F14 Mill feed bin
F15 Mill feed conveyor
F16 Rod mill
F17 Rougher
F18 Cleaner cell
F19 Recleaner cell
F20 Cleaner scavanger cell
F21 Cleaner scavanger cell
F22 Hig hig mill
F23 Concentrate concentrate thickener
F24 Concentrate filter
F25 Tailings tailings thickener
F26 Filter-1 (belt)
F27 LCP tailings conveyor
F28 FECAB tailings conveyor
F29 Stacker feed conveyor
F30 Backfill tailings stockpile
F31 Tailings to dnt
F32 Tailings reload feeder
F33 Tailings reload bin
F34 Emergency feed conveyor
F35 Tailings emergency stockpile
L14 Impurity removal 1
L15 Impurity removal filtration
L16 Impurity removal 2
L17 Lithium phosphate conversion
L18 Barren liquor falling film evaporation (FFE)
L19 Glauber salt crystallisation 01 & 02
L20 Sodium sulphate anhydrous crystallisation
L21 Sodium sulphate anhydrous (SSA) drying
L22 Sodium sulphate bagging
L23 Sodium sulphate anhydrous (SSA) storage
L29 Mixed sulphate crystallisation
L30 Mixed sulphate drying
L33 Lithium sulphate conversion
L34 Lithium sulphate filtration
L35 Lithium sulphate crystallisation
L36 Lithium sulphate dissolution
L37 TSP regeneration
L38 Impurity removal 3
L39 Crude lithium carbonate precipitation
L40 Crude lithium carbonate filtration
L41 Crude lithium carbonate pls conditioning
L42 Bicarbonation
L43 Bicarbonation pls ion exchange
L44 Lithium carbonate crystallisation
L45 Lithium carbonate dewatering
L46 Bicarb circulating gas reconditioning
L47 Final product drying
L48 Final product micronising
L49 Final product magnetic impurities removal
L50 Final product packaging
L51 Final product storage
L52 Limestone (calcium carbonate)
L53 Sodium sulphate anhydrous (SSA)
L54 Gypsum (calcium sulphate di-hydrate)
L55 Trisodium phosphate (TSP)
L56 Slaked lime (calcium hydroxide)
L57 Filter aid
L58 Sulphuric acid
L59 Phosphoric acid
L60 Hydrochloric acid
L62 Caustic soda (sodium hydroxide)
L61 Soda ash (sodium carbonate)
L63 Raw water
L64 Process water
L65 Condensate
L66 Demineralised water
L67 Potable water

F36	Reclaim conveyor-1	**L68**	Steam boiler & distribution
F37	Reclaim conveyor-2	**L69**	Gland seal water
F38	Backfill belt feeder	**L70**	Cooling water
F39	Backfill shuttle conveyor	**L71**	Carbon dioxide
L01	Concentrate handling	**L72**	Plant air
L02	Roaster 1 feed treatment pellitiser	**L73**	Instrument air
L03	Roaster 1 off gas treatment	**L74**	Wastewater treatment plant

2.5.1. Mineral processing (FECAB)

Mineral processing in the FECAB phase will be designed to produce a high-purity cinvaldite concentrate from the mined material, which will be the input raw material for subsequent metallurgical processing at the LCP plant. The process will involve several consecutive technological steps – tertiary crushing and sorting, grinding, flotation, dewatering and handling of the concentrate and residual material.

Tertiary crushing and sorting

Primary and secondary crushing of the ore will take place underground in the mine. The ore will enter the processing plant after primary and secondary crushing in a fraction of up to 83.5 mm.

The ore transported to the processing plant will be crushed and re-sorted in a closed circuit to a nominal size of approximately 18 mm. The tertiary crushing circuit will consist of vibrating screens, cone crushers, feeders, conveyors and dust extraction equipment. The ore will be repeatedly processed in the circuit until it passes through the screen openings of the required size. The prepared material will be stored in a silo as a supply for grinding.

Grinding

From the silo, the ore will be transported to two rod mills, where it will be wet ground to a fineness of around 0.15 mm. The steel rods used as the grinding medium will be continuously replenished to prevent excessive wear and deterioration in grinding efficiency. After grinding, the material will be separated into a fine fraction, which will continue to flotation, and a coarser fraction, which will be returned to the mill. The grinding circuit will include conveyors, feeders, pumps, screens and equipment for handling the grinding rods.

