



Leaflet on protection of waste disposal facilities and pipework

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Foreword

This leaflet is intended to provide information and guidance for building owners, project developers and those involved in construction work. It is intended to provide you with practical assistance when applying for and carrying out all civil engineering measures and excavations.

In addition, damage to the disposal facilities and disposal pipes of Munich Municipal Sewage Treatment (MSE) should be avoided.

The cleaning, maintenance, renovation and expansion of the sewer network are core tasks of the Munich Municipal Sewage Treatment. A sewer network of around 2,400 kilometres in length lies buried underground in Munich. The two large sewage treatment plants in the north of Munich, with a total population equivalent of three million, on a daily basis treat 425,000 cubic metres of waste water from households and industry.





Any damage to the sewer network has consequences for the soil-groundwater system. This has led to some considerable construction delays and enormous costs. Public squares and roads are often blocked for long periods of time. A back flow from the municipal sewer can also cause major damage to houses and contents.

At a depth of approx. 2 to 8 metres, Munich's underground sewers have diameters of approx. 25 centimetres to 6 metres. An independent building inspection can save you additional time, effort and costs.

Our aim is to avoid damage to our systems and to rule this out in advance together with you in the planning phase.

We want you to build safely and thereby save time, effort and money – and we can fulfil our duties, to clean the waste water without causing any damage.

Information on the MSE pipeline network 1.1 Underground sewers and structures

General information

Munich Municipal Sewage Treatment plants and sewer structures and systems can be located in public traffic areas or traffic grounds, in urban green spaces as well as on private property and non-dedicated urban areas.



Example of the Munich sewer network

1 Information on the MSE pipeline network | **1.1 Underground sewers and structures**

Information on the MSE pipeline network **1.1** Underground sewers and structures



Among other things, the sewer network in Munich consists of:

- Sewers of different sizes
- Pipelines
- Shafts
- Manhole covers
- Road drains or gullies
- Switch cabinets
- Cabling
- Retention basin

The drainage system in Munich is predominantly a combined system (gravity system). In this combined system, waste water and rainwater are discharged together and fed into the waste water treatment system. In some areas there is also a separation system with infiltration and, to a lesser extent, there are also special drainage methods such as pressurised and vacuum drainage.

The plants for waste water and storm water drainage (sewers, manholes, drainage pipes, etc.) are buried in public and private land

When excavating or carrying out earthworks, you should always be prepared to find sewage disposal pipes in the ground.



Pumping stations

Marking of pipes

Route warning tapes are intended to warn you and are used for early detection and protection against damage to the system.

- Not all of the plants are documented in the planning.
- The actual route of pipelines may deviate from the as-built documents. You should therefore be prepared for unmarked pipework.
- Perform excavations in public traffic areas with the necessary care. If necessary, use hand shafts or search slots, for example.
- Route warning tapes are not always available.
- A sufficient distance between the route warning tapes and the pipeline cannot be relied upon.

Information on the MSE pipeline network **1.2** Underground zoning

The public road space or road surface is divided into zones for the laying of supply and disposal lines. The following sectional illustration shows an example of the division or sector location.





TEGW

Example of sectional view in the underground - road construction

The City of Munich (LHM) has divided the road surface into different zones since around 1950. New zoning is agreed in the course of the division and reminder procedures in the event of conversion or new construction The zoning can be requestedfrom the zoning office of the building department at zonenbuero.tz2.bau@muenchen. de. You can obtain information on the sewer system register from MSEs sewer information centre at spartenauskunft.3k.mse@muenchen.de.

Where can MSE systems be located?

Munich Municipal Sewage Treatment plants and sewer structures and systems can be located in public traffic areas or traffic grounds, in urban green spaces as well as on private property and non-dedicated urban areas. These are not recognisable above ground.

Duty to enquire

The systems and structures are separately secured with a sewer protection zone and are subject to an exploration obligation on your part.

Before starting the construction work, the property developer or the person commissioned by the property developer must enquire whether there are existing plants in the planned construction area. This applies in addition to the applicable information obligations of the building owner or client in accordance with the applicable Construction Site Ordinance (BaustellV).

