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Institutional Framework for Water Management in the German Federal State of Hamburg

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Institutional Framework for Water Management in the German Federal State of Hamburg

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Introduction

This document describes the interaction between the different institutions that play a role in dealing with water, focusing on the issues of rainwater management and flood protection. The document will explore the main criteria which guide how responsibility regarding these issues is assessed and allocated. In addition, it describes responsibility regarding the different lifecycle phases of water management plants and water management measures. This study's purpose is to function as a basis for a further, more thorough analysis of the situation, and as an evaluation of the institutional setting within an international comparison.

Rainwater management

By and large, rainwater management in Hamburg is shaped by legal and other regulatory requirements. These differentiate between naturally flowing water (i.e. precipitation that runs off into a natural, non-sealed area) and precipitation from built-up areas and sealed surfaces. In this way, rainwater run-off from built-up areas and sealed surfaces counts as wastewater and has to be channeled away. However, no changes should be made to the course of naturally flowing water unless it causes difficulties along its length. Boroughs' MOR bodies are responsible for these issues.

This document describes in detail the regulations governing rainwater that falls in residential areas. Hamburg's environmental program from 1984 stipulates that when a new development project is being planned, infiltration and delayed drainage of precipitation into bodies of water should take priority over being routed into the sewage system. The following guidelines were enshrined in law:

- §9a: HmbAbwG is exempt from the obligatory use of sewers if the precipitation can be handled in a non-damaging way
- §32a: HWaG is, under certain conditions, permitted to allow precipitation to drain away without explicit authorization. A regulation regarding the handling of rainwater provides further details for the requirements.

Measures for handling rainwater can be sketched out in master plans. The core is formed by Hamburg's wastewater handling plan (FHH 2000). Hamburg is a German state in its own right, and its regional parliament drew up the wastewater handling plan under the guidance of BSU U1 and with cooperation from BSU IB and Hamburg's HSE municipal wastewater authority. The plan makes many statements about wastewater drainage and wastewater technology. Within this framework, it also makes pronouncements about how to drain and handle precipitation. In doing so, it takes a look at conventional routing to sewers as well as decentralized rainwater handling. Along with its basic endorsement for decentralized rainwater management, the plan above all addresses questions regarding the purification of rainwater and the reduction of the diffuse contamination of bodies of water from mixed water infiltrations. The plan outlines basic measures for mixed water and rainwater sewers, but it contains no definite steps or strategies which support decentralized rainwater management.

Regulations regarding decentralized rainwater management can be integrated into management plans in accordance with the §27b HWaG. Management plans are entirely under the control of BSU-U1 (FHH 2006f), as is the entire implementation of the water framework guideline. However, the city boroughs' water authorities, the Hamburg Port Authority and water company Hamburg Wasser also participate when management plans are implemented. Additional professional measures are used to complement and complete the

management plans, including the creation of hydrological models of rivers' catchment areas which are used to gauge rainwater management requirements. In addition, steps regarding decentralized rainwater management and the progressive development of conventional rainwater drainage are also integrated if they contribute to the management targets for bodies of water.

Hamburg currently only makes limited use of the coordination options provided by higher-level plans, and the plans themselves are in part out of date. In addition, they have so far been restricted to general statements, and though they emphasize the basic priority assigned to centralized rainwater management, detailed measures that support or coordinate decentralized rainwater management have not yet been included in the plans.

On lower administrative levels, other plans and planning instruments are available for developing rainwater management concepts. Responsibility and authorization depend on two things: the planning procedure that the rainwater management objectives are part of, and the exact type of rainwater management in question (FHH 2006a and f).

- Fundamental guidelines regarding rainwater management are incorporated into the land development plans. The rainwater management system selected is included in these plans. Because decentralized rainwater management takes precedence over conventional water disposal via sewer systems, new land development plans contribute to establishing decentralized rainwater management at newly developed sites. Land development plans are generally drafted by the borough authorities. The drafting process has to include the participation of specialists from the borough's MOR body. The borough's land development plans have to be approved by BSU-LP (federal state's planning office). Certain plans are exempt, e.g. for closed-off priority areas which are drafted by BSU-LP itself. However, water authorities also contribute to these state-managed plans, in particular BSU-U and BSU-IB.
- According to §9 HWaG, areas can be indicated where rainwater can be prohibited from being routed into the sewer system. In these areas, it can instead be stipulated that rainwater has to be allowed seep into the ground and be retained. Based on legislation from Hamburg's regional parliament, BSU U has transferred the authorization for granting this kind of permission to the city's various boroughs. It is not known how much day-to-day use is actually made of this regulation.
- To provide more details regarding the basic features of the wastewater handling plan and ensure their implementation, Hamburg Wasser laid out programs for extending and renovating the city's sewer system. HSE was responsible for the construction and maintenance of the mixed and separate sewage systems. HSE also supports decentralized rainwater management, but it is not involved in planning and implementing decentralized water management sites and equipment, so it is not taken into account in the sewer extension and renovation program.