Flotation

The main separation method will be multi-stage flotation. The material from the mills will be fed in the form of a suspension into classification cyclones, where the finest particles (<10 μm) will be separated for storage as tailings. The 150–20 μm fraction will be mixed with a reagent – a flotation collector – and a small amount of hydrochloric acid to adjust the pH and then processed in flotation cells. Flotation will separate the pure cinvaldite concentrate from the residual minerals. A visualisation of the flotation hall is shown in Figure 12.

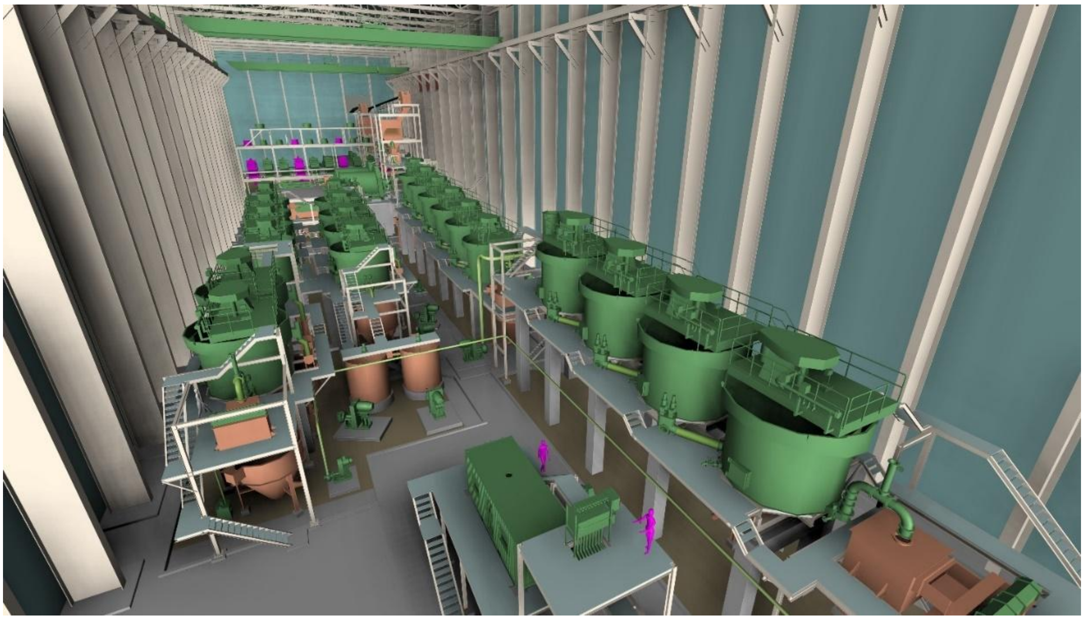

Figure 12: Visualisation of the flotation hall

Overall, flotation in tests conducted in 2024-2025 demonstrated higher efficiency and economic feasibility compared to the originally considered magnetic separation. At the same time, cleaner concentrate reduces the costs of subsequent metallurgical processing at LCP and reagent consumption.

Dewatering and storage of concentrate

The concentrate obtained by flotation will settle in settling tanks, from where the used water will be recycled back into the process. The concentrate will then be dewatered in vacuum filters and stored in closed tanks. Before shipment to the LCP plant, the material will be finely ground to a size of less than 100 µm. The dewatering circuit will use sedimentation tanks, vacuum filters, pumps, feeders, conveyors and air compressors.

Handling of residual material (tailings)

Residual material from flotation will pass through dewatering cyclones and sedimentation tanks. The fine fraction (<75 µm) will be dewatered in vacuum filters and mixed with the coarser fraction from the cyclones. Approximately 15% of the tailings will be used as backfill material for the mine, with the remainder being stored at the DNT storage facility. The tailings will be temporarily stored in a handling hall, from where they will be transported by belt conveyors to a longitudinal dump. From there, it will either be loaded onto trains for transport to the mine portal as part of the backfill, or transported by lorries to the DNT.

Preparation and dosing of reagents

Reagents used in flotation and other technological processes will be stored in a closed and secure building, in double-walled containers with integrated protection against the leakage of hazardous substances. Storage and handling will be carried out in accordance with applicable national and European regulations for the handling of reagents (e.g. REACH and CLP regulations) and in accordance with the operator's internal safety guidelines.