The contractor must enquire with the client and the responsible authorities about the type, location, condition and route of pipelines.

According to the applicable regulations of German Social Accident Insurance for the construction industry and German statutory accident insurance, "the contractor must ensure that construction work is supervised by authorised and competent supervisors".

Knowledge of existing pipelines before the start of construction

Plants located in the construction area must be known before excavation work begins. The course and depth of the pipelines in the construction site must be labelled.

Please note that no excavation work may be carried out if the pipe routes and depths are not known!

The following must be agreed with the plant operator

- Necessary safety and protective measures (depending on the construction technology planned for realisation)
- Measures required when locating pipelines
- Discrepancies between the plans and the existing structures on site



The safety distances to the individual plants must be maintained as specified by the grid operator. Mechanical excavation is permitted up to a maximum of 30 cm above or to the side of the pipelines.

Construction work on or in public roads is regulated by the administrative order of theCity of Munich - Excavation Regulations (AufgrO). The excavation regulations can be found at <u>City of Munich website</u>.

Minimum distances to drainage structures in public traffic areas

If other distances result from the individual case assessment, these are decisive.

- Installation of external divisions
- Always parallel / horizontal minimum clearance of 1.00 m regardless of the zoning to existing sewers
- Excavation shoring
- Shoring anchors: generally 1.50 m from existing sewers, no grouting bodies under and within 2.00 m of infiltration shafts
- Bored piles, sheet pile walls, diaphragm walls require case-by-case consideration
- New tree plantings and deep-rooted shrubs
- to sewers up to approx. 800/1200, generally 2.50 m from tree shaft to sewer shaft
- to sewers from approx. 800/1200, from shaft tree to outer edge of sewer generally 2.50 m
- from shaft of manhole to shaft of tree generally 3.50 m

- General requirements for crane locations, containers and outdoor seating areas
- Existing road drains, maintenance openings and manholes must be freely accessible at all times
- Access manholes and street drains as well as sewer vents must remain clear
- The drainage of surface water via the road drains must generally be ensured
- Street drains must always be kept clear within a radius of 1.00 m
- To ensure the safety of our sewer workers, the manholes must be kept clear within a radius of at least 2.00 metres.
- General requirements for cleaning vehicles
- The access road must be designed for vehicles with a total load capacity of 35 tonnes and must have a minimum driving width of 3.50 metres.
- In access shaft areas, the swivelling of the crane arm on the vehicle must be taken into account within a radius of at least 4.00 m and kept clear of equipment (e.g. play and climbing equipment, signage, information pillars, lights).
 - Do not start any excavation work without knowing the course and location of pipelines in the construction site!
 - The minimum distances are defined in the guide value sheets and can be found at the following link: how to protect our sewers!

Size ratios of the sewer protection zones

As well as protecting the existing MSE plants and ensuring accessibility and manoeuvrability to the plants, the sewer protection zones also serve as a working area for any rehabilitation and replacement work that may be required in the future. A distinction is made between 3 zones:

- for private property areas
- for urban green spaces
- for non-dedicated traffic areas

Sewer protection zones can be designated in a legally binding development plan by a pipeline right and secured in rem on private properties with a pipeline right area. Rights in remare recorded in the land register and result in an absolute right, e.g. to lay sewers or electricity pipelines and thus ensure the supply. The sewer protection zones exist even without land register protection.

A review is mandatory on the part of the programme management. Please inform yourself in advance about the size of the sewer protection zones and pipe rights of way in the planning stage. You are welcome to contact <u>MSE's divisional information centre</u>. Your enquiry will then be forwarded to the relevant specialist department.

Line information

Please apply to MSE for planning information well in advance of the start of excavation work. This gives you an overview of the existing waste disposal facilities on your construction site.

Notes on Sewer protection zones

- No overbuilding or underbuilding
- No planting of trees and deep-rooted shrubs
- No embankment or removal of terrain
- Securing as a construc-

From the divisional information (<u>spartenauskunft.3k.mse@muenchen.de</u>) you will receive the sewer register as a PDF file for planning and implementation purposes. There is no charge for this service. No responsibility is taken for the accuracy of the information in the sewer register.