A number of different bodies are responsible for implementing rainwater management measures, depending on the selected rainwater management system and on the initial approval processes (FHH 2006f).

- Rainwater management in planning process for land development plans: The land development plan contains the type of drainage, which can be either the conventional removal of water via sewers or some form of decentralized rainwater management. The drainage facilities are generally designed and constructed by a central authority, either by HSE (sewers), by LSBG, or by a private investor (decentralized rainwater management).
- If the rainwater management system is created as part of a larger undertaking for which planning approval is pending, the necessary decisions fall under the "collective

effect" of a planning permission process (according to Hamburg's construction code). These regulations apply to construction that is planned in new developments and in existing developments. This is the case for decisions which are necessary for conventional water drainage, such as connecting to sewers, as well as to permits which are necessary for decentralized water management, such as routing run-off into bodies of water or illustrating rainwater infiltration, both of which are regulated by water-related laws. Each individual borough's planning inspection authority is responsible for handling planning permission. There are exceptions: the HafenCity area, where BSU-ABH is responsible for planning permission, and Hamburg's harbor, where the Hamburg Port Authority (HPA) is responsible for planning permission.

- If rainwater management facilities are slated for renewal or modification but the changes do not fall under the "collective effect" of a planning permission process, the following individual permits must be obtained (FHH 2006f):
 - §32 a HWaG permit-free infiltration: A wide range of intentions do not need any drainage permit, with the aim being to make decentralized rainwater management easier. Details are available in the rainwater drainage regulations. BSU U1 oversees permit-free drainage.
 - § 7 HWaG permit to route run-off into groundwater: A permit which complies with water laws is necessary for rainwater which is covered by regulation, e.g. rainwater from business premises. BSU U1 is responsible for issuing this permit.
 - §7 HWaG permit to route run-off into surface bodies of water: A permit which complies with water laws is also necessary if rainwater is to be diverted to surface bodies of water. Different water authorities are responsible for the permit, and responsibility varies for different bodies of water depending on the particular application. The water in the port, in the Bille and Alster rivers and in the canals in Hamburg's city center is under the jurisdiction of BSU IB 1. Other bodies of water are dealt with by the borough in question.
 - Limited sewer usage fee: A small fee for using sewers is permitted in the event of decentralized infiltration, run-off etc. and there is no connection to municipal rainwater sewers. Applications for fee reduction go to HSE.
 - §7 HWaG permit and connection to sewer network: A permit is needed for connecting to a municipal mixed-water or rainwater sewer. HSE is responsible for this permit for residential construction projects, and other building work is dealt with by BSU IB 3. If water is to be fed into sewers, a permit is generally necessary, but rainwater which has not become in some way harmful is permit-free, which means that this particular step is often not necessary.

Similarly, different authorities are responsible for designing and constructing rainwater management facilities depending on the particular type of management (FHH 2006f):

- HSE takes care of designing and constructing municipal sewers and associated facilities for removing and managing wastewater. As a result, there is no clear allocation of authority for conventional rainwater-channeling facilities.
- Several bodies and authorities can instead be involved in implementing measures for decentrally managing rainwater. LSBG is usually responsible for building municipal decentralized rainwater infiltration facilities. LSBG receives the commission for this from boroughs or from BSU. For what are known as "intended and development plans", the private parties behind the construction work are responsible for designing and installing the facilities for decentralized rainwater management. Registered and certified specialist companies have to undertake their construction. Private or commissioned engineering practices can design the occasional decentralized rainwater management facility, but construction still has to be done by certified specialist companies.

Responsibility for operating the rainwater management facilities also depends on the management process being applied (FHH 2006f).