Liquid reagents will be transported in ISO-certified tanks designed for the transport of reagents, while solid reagents will be stored in their original packaging with intact manufacturer's labels and clearly marked safety symbols. All pumping or handling of liquids will take place in a closed system with the possibility of immediate collection of any spills.

The storage area will be equipped with an impermeable floor with a reagent-resistant surface finish and a containment berm with a collection sump to capture any leaks. The system will also include active and passive environmental protection features such as leak detection sensors, regular leak checks and reagent handling records.

2.5.2. Metallurgical processing of concentrate (LCP)

The final product for production in Prunéřov will be lithium carbonate (LCE). This will be processed at a plant called LCP. The lithium carbonate production plant will process cinvaldite concentrate produced in the FECAB processing section with a nominal capacity of approximately 610,000 tonnes of dry concentrate per year. The goal will be to produce approximately 37,500 tonnes of LCE per year with a purity of 99.5%, suitable for use in the battery industry.

The entire process will take place in a closed technological cycle, including concentrate reception and preparation, thermochemical processing, impurity separation, conversion and crystallisation, refining, drying, micronisation and packaging of the finished product.

Receipt and preparation of concentrate

The concentrate from FECAB will be transported by a conveyor system to the LCP, where it will be mixed with recycled mixed sulphates, gypsum and calcium reagents. The mixture will be prepared for dosing into the kiln line (Figure 13) using pumps, feeders and belt conveyors.

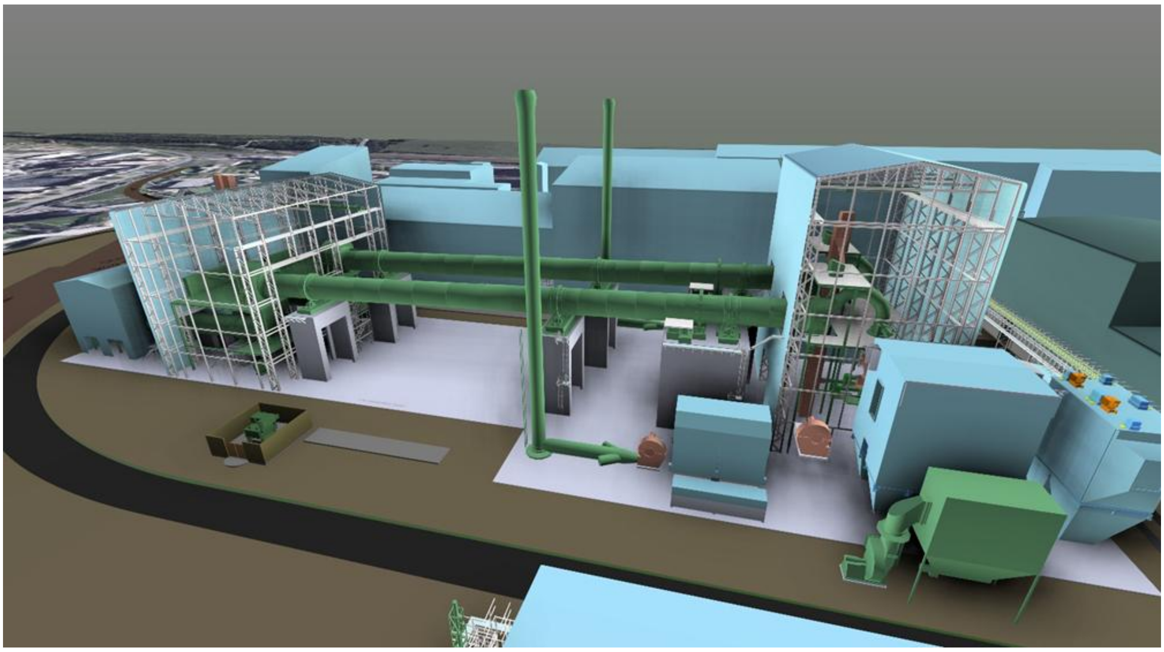

Figure 13: Visualisation of part of the processing plant with the kiln line (green)

Firing and conversion to solution

Before firing, the mixture will be pelletised and then fired to convert the lithium bound in cinvaldite into soluble lithium sulphate. After cooling in air-cooled coolers, the fired material will be ground in ball mills and converted into an aqueous solution. The flue gases from the furnaces will undergo multi-stage cleaning to remove solid particles, sulphur oxides and hydrogen fluoride.