The drawings and the nominal width of the sewers refer to the internal dimensions. The wall thickness is not shown and not specified.

The accuracy of the location and heights from the sewer register must be checked on site by you as the applicant.

Access to waste water treatment plants

Access to and work in and on MSE waste water treatment plants is subject to authorisation. Please contact the <u>relevant sewer operating station</u> for authorisation to carry out measures or for on-site access.

tion site installation area and for accessibility for maintenance and servicing work



East and West zoning

The operating instructions are provided as part of the application for access to the sewer network. Please observe the existing service and operating instructions when entering the sewage system. These regulations define the handling of work in enclosed spaces of waste water treatment plants.

Important information summarised

- Sewer register information available free of charge as a PDF file at <u>spartenauskunft.3k.mse@muenchen.de</u>
- You can find an overview of our contact persons under <u>Contact.</u>

Working in the vicinity of MSE systems 2.2 Pressure and vacuum pipes

The special drainage methods of pressure and vacuum drainage are used to drain off the waste water. Wastewater and sewage sludge by means of positive or negative pressure.

When carrying out excavation work and exposing pipelines in the vicinity of pressurised and vacuum lines, increased caution is required.

Even the slightest mechanical damage to system components (manhole, pipeline, etc.) leads to a complete functional failure of the entire drainage system. As the waste water can then no longer be drained, a back flow in the connected buildings is to be expected.

Caution

• In the area of pressure- or negative pressurespecial care must be taken with pipelines

• MSE pressure and vacuumllines can also be located outside the Munich area

Working in the vicinity of MSE systems 2.3 MSE construction inspection

MSE carries out construction inspections to prevent damage. Construction measures with a high potential for damage to our sewage disposal systems are examined.

This does not release you from your duty of care regarding your own construction inspection.



Your duty of care

Necessary obligations

The duty of care (resulting from the Construction Site Ordinance and the Occupational Health and Safety Act) regulates certain requirements on the realisation of construction projects.

For example, a contractor carrying out excavations in public areas must obtain information about the location and route of underground supply lines. The contractor is obliged to familiarise itself with the the route of waste disposal lines.

Underground supply lines are generally to be expected. Please send your written enquiry with the corresponding plans, including documents describing the planned measures to the waste management organisation.

If damage occurs due to a lack of prior information, this results in delays, additional work and unnecessary costs for all parties involved. Avoiding damage is in the joint interest of building owners, operators and contractors. Please therefore take the greatest care when carrying out excavation work in public spaces.

Legal liability consequences

Helpful tips

- Coordinate with the MSE prior to construction and, if necessary, make enquiries in the event of uncertainties.
- Fulfil your duty of care and avoid unnecessary costs.
- The sewer station (Tel.: 089 661818) serves as the first point of contact for operational

If damage occurs to the waste disposal or drainage plants as part of a construction project, liability is determined in accordance with the statutory provisions. Particular mention should be made here of (non-exhaustive) §§ 823 et seq. BGB on the obligation to pay damages. Accordingly, damage caused to the property of others must be compensated. In the event of damage to sewers or structures used for disposal or drainage, compensation must always be paid.

Damage to drainage systems can contaminate water bodies, as waste water can enter the groundwater or be discharged into the Isar and surrounding water bodies. The person who caused the damage may then be held criminally liable (§ 324 StGB).

In such cases, please contact the sewer station immediately (Tel: 089 661818). This is available to you around the clock, 7 days a week. This can prevent backwater in the sewer and flooding in buildings as well as unnecessary costs for both sides.

If construction sites are not secured in accordance with the regulations, you are in breach of your duty to ensure road safety and must expect corresponding liability consequences.

The applicant is fully liable for any damage to the municipal sewer network caused by construction work.

2 Working in the vicinity of MSE plants | 2.3 MSE construction inspection

faults.

Understanding the plan 4.1 Content and information

Information included

Rainwater and waste water produced in commercial and residential areas, which is made up ofdomestic, commercial and industrial waste water, is discharged via the local drainage systems and channelled to the sewage treatment plant.