- HSE is responsible for operating municipal mixed and separated sewers.
- A range of bodies can be responsible for operating and maintaining decentralized rainwater management facilities. If the facilities are municipally owned, the borough in question and LSBG are generally responsible for maintenance. However, operation and maintenance can also be assigned in part to private investors. If decentralized rainwater management facilities are privately owned, their maintenance is also privately performed. Responsibility can be assigned to the individual property owners or to groups, e.g. water associations.

Allocating responsibilities for rainwater management is therefore influenced by two factors. On the one hand, responsibility is assigned according to the selected management process – conventional water disposal or decentralized rainwater management. On the other hand, responsibility also depends on the planning or construction process that forms the framework for rainwater management.

Flood protection

Flood protection has two objectives in Hamburg. Firstly, the city has to be protected from the Elbe bursting its banks: about one third of Hamburg's surface area is at risk from the Elbe flooding. These include areas within the littoral floodplain: the port, industrial and residential areas, parts of the city center and along the course of the Alster. Flooding by the Elbe can cause immense damage.

Secondly, smaller rivers within Hamburg's borders have to be prevented from flooding. This "internal" flooding is caused by man-made alterations to bodies of water and their catchment areas. For example, a lot of natural floodland has been built over and rainwater runoff has been accelerated in proportion to how much of the urban catchment area has been paved over and otherwise sealed.

These two flood protection objectives also have to be differentiated when it comes to assigning responsibilities.

Responsibility for ensuring flood protection along the Elbe is divided up according to location (FHH 2006f):

- The water boards of the Hamburg boroughs Bergedorf, Harburg and Mitte manage flood protection from Altengamme to the barrier at Billwerder Bucht, from Neuland to the barrier at Moorburger Straße, and on the island of Wilhelmsburg. The focus is on dyke maintenance and on aid for protecting the dykes during storm surges.
- The HPA is responsible for tackling Elbe flooding between Cranz and the barrier at Moorburger Straße. Activities focus on planning, designing, constructing and maintaining municipal flood protection facilities and monitoring privately run flood protection facilities in the city's harbor. In addition, the HPA is integrated in dyke protection planning and runs storm surge warning services; it also helps protect dykes.

Responsibility for flood protection along internal waterways is allocated depending on the body of water in question and lies with the relevant borough water authority. This is BSU U for the Alster, the city-center canals and the Bille. The HPA is responsible for the Elbe and harbor, though internal flooding is of less importance here. For the rest of Hamburg's

waterways, responsibility lies with the different MOR bodies of the city's various boroughs (FHH 2006f).

Flood protection is taken into account in a range of high-level plans. Responsibility is subdivided between different bodies (FHH 2006f):

- Hamburg anti-flooding building program (FHH 2006b): In the 1990s, Hamburg's existing flood protection facilities were reviewed with regard to their long-term protection prospects. Scientific and technical analyses were used to calculate a new control value for storm surges along the Elbe. This new control in turn served as the yardstick for recalibrating the flood protection facilities along the Elbe's tidal basin. The flood protection facilities ensure floodwaters 7.6–9 meters above sea level are held back (FHH 2006b). After calculating these fundamentals, a contrast study was carried out between the existing height of Hamburg's flood protection facilities and what will be necessary in the long term, and it was found that they need to be on average 1 meter higher if they are to meet long-term requirements, and they also need to be made correspondingly wider. Construction work was estimated to last five years and cost approx. €600 million. Dykes and flood walls are to be adapted to meet the long-term requirements, as are barriers, locks, pumping stations, sluices and protection towers. Work to strengthen dykes was largely complete by 2007, and the focus is currently on water protection walls and individual buildings. LSBG is responsible for construction work for the flood management program because it is the successor to the flood protection unit of the city's construction and operation authority.
- Management of the Elbe's tidal areas: A regional development concept is currently being drawn up for the entire tidal basin of the Elbe, which stretches from Geesthacht to Cuxhaven. The concept aims to come up with an integrated view of what is necessary when developing the Elbe's tidal basin, and it includes flood protection, environmental protection and the development of Hamburg's harbor. For example, enlarging the floodland available to the Elbe is intended to return tides along the river to their original state and reduce the tidal range. This will also make a long-term contribution to improving flood protection. Implementing the management concept for the Elbe's tidal basin is seen as a long-term project expected to take about 100 years. Within the borders of the state of Hamburg, the HPA is responsible for carrying out the plan, but because it covers an area far larger than the city itself by comprising the entire tidal basin of the river, many other authorities are involved in implementing the project's aims, including the north German branch of the national water and shipping authority (HPA WSV 2006).
- Hamburg climate protection strategy: The needs arising from flood protection along the Elbe and internal waterways are linked in with Hamburg's climate protection strategy. The city's initial climate protection plans were outlined in the timetable *Environment – Targets for Hamburg's future*¹ in 2001. The concept focused solely on the need to reduce CO₂ emissions by reducing energy consumption and generating electricity in a more efficient manner. Hamburg subsequently released the additional document *Climate protection in Hamburg in 2007-2012 – Undertanding climate developments, reducing climate change, managing climate impact*² (FHH 2007). This document targets a double-edged strategy: limiting climate change by cutting CO₂ emissions, and adapting to and coping with the impact of climate change. As a result, it describes the various flood protection measures already undertaken along Hamburg's internal waterways, and it also mentions how flood protection along the Elbe is also necessary.