Filtration of insoluble residue and removal of impurities

The resulting suspension will be vacuum filtered and washed to minimise lithium losses. In several stages of impurity removal, metals and unwanted compounds, including fluorides and calcium, will be precipitated using lime, phosphoric acid and sodium carbonate. The separated solids will be used primarily as backfill material in the mine.

Conversion and crystallisation

Lithium sulphate in solution will be converted to lithium phosphate, then converted back to lithium sulphate and crystallised. A by-product will be Glauber's salt ($Na_2SO_4 \cdot 10H_2O$), which will be processed and packaged for further sale or use in the process. The obtained solutions will be further purified and recycled into the previous production steps.

Refining and production of pure lithium carbonate

The purified lithium sulphate solution will react with sodium carbonate to form crude lithium carbonate, which will be further refined using the bicarbonate method and purified by ion exchange. The final product – high-purity lithium carbonate – will be obtained by crystallisation and centrifugation.

Dehydration, drying and micronisation

After dewatering, the lithium carbonate will be dried in plate dryers, cooled and then micronised to the required fineness in ultra-fine mills. This process will ensure optimal physical properties for battery cell production.

Packaging and shipping

The finished micronised product will be packaged in large-volume big bags (1,000 kg) on an automated filling line equipped with a weighing system, a vibration unit for compaction and roller conveyors. The bags will be prepared for dispatch by forklift trucks.

Wastewater

The process water used in the individual stages of processing will be collected after use and then treated in a wastewater treatment plant operated on the premises. This treatment plant will remove mechanical impurities, organic pollution and other substances generated during the technological processes. Once the required parameters have been achieved, the treated water will be returned to the production cycle, reducing overall fresh water consumption and increasing the efficiency of water resource management.

The annual production of sewage water in the processing plant will correspond to the consumption of drinking water, which is estimated at 36,500 m^3 per year. This amount mainly represents municipal wastewater generated from the sanitary and social facilities of employees. Sewage will be discharged by gravity or using existing pumping equipment into the internal sewerage network at the processing plant's premises ( ). It will then be transported to the existing wastewater treatment plant, where it will undergo the appropriate stages of treatment to meet legislative requirements before being discharged or reused.

2.5.3. DNT storage

The DNT storage facility is an area for storing residual materials from the processing process, i.e. mainly from FECAB and partly from LCP, at the Doly Nástup Tušimice area. LCP residues and FECAB tailings will be stored in the DNT area using the dry dumping method. Residual material will be drained as much as possible using filters before storage. The result is a so-called "filter cake", which is a semi-solid to loose material with low moisture content. Unlike conventional tailings ponds, there is no need for a large water area with dams, water seepage into the ground is reduced, the volume of water in circulation is minimised, and therefore more water is recycled back into the technology.

Two types of materials will be stored at the DNT storage facility, namely:

- from the FECAB plant – tailings, ground granite free of mica, very fine material, fraction approx. 0.1 to 0.5 mm (permanent storage)
- from the LCP plant – insoluble residue, outputs from the metallurgical process, very fine material consisting of approx. 70% gypsum, quartz and clay minerals (temporary storage)

Due to the lack of sufficient space in the mine in the initial phase of mining, it will not be possible to store LCP residues immediately in the Cínovec mine (current assumption for the first four years from the start of initial excavation, i.e. from the start of ore mining, which is a period of approx. 1.5 years). During this period, LCP residues will be transferred to the DNT area to a separate temporary storage facility. In addition, a permanent tailings storage facility from FECAB will be established (see figure and tables below).

Once sufficient mining space has been created for storage, the LCP residues at the temporary deposit within the DNT will be transferred to the EPRU loading area and transported by rail for return storage at the Cínovec mine. In subsequent years, insoluble residues from LCP will be transported directly from the processing area to the mine without being stored at the intermediate storage site. Tailings from FECAB will then be stored both at the DNT storage site and mixed with residues from LCP in the mine area.