Plans contain information on parameters such as the location, size, gradient and flow direction of the sewer and via the following other facilities of the sewer system:

- Sewer material
- Sections or structures (e.g. culvert)
- Surface drainage plants (trenches, road gullies, settling pits, soakaways, swales, pumping stations)
- Isolating devices

Access shafts and maintenance openings

- Ventilation shafts
- Measurement and control technology plants

Planning information



Basic map Building + house no., green area Transport sector

With base map in the back-

Development process/development system: Combined sewage/free fall Pipe-ID: 041224 Material: KLI (brick masonry) NE 700/1050 "Profile type (Ei 2/3)

Profile width [mm]/profile height [mm] 0.233%" Inlet shaft gradient

• Please contact our development office, MSE-421, for applications for house connections and property drainage • As part of the planning process, you can request plans from the divisional information centre if required (spartenauskunft.3k.mse@muenchen.de)

Important Notes

- The position and heights must be checked on site before any construction work is carried out. The cadastral plans are for information (there is no guarantee of accuracy).
- In cadastral plans, the inside diameter is always named and shown (i.e. without the outer wall or protective concrete layer).
- Access to the sewer for on-site inspection must be requested from the sewer operating station responsible.

Understanding the plan 4.2 Control position and coverage

The base depths shown in the plans are not binding. Manhole cover heights are generally not released, as these may have changed due to redesigns of the road surfaces. The overlap heights must be determined by the applicant. he information in the MSE plans is shown in the

coordinate system DHHN 12 (1912).

150 year old sewers

The first sewers were built in the first half of the 19th century.

Due to the age of some of the MSE sewers, their location often deviates from the current zoning.

Please take these circumstances into account in your planning.

Participation of the Munich Municipal Sewage Treatment (MSE) 5.1 When to contact MSE



General information

In the planning and implementation of urban development and private construction measures, the <u>underground supply lines and structures</u> must be checked in advance.

The course and dimensions of the sewer can be called up via the <u>MSE</u> <u>Information</u> on securing our sewer structures and systems is provided here. The cadastral sheet is purely informative; the exact position of the sewer structures must be carefully checked on site (e.g. by hand excavation, search slots, etc.).

In relation to private properties, the sewer may be secured in rem. The property owner has the option of requesting the deed from the land registry. Building restrictions are specified in the deed. These building restrictions must be complied with.

Furthermore, the property owner can check the following, whether a development plan has been drawn up and a sewer protection zone has been defined as a pipeline area. Here too, clarification can be requested in advance via a sewer cadastre can be requested in advance via the <u>divisional information centre</u>.

If no security in rem has been designated, we refer to the sewer protection zone widths to secure our plants. You are welcome to contact <u>MSE's divisional information centre</u> for this purpose. Your enquiry will then be forwarded to the relevant specialist department.

Participation of the Munich Municipal Sewage Treatment (MSE) 5.2 Reminder procedure

Procedure

The Munich Excavation Regulations (AufgrO), administrative regulations on construction work on roads in the state capital of Munich, govern registration, authorisation, coordination and cost accounting.

You can find the excavation regulations in the overview of municipal law. The municipal law is a collection of the statutes and ordinances issued by the City Council of the City of Munich.

In the administrative procedure, a distinction is made as to whether the construction measures are public or private.

Application for public programme operators Every construction project that is ready for execution must be announced by the project organiser through a procedure (reminder or division procedure) to all affected parties. The reminder procedure is started by the measure organiser via a corresponding electronic specialist procedure. This gives the project organiser the sector coordination number or project number.

The processing period is one month. In the case of commemorative procedures or property development, these can be shortened if the existing sewer and, if applicable, the sewer protection zones are shown in the implementation planning or in the open space plan.

Application for private project organisers

Depending on the measures involved, private project organisers submit their applications for special use permits under road law to the following departments:

• to the Transport Department (e.g. for crane installations)

- to the building department (e.g. for construction site facilities and containers)
- to the district administration department (e.g. for outdoor bar areas)

The responsible departments involve the utility companies in submitting a statement. Right-of-way special uses have a shortened processing period of 3 to 10 working days.