¹ Umwelt - Ziele für ein zukunftsfähiges Hamburg

² Klimaschutz Hamburg 2007 – 2012 - Klimaentwicklung verstehen, Klimawandel mindern, Klimafolgen bewältigen

This climate protection strategy was rounded off by a second document in 2008 (FHH 2008). This second document stipulates that a strategy for adapting to climate change in Hamburg and which applies to all civic authorities had to be worked out before the end of 2010. Flood protection is mentioned in the section devoted to managing the effects of climate change. In addition, flood protection is to be integrated with the planned strategy for adapting to climate change, a strategy which is to apply to all participating authorities. BSU's climate protection unit is responsible for coordinating the climate protection strategy. Scientific and technical material is contributed by the various civic authorities responsible for different issues.

Other concrete plans relating to flood protection (FHH 2006f):

- In line with §53 HWaG, the boroughs responsible for the different sections of the Elbe identified areas which are vulnerable to flooding, and these areas between the river and the municipal flood protection facilities are made publically known, which then means that special legal provisions apply to them, requiring that changes to the soil surface or construction work have to be approved by the borough under whose authority the particular area falls. Dyke protection units have to be included in core decisions made regarding flood protection.
- In line with §55 HWaG, planning approval is necessary for the construction or substantial alteration of flood protection facilities. Within the HPA's zone of responsibility, the city's economic and labor authority issues this approval; in the other parts of the city, the boroughs' approval units do the issuing. Constructing the flood protection facilities is done by the waterways and water protection unit together with the planning and design unit for anti-flooding measures at LSBG. The city's finance department is responsible for decisions relating to possible compensation cases arising from building flood protection measures. Dyke protection units are included in approval processes.
- In line with §54 HWaG, floodland and bodies of water at risk of flooding also have to be identified for Hamburg's internal waterways. In addition, flood protection plans have to be drawn up according to §54c HWaG. Identification is carried out by the water board responsible for the body of water in question, i.e. BSU U or the borough. Around bodies of water at risk from internal flooding, plans are required to designate areas as subject to flooding or which as necessary retention areas. These areas are classified as floodland, and special legal provisions apply to them, e.g. permits are necessary for construction work, changing the soil surface or changing from pasture to tillage.

The following are the responsibilities associated with maintaining the flood protection facilities:

- Along different stretches of the Elbe, upkeep of municipal flood protection facilities falls to the HPA, the city's boroughs or BSU. LSBG receives contracts from the boroughs and BSU and is therefore integrated into the maintenance projects.
- Owners are essentially responsible for maintaining private flood protection facilities, but the authorities can inspect them to see that maintenance is performed correctly. For example, the HPA assumes the role of supervising private flood protection measures within the area of the port, using legislation governing polders as a guideline.
- To ensure that maintenance is of a sufficiently high standard, municipal flood protection facilities are regularly inspected by the above-mentioned authorities. Dyke protection units are also meant to take part in inspecting dykes. In addition, these units have both the right and obligation to report any damaged flood protection facilities to the appropriate authorities (FHH 2006f), Wilhelmsburg dyke protection unit n.d.).