In addition to the actual disposal sites for residual materials from the FECAB and LCP plants (temporary disposal site), the storage area will also include a fenced storage facility with space for storing the necessary equipment and a settling/retention tank. The area will also be equipped with a perimeter drainage channel for the drainage of uncontaminated rainwater and perimeter safety embankments.

Figure 14 shows the final location and shape of the permanent landfill. The total designed height of the landfill is approximately 100 m. As the landfill will be located in a mine pit and the surrounding villages are significantly higher above sea level than the DNT storage facility, the landfill will not protrude significantly above the surrounding area.

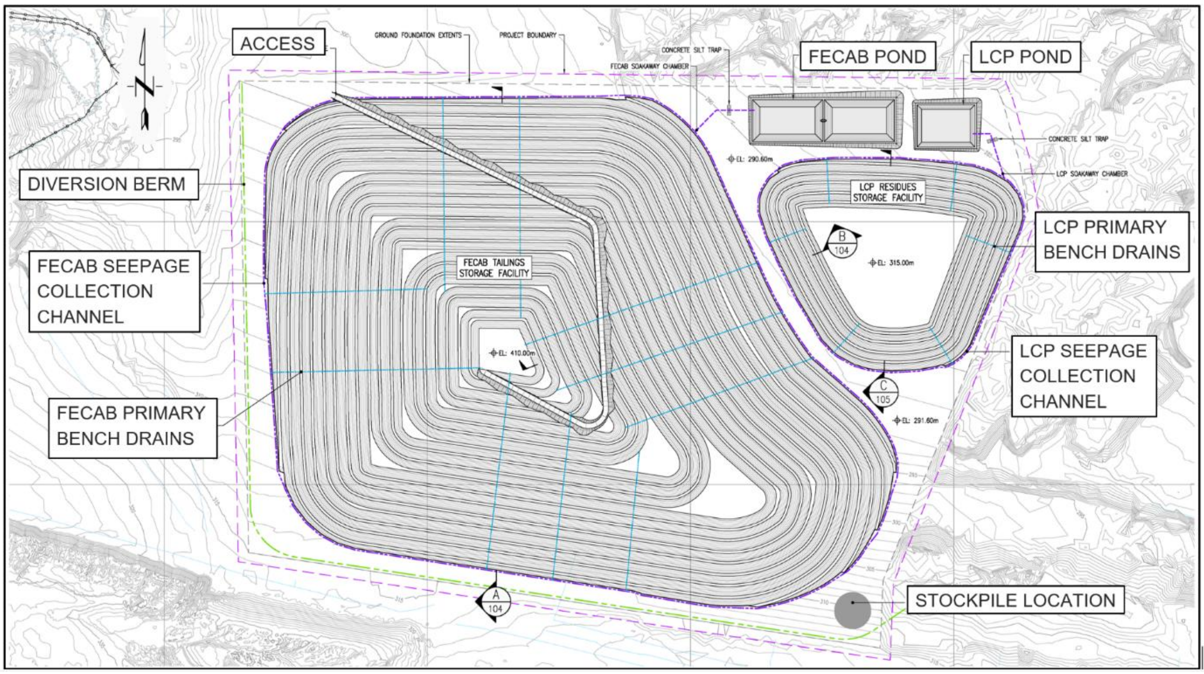

Figure 14: DNT storage facility – location and shape of the permanent disposal site (final state, year 27)

2.6. Road transport

Road transport will be used mainly during construction (transport of materials, transport of persons). During operation, road transport will be lower and will be used mainly for the transport of persons.

Table 3 shows the estimated daily road traffic intensity during construction, and Table 4 shows the intensity during operation.

Area	**Passenger vehicles**	**Light goods vehicles (< 3.5 t)**	**Medium-duty vehicles + buses (3.5–12 t)**	**Heavy goods vehicles (>12 t)**
Portal + upper part of the transport system	44	18	16	50
Dukla + lower part of the transport system	51	23	16	25
Processing plant	107	36	34	83

Table 3: Daily road traffic intensity – construction

Area	Passenger vehicles	Light goods vehicles (< 3.5 t)	Medium vehicles + buses (3.5-12 t)	Heavy goods vehicles (>12 t)
Portal + upper part of the transport system	25	0	24	30
Dukla + lower part of the transport system	40	4	2	1
Processing plant	140	10	17	8

Table 4: Daily road traffic intensity – traffic

2.7. Related infrastructure

Beyond the key construction and technical parts of the project, which are

- the mine and portal complex,
- the transport system between the portal and the transhipment facility,
- the transhipment facility,
- the processing plant

it will be necessary to build additional related infrastructure and relocate or modify existing one.