For construction times of more than 12 months

In the case of construction measures by private contractors with a construction period of more than twelve months or those with permanent installations in the road surface (with the exception of installations for property drainage) (<u>tz5.bau@muenchen.de</u>) for private contractors (e.g. excavation pit shoring).

Participation of the Munich Municipal Sewage Treatment (MSE) 5.3 Division procedure

Procedure

In general, a divisional procedure can be started **before** the reminder procedure. The divisional procedure does not require a division coordination number and is regarded as a preliminary draft. If this results in a opinion with conditions, this is valid and must be taken into account in the subsequent reminder procedure.

The submitted procedures are checked for pipe conflict, required minimum distances with regard to existing facilities, possible new sewer constructions and groundwater measuring points, among other things. Following a successful review, a final statement is issued with an authorisation. If points of conflict are identified, authorisation may be grantedsubject to conditions or objections The processing period is one month.

Submission of the procedure

You can submit a speciality procedure to Munich Municipal Sewage Treatment at the following email address: <u>3k-spakoo-einwaende.mse@muenchen.de</u>. In the event of an objection, the applicant must draw up a corresponding amendment. A favourable opinion is only issued after compliance with the conditions or objections specified in the procedure.

Division procedure explained in compact form

- Submission of the procedure to <u>3k-spa-koo-einwaende.mse@</u>
 <u>muenchen.de</u>
- MSE-3K checks for existing systems and conflict points
- Preparation of an overall opinion of the MSE by MSE-3K
- Reply to the applicant or the body responsible for coordination within 4 weeks

Participation of the Munich Municipal Sewage Treatment (MSE) 5.4 Transfer of private house connections

The owner is responsible for the maintenance of the connection pipe to the sewer.

During the planning of a construction project, the project organiser must check whether existing waste water house connections are affected by the project using the house files available at the planning information office. Access to the plan can be requested at <u>planauskunft.mse@muenchen.de</u>.

If it is necessary to relocate the existing house connections, sketched plans showing the planned changes must be submitted in advance to the construction supervision department, MSE-423 <u>423.mse@muenchen.de</u>. Work on the property drainage system may only begin after approval by MSE-423.

Work on the property drainage system must be notified by the contractor to MSE-423 at least 24 hours before the start of work using the <u>"Property drainage work commencement notification"</u> form.

Participation of the Munich Municipal Sewage Treatment (MSE) 5.4 Transfer of private house connections

The pipeline trenches may only be backfilled after acceptance by the MSE-423 inspector.

For newly installed parts of the property drainage system (including the sleeves that connect to the existing system), a proof of tightness must be provided in the presence of the MSE-423 inspector.

If a drainage pipe of a private property drainage system is nevertheless found and/or damaged during the excavation work for the measures, please report this immediately by email to <u>423.mse@muenchen.de</u>.



- Notification of work by the executing company 24 hours before the start of work at MSE-423
- Pipe trenches may only be backfilled after acceptance by the MSE's inspection supervisor
- Please report any damage to a private property drainage system immediately by email to <u>423.mse@muenchen.de</u>

Behaviour in the event of faults

What is a fault?

Any damage to the sewer system constitutes a malfunction. Call us if, for example, a street drain (gully) is blocked, in the event of street subsidence due to sewer collapses, in the event of concrete inlets in street drains or defective manhole covers.



Give us a call! Available 24 hours a day, 7 days a week! 089 66 18 18

For general enquiries, you can use the <u>contact options</u> in the overview.

Contacting the sewer station

Our sewer station is your first point of contact in the event of damage (malfunction) around the clock. You can always get in touch with a personal contact there who will discuss the next steps with you.

Please take prompt action! Early reports of damage can significantly reduce the cost of repairing the damage.



MSE employees remove concrete with a demolition hammer



Suspension placement

Information for your planning **7.1 Planning information**

For the planning of construction measures, information on the sewer system can be requested by email via <u>spartenauskunft.3k.mse@muenchen.de</u>.

Pipelines can also be located outside the Munich district and can be queried via the information on the division.