In the event of a storm surge, defensive emergency management is necessary along with the preventative storm protection measures described so far. The following authorities and bodies are involved in emergency management:

- Essentially, LSBG is responsible for defending municipal flood protection facilities. Its independent subdivision for dyke protection and inspection takes care of this task.
- Dyke protection units provide support for defending dykes and are part of the dyke protection organization as a result. This organization covers activities such as dyke inspection and the strengthening and improvement of dykes in the event of a disaster (Wilhelmsburg dyke protection n.d.).
- Within the harbor, the HPA plays an important role in defensive protection in the event of a storm surge. The HPA runs Hamburg's WADI storm surge warning service and HASTA, the harbor branch of the city's emergency management system. The HPA danger management unit organizes these functions (HPA 2008).
- Hamburg's department of the interior is responsible for emergency management, something which also covers flooding. The disaster, fire and population protection authority is the central emergency management body for the federal state, and it is responsible for coordinating the deployment of the city's various authorities and services in the event of an emergency (FHH 2006f).

Tidal Elbe Forum

Currently, a regional development concept is being developed for the section of the Elbe from Geesthacht to Cuxhaven, which is tidal. The HPA and northern German shipping authority initiated the process behind the creation of the concept for sustainably developing the Elbe estuary. Because this development requires a wide range of interests to be taken into account, an extensive communication and participation process was started, and it is known as the Tidal Elbe Forum. Its aim is to draw up a holistic concept for the development of the Elbe tidal basin that takes the following considerations into account: fishing, environmental protection, tourism, agriculture and shipping (HPA WSD Nord 2006) (www.tideelbe.de). When undertaken early, comprehensive and continuous communication can create synergies and reduce existing conflicts of interest over how the Elbe estuary is to be used. The forum does not have any formal authority over water management, but it does serve as a platform for communication and exchanging ideas.

A range of groups are part of the tidal Elbe forum, and the following are expressly named as partners: Hamburg Port Authority, northern Germany's water and shipping authority, Hamburg's urban development and environmental board, environmental protection associations such as Gesellschaft für ökologische Planung e.V. and Nabu, the work group Maritime Landschaft Unterelbe GbR, the Institute for Coastal and River Engineering at TUHH, and Hamburg University's soil research institute.

In addition, the concept for the Elbe's tidal basin is integrated in a number of scientific, implementation-oriented networks and projects on an supra-regional level, e.g. ESPO (European Sea Ports Organisation), ICZM (Integrated Coastal Zone Management), SedNet (European Sediment Network), HARBASINS (Harmonised River Basins Strategies North Sea) and NEW Delat (port requirements and FFH directive), (Tideelbe).

To encourage the discussion surrounding the concept for the Elbe tidal basin, three meetings have so far been held (www.tideelbe.de). Numerous groups, some of them critical, take part in these events, which are as such an ideal event to discuss the concept. The website www.tideelbe.de has also been created as another communication platform for those

involved in the management of the estuary. The website contains extensive information, data and material about the Elbe's tidal section and how it is managed.

Summary

The institutional setting for water management in Hamburg is complex. There are several different factors which explain how these institutional structures arose.

On one hand, the historical growth and development of institutions and structures has to be taken into account. From the very start of land reclamation along the river in the middle ages, there have been organizations which oversee management of the region's water and earth resources, as well as ones responsible for the dykes along the rivers. Other aspects of the complex institutional setting behind these issues have arisen because of divisions between different disciplines, e.g. between urban planning and technical environmental protection. In addition, different institutional reforms have been carried out in recent years. As a result, the institutions, authorities, boards and bodies were not created in one fell swoop, but they came to be in different ways over time.

In addition to this, private organizations and related groupings have now begun to play an increasing role with regard to water management in Hamburg. These include the water company Hamburger Wasserwerke, drainage company Hamburger Stadtentwässerung, the Hamburg Port Authority, and LSBG. All of these are structured as privately managed bodies, though financial privatization is not really the focus of their activities: Their organizational structures are associated with private enterprises and are an attempt to improve efficiency when carrying out the tasks at hand.

Two basic models dictate how responsibilities are allocated regarding water management. On the one hand, tasks are grouped according to the features in the physical environment, i.e. flood protection duties are divided up between the different rivers and sections of the riverfronts. This ensures that duties are integrated and focused. On the other hand, responsibilities for water management are also allocated according to the tasks that need to be done, as is necessary in the case of water disposal, for example. Duties which pertain to the same matter can be grouped together within administrative structures. This task-oriented distribution of responsibilities, based on related technical aspects, is intended to make administrative structures clearer to outsiders. However, problems arise with the different areas of responsibility, e.g. decentralized rainwater management, and lead to an overlap between feature-related responsibilities and task-related responsibilities.