Infrastructure for the mine and portal:

- power supply to the portal
- transformer station in the Dubí-Novosedlice area, including relocation of the existing high-pressure gas pipeline
- water supply to the portal (from the Pramenáč adit – drinking water, from Lake ČSM as a backup source for the mine – process water)
- access road to the portal

Infrastructure for the transport system:

- access roads to the bases of the transport system towers

Infrastructure for the Dukla transshipment point:

- railway siding connecting the site with the state railway
- power supply
- transformer station in the Dukla area
- relocation of existing high-pressure gas pipeline and anodes
- process water supply from Lake Dukla
- change in the route of the current gas connection

Infrastructure for the Prunéřov processing plant:

- railway siding connecting the site to the state railway
- gas connection
- Transformer station
- connection to the distribution network and future photovoltaic power plant

Infrastructure for the DNT storage facility:

- overhead transport system between the processing plant and the storage facility.

3. Project implementation

The basic prerequisite for the project schedule is the gradual completion of detailed engineering and the acquisition of key permits (EIA, project permit, IPPC, mining permits), which are required to commence construction. At the same time, an EPCM contractor will be selected to manage the design, technical solutions for the construction, purchase of equipment and building materials, and to manage and supervise the construction.

After the EPCM contractor takes over, the procurement of construction works, equipment and technologies will commence; critical items with longer delivery times will be ordered on a priority basis. The exploratory tunnel can be implemented partly in parallel with the permitting of other structures but requires its own permit for project development. The subsequent construction is divided into the portal, transport system, Dukla (transshipment point and railway connection) and Prunéřov and related infrastructure.

Commissioning will take place in stages: first mining (after commissioning the portal and selected underground nodes), then the transport system and Dukla for material flow, and then processing in Prunéřov (FECAB/LCP) after completion of installations, tests and trials.

4. Permitting process

The permitting process for the Cínovec lithium mining and processing project will take place in several consecutive phases, which include the modification of spatial planning documentation, environmental impact assessment, preparation of project documentation and obtaining all necessary administrative decisions and permits.

The first step is **to update the Ústí Region Spatial Development Principles (aZÚR)**, which involves reclassifying the affected areas into the appropriate functional category to enable the project to be implemented. This process has already begun and is expected to be finalised in February 2026. In parallel, **an EIA screening procedure** has already been carried out for the processing part of the plant (2025) and, previously, separately for the mining part (2021).

These steps will be followed by the preparation and submission **of EIA documentation** for the entire project – i.e. for the mine, processing plant and related infrastructure. This process has already begun. Once it is complete, a contractor will be selected to prepare **detailed project documentation for the construction.**

The next step will be to submit an application for **a Unified Environmental Opinion** (**JES)** and to commence negotiations with the relevant authorities on the project documentation. Subsequently, an application for the determination of the mining area and for **an Integrated Permit (IPPC)** will be prepared and submitted.

It will then be possible to submit applications for **a Project Permit** (above-ground structures) and **a Mining Permit** (underground structures) to the relevant authorities. The relevant authority for the processing plant and associated structures (engineering networks, roads, etc.) will be the Transport and Energy Construction Authority (DESÚ). For the mining part of the project, the competent authority will be the Czech Mining Authority (ČBÚ). The maximum statutory deadlines for issuing decisions are 120 days for DESÚ and 60 days for ČBÚ, including the settlement of any objections or appeals.

Once all decisions have become final, it will be possible to commence construction work on all parts of the project.

5. Workforce

We expect the project to create nearly 2,000 jobs. Table 5 lists the individual types of jobs created.

Location	Description	Number
Mine (Sedmihůrky)	Mine employees	1,125
	Mine administration	140
Transshipment station (Dukla)	Transshipment centre employees	100
Processing plant (Pruněřov)	FECAB employees	125
	LCP employees	250
	Processing plant management	125
Storage facility (DNT)	Storage facility employees	60
	Total	**1,925**

Table 5: Estimated number of jobs

It is also estimated that at least another 2,000 jobs will be created in the region as a secondary effect, mainly in the area of direct industrial subcontractors (machine servicing, maintenance, transport), services related to plant operation (catering, security services, waste management) and within broader regional relationships (shops, restaurants, sports).