In general, the information on the sewer system is used to provide information on the sewer system in the public road space.

The information does not contain any data on private house connection pipes, no information on the development of the building and no information on groundwater measuring points. The planner must enquire about these from the relevant specialist departments. The respective contact persons can be found in the statement on the authorisation of the procedure.

Information for your planning 7.2 Consideration during planning

The waste disposal area of the state capital of Munich comprises approx. 2,400 kilometres of sewers and approx. 4,000 kilometres of private household connections.

The existing disposal facilities are to be included and taken into account in the planning of the project organiser. The inclusion of all existing systems in the respective planning of measures is a central planning requirement. This enables Munich Municipal Sewage Treatment to recognise any collisionsthat may occur at the planning stage. This means that these can be avoided or ruled out in advance.

The necessary inspections and documentation to preserve evidence must be carried out by the project sponsor, the client or the commissioned construction companies themselves. When carrying out a preservation of evidence, the required <u>entry authorisation for a sewer entry must be observed</u>.

Applicable regulations and ordinances

Overview of the most important regulations

A large number of rules and regulations exist for the execution and realisation of construction work and the existing requirements and associated obligations.

Please note that the regulations contained in the following overview are always valid in their current version and that this overview is not an exhaustive list.

Drainage Regulations

DGUV Regulation 38

Statutes on the use of the drainage facilities of the City of Munich

Accident prevention regulation Construction work

AUFGRO

Administrative order on construction measures on roads in the City of Munich. Excavation regulations (AufgrO)

BETRSICH

Industrial Safety Ordinance

DGUV Information 203-017

Protective measures for earthworks in the vicinity of underground cables and pipes

DWA-M 129

Safety when working in the vicinity of grid systems – Performers Supervisors and those preparing the work: Requirements and qualification

BAUSTELLV

Ordinance on Health and Safety on Construction Sites

ZTV Sewer Construction MÜ Additional technical regulations

Additional technical regulations for the new construction of sewers and pipelines in Munich



5 Participation of Munich's Municipal Sewage Treatment (MSE) | **5.2 Reminder process**

Contact:

Subject	How to contact us	Address
Area office Zoning, zone and geodata management	<u>zonenbuero.tz2.bau@muenchen.de</u>	Building Department – Civil Engineering Department, Central Services Friedenstraße 40 81671 Munich, Germany
Division information Division information on the municipal sewer system	<u>spartenauskunft.3k.mse@muenchen.de</u>	Munich Municipal Sewage Treatment – Operation Friedenstraße 40 81671 Munich, Germany

Planning information Drainage plans, plan management and information (inspection of as-built plans and plan copies)	<u>planauskunft.mse@muenchen.de</u>	Munich Municipal Sewage Treatment – Plan information and management Friedenstr. 40 81671 Munich, Germany
Development Office Property development	<u>421.mse@muenchen.de</u>	Munich Municipal Sewage Treatment – Property Drainage Friedenstr. 40 81671 Munich, Germany
Construction Supervision Drainage pipes of private property drainage systems	423.mse@muenchen.de	Munich Municipal Sewage Treatment – Property Drainage Friedenstraße 40 81671 Munich, Germany
Building Department Private construction measures in public, dedicated traffic area (reminder procedure) Excavations in the road	<u>tz5.bau@muenchen.de</u>	Building department – Civil Engineering Department, Central Services Friedenstraße 40 81671 Munich, Germany
Transport Department Construction measures in public	baustellen.mor@muenchen.de	Transport Department Implerstraße 9

81371 Munich, Germany

Sewer Monitoring General operational faults	<u>089 66 18 18</u>	Munich Municipal Sewage Treatment – Operation
East Sewer Operating Station Operational disruptions in the East area	<u>312ost.mse@muenchen.de</u> 089 637 00 65	Munich Municipal Sewage Treatment – Operation Otto-Hahn-Ring 65 81739 Munich, Germany
Kanalbetriebsstation West Operational disruptions in the West area	<u>312west.mse@muenchen.de</u> 089 818 963 870	Munich Municipal Sewage Treatment – Operation Bergsonstraße 120 81245 Munich, Germany