Outlook

In 2010, BSU joined forces with Hamburg Wasser to create the RISA project for adapting the rainwater infrastructure. RISA's aim is to plan for and tackle the predicted increase in precipitation as a result of climate change.

The project's aim is to maintain the existing high levels of water disposal efficiency, guarantee and improve flood protection along waterways and internal bodies of water, and to define targets for a water management system that is as close to nature as possible. To achieve these objectives, integrated solutions regarding water management are to be established and be better integrated in planning and development.

Along with technical and issue-related contents, planning and communication procedures dealing with the issue of rainwater management should be optimized, and cooperation on the

administrative level should be improved. To achieve this, the legal, institutional and financial framework in Hamburg will be analyzed and, if necessary, suggestions for modifications will be produced. The results of the project are to be included in a "rainwater structural plan" that will, over the next few years, form a guideline for any actions undertaken by administrative bodies, specialists and property owners with regard to rainwater management within Hamburg. Taking its cues from 1990's structural plan for water disposal and waterway protection (FHH 1990), the rainwater structural plan should both illustrate the current state of rainwater management in Hamburg, outline targets for future approaches to rainwater and sketch the necessary technical solutions, as well as how procedures, participation and information are structured on the administrative level. These contents can be supplemented by the addition of necessary legal or institutional revisions.

Project structure and duration:

The RISA project's structure is based on four teams focusing on water management for residential areas, urban and rural planning, transport planning, and waterway planning. This ensures that the most important specialist disciplines from the area of water management are integrated in the project. The teams' briefs will be augmented as necessary with the interdisciplinary topics which are relevant to the work of all four teams: Technical basics, institutions and law, costs and finances, and communication and PR.

The teams will be coordinated by the project management with the help of management support. The top-level steering group for the project includes managers from the following: Hamburg's urban and rural planning board, its environment, nature and resource protection authority, BSU's traffic and roads unit, LSBG, Hamburg Wasser.

A range of higher education institutes and specialist practices accompany the individual teams with technical support:

HCU HafenCityUniversität Hamburg, Prof. Wolfgang Dickhaut; TU Kaiserslautern, Prof. Schmitt; Ing. Gesellschaft Prof. Sieker mbH.

After the project was initiated in 2009, its duration was set at three years, and it was subdivided into the following project phases:

- Initial assessment of the situation and analysis (re. shortcomings) of the framework conditions for rainwater management, definition of necessary actions, development of pilot measures
- Adaptation of framework conditions, development of guidelines, plans for measures, plans for pilot measures
- Identification of targets and assessment of as-is situation, completion of structural plan, implementation of pilot measures

More precise information about the course of the project will soon be available on the RISA homepage. Further information is available at <http://www.hamburg.de/risa> and <http://www.hamburgwasser.de>.

Abbreviations

BSU	Behörde für Stadtentwicklung und Umwelt / Urban development and environmental authority
BSU IB 1	Amt für Immissionsschutz und Betriebe, Abteilung Energie / Hamburg state office for emissions regulation and business, energy division
BSU IB 3	Amt für Immissionsschutz und Betriebe, Abteilung Abwassertechnik / Hamburg state office for emissions regulation and business, wastewater technology division
BSU IB	Amt für Immissionschutz / Office for emissions regulation
BSU LP	Amt für Landes- und Landschaftsplanung / Hamburg state planning office
BSU U1	Amt für Umweltschutz / Hamburg state environmental protection office
BSU-ABH	Amt für Bauordnung und Hochbau / Hamburg state office for building regulations and high-rise construction
HmbAbwG	Hamburg Abwasser Gesetz / Hamburg wastewater law
HPA	Hamburg Port Authority
HSE	Hamburger Stadtentwässerung / Hamburg wastewater company
HWaG	Hamburgisches Wassergesetz / Hamburg water law
LSBG	Landesbetrieb Straßen, Brücken und Gewässer / Hamburg state company for roads, bridges and waterways
MOR	Management des Öffentlichen Raumes / Management of public space
NN	Normal Null / sea level
WRRL	Wasserrahmenrichtlinie / Water framework directive

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