The estimate of secondary jobs created is supported by studies which indicate that for large industrial investments in mining and energy, the economic multiplier ranges between 1.5 and 2.0.

In other lithium mining projects in Australia or in the development of gigafactories, the number of indirect jobs exceeded the number of direct employees. At the same time, an analysis of the socio-economic impacts associated with the construction of new units at the Dukovany nuclear power plant assumes that each employee will create an additional 2.4 indirect jobs.

The multiplier of 1.0 considered for the lithium mining and processing project is very conservative compared to other projects.

The creation of approximately 2,000 direct and 2,000 indirect jobs represents a significant step in the transformation of the Ústí nad Labem Region following the decline of coal mining. The region has long been one of the areas with higher unemployment and a limited supply of skilled jobs. The new jobs will therefore not only bring social stability to the local population, but also provide significant support for the local economy.

Direct employment in the project will provide jobs for specialists in technical, engineering, geological and environmental fields and support the development of modern technologies. Indirect jobs will be created by service and material suppliers, in logistics, maintenance and related fields. This will contribute to broader economic diversification and reduce dependence on traditional industries.

The project will also offer opportunities for local educational institutions: the development of apprenticeships, retraining and cooperation with universities. Young people will thus gain prospects for employment in the region and be less motivated to leave to find work elsewhere.

Overall, the creation of these jobs can trigger positive changes, enhance the attractiveness of the Ústí Region and become an important pillar of its just transition.

6. Economic indicators

6.1. Project costs

The total investment in the project is estimated at more than CZK 42 billion (at current prices). The cost of the processing plant and related logistics infrastructure accounts for the majority of the total project costs. The processing plant with a transshipment facility in Dukla and the necessary infrastructure is expected to cost approximately CZK 25 billion. The mine itself should cost approximately CZK 5 billion. The remainder is accounted for by other necessary infrastructure and indirect costs, such as securing land.

The project has received a grant of CZK 800 million from the Just Transition Fund. These funds will be used primarily for infrastructure related to the preparation of the mine.

The project also received a subsidy of CZK 8.5 billion from the Strategic Investments for a Climate-Neutral Economy programme. This support is intended for the construction of a processing plant.

AISC costs *(All-In Sustaining Costs)* are USD 13,600/t (CZK 280,000/t). They express the total costs of long-term maintenance of operations and include, in particular, operating costs for mining and processing, administrative and overhead costs, sustaining CAPEX, taxes and other fees.

6.2. Long-term outlook for lithium prices

Long-term price forecasts are monitored by leading analysts, consultants and financial institutions.

There is a consensus in the market that lithium prices will rise significantly from today's low levels. There are several possible scenarios for how the price of lithium will develop. However, all scenarios agree that the price of lithium will rise significantly in the future compared to current spot prices. Demand for lithium is expected to grow significantly with the development of electric vehicles and battery storage.

The final feasibility study therefore works with a lithium price range of USD 15,000 to USD 30,000/t (CZK 310,000 to CZK 620,000/t).

6.3. Internal rate of return (IRR)

The main financial indicator of the project is the internal rate of return (IRR). As it depends on the price of lithium, the feasibility study shows it for a lithium price range of USD 15,000 to USD 30,000/t. The values shown in Table 6 already take into account the subsidy support that the project has received.

LCE price [USD/t]	15,000	20,000	25,000	30,000
IRR	0.2	8.9	14.4	18.9

Table 6: Project IRR for lithium price range

The internal rate of return (IRR) of the project ranges from 0.2% to 18.9% depending on the assumed price of lithium.

7. Key risks and opportunities

7.1. Project risks

The implementation of the project represents a complex investment plan with a long time horizon, which is subject to a number of technical, legislative, economic and environmental influences. For the purposes of risk management, a detailed risk register has been prepared, which includes identification, assessment and proposals for measures to minimise risks.

The risks are divided into the following categories:

- technical,
- financial,
- commercial,
- organisational,
- ESG.

7.2. Project opportunities

The project team is working on significant project opportunities that aim, among other things, to:

- optimise the proposed processing process,
- reduce operating and investment costs,
- reduce the project's carbon footprint,
- reduce the impact of selected risks.

Long adit

The primary method of transporting mined ore to the railway station in Dukla is the above-mentioned above-ground transport system. Another opportunity being explored for the project is the alternative transport of mined ore through a long tunnel. This concept is currently under review and meets the requirements of the Ministry of the Environment in the Conclusions of the Preliminary Investigation, for Geomet to explore alternative methods of transporting ore and fill. The long tunnel would replace the above-ground transport system for transporting mined ore and fill between the portal and the Dukla transshipment point. In addition, it would allow all the necessary infrastructure to be routed to the portal.

Figure 15 shows the proposed route of the long adit. In section 1, the proposed route runs above ground – via an above-ground conveyor. Sections 2 and 3 are already covered by an underground tunnel leading to the deposit. Approximately halfway through section 3, the tunnel runs close to the surface to ensure a connection to the railway at the Dubí station and also to the I/8 road.

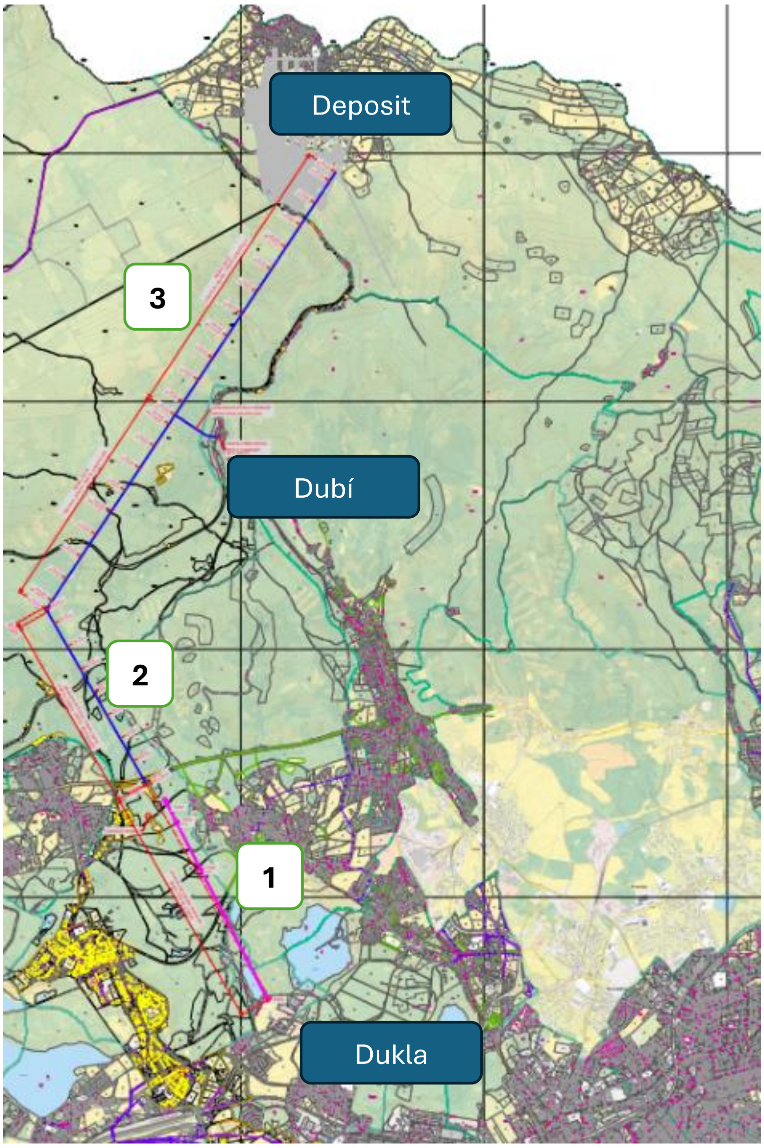

Figure 15: Situation map – long tunnel

The feasibility of the long tunnel is currently being verified at the conceptual study level. The documentation will be used to prepare the EIA documentation, which will be submitted with two transport options, i.e.:

a) above-ground transport system
b) long adit

It is expected that the Ministry of the Environment will evaluate both options in its EIA Statement and, if neither option has a "significant negative impact on the environment", it will be possible to choose either option in the further permitting process.