Scope of Services for Engineering Work in Abandoned Mine Remediation

Recommendation of Working Group 4.6 Abandoned Mines · Guidance for preparing specifications of services and terms of reference in the field of abandoned mine remediation · Status: 10 September 2024 (Version E11)

> This work is based on the structure and the service profiles of the HOAI (German Official Scale of Fees for Services by Architects and Engineers) for engineering structures.

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Editors	Stephan Bachmann, Andreas Benthin, Matthias Bock, Geertje Buchwald, Falk Seliger
Contributors	Danny Bodenstab, Tobias Friedrich, Alfred Geers, Michael Heitfeld, Robin Hoffmann, Peter Hogrebe, Jitka Kadlčakova, Tobias Rudolph, Peter Scharf, Emmerich Schuscha, Christina Seidel, Jan Starke, Tobias Steinert, Peter Steinmetz, Goetz-Wolfram Thauer, Ansgar Wehinger, Daniel Wehler, Roy Wings, Dietrich Lutz, Jan Malte Senger, Markus Troger

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Foreword

When engineering services in the field of abandoned mine remediation are awarded, many questions arise for clients and contractors regarding the necessary scope of services, owing to the highly specialised nature of the work. In many cases, freely negotiated contracts are concluded, but the HOAI (here above all the service profile for engineering structures) is also applied, in particular by public clients.

The service profiles of the HOAI are fundamentally not designed for application to abandoned mine remediation and in many cases do not fully reflect the services required within the scope of abandoned mine remediation projects.

Based on the many years of experience of the Working Group Abandoned Mines in this field and the interdisciplinary composition of its members, the following recommendation has been prepared with typical service profiles for abandoned mine remediation, divided into essential services and additional (possibly supplementary rather than additional) services for the 9 service phases (SP; German: Leistungsphasen, LPH) according to the HOAI. This recommendation is intended to serve as guidance/orientation for contracting authorities.

When the HOAI is applied, the basic services are generally prescribed, and the service profiles formulated here can be used in addition to define special services.

In the case of freely negotiated contracts, a specification/service profile adapted to the task in hand can be developed from the structure presented as a whole.

The guidance for preparing specifications of services and terms of reference in the field of abandoned mine remediation was prepared by the Working Group Abandoned Mines of DGGT e. V. (WG 4.6) and DMV e. V. on the basis of the structure and the service profiles of the HOAI for engineering structures. In the WG 4.6 document, the essential services and the additional services for all 9 service phases are presented in a table. For better readability in these conference proceedings, the content has been transferred into text form.

Service profiles by service phase

SP 1 Basic evaluation – abandoned mine remediation

Essential services	Additional services
• Clarification of the task and delimitation of the planning area • Determination of the given boundary conditions • Site inspection • Compilation of relevant further planning intentions, including formulation of decision aids for the selection of other specialist parties involved in the planning • Determination of the scope of services and of the necessary preliminary work (e.g.	• Selection and inspection of similar objects • Photo documentation of site inspections • Determination of special requirements not laid down in standards (e.g. digitisation programmes and guidelines, geographic reference systems to be used) • Identification of contemporary witnesses • Research in specialist databases (drilling data, shaft register, geotechnical events or similar) • Historical research in archives (e.g. state

Essential services	Additional services
preservation of evidence, crown hole calculations, surveying services) • Research and compilation of previous planning, investigation or remediation documents and expert reports (e.g. mine plans, investigation reports, mining damage analyses (BSA), subsoil investigations, geophysical result reports, backfill documentation, contaminated site reports or similar) • Collection of data from (online) databases (e.g. precipitation data, runoff, infiltration, receiving waters, designated FFH, nature and environmental protection areas, utility plans, development plans, contaminated and suspected UXO areas, etc.) • Summary, explanation and documentation of the results	archives, mining archives) or other sources (e.g. internet)

SP 2 Preliminary design – abandoned mine remediation

Essential services	Additional services
• Analysis of the basic data • Coordination of the objectives with the boundary conditions under public law as well as third-party planning • Investigation of possible solutions and their effects on structural and constructional design, suitability and economic efficiency, taking into account environmental compatibility, in particular the assessment of species protection • Procurement and evaluation of (official) maps, mine plans and previous planning, investigation or remediation results, expert reports, as well as data from specialist databases and further historical material, etc. • Procurement and evaluation of data from (online) databases • For objects requiring structural design: clarification of the task also in the field of structural design • Provision of the work results as a basis for the other specialist parties involved in the planning, as well as coordination and integration of their services • Clarification and explanation of the essential subject-specific interrelationships, requirements and conditions • Preparation of a hazard analysis with definition of zones of influence • Development of a remediation concept including	• Supplementing the preliminary design documents on account of special requirements and with regard to special measures beyond the usual extent that arise from legal provisions and the generally recognised rules of technology • Preparation of as-built plans of utility lines • Preparation of a digital mine plan, georeferencing • (Mine) surveying and (continued) keeping of mine plans • Preparation of a time and organisation plan • Preparation of cost-benefit analyses • Obtaining access permits, etc. • Inspections (including underground) with documentation of the results • Installation and operation of measuring stations • Preservation of evidence (expert reports, photo documentation) • Crown hole calculations • Interviews with contemporary witnesses and documentation • Planning/preparation of tender documents, including obtaining declarations of consent from landowners/tenants, participation in the award and construction supervision, including evaluation of the results for relevant investigation measures (e.g. boreholes for crown hole calculations and/or intermediate

Essential services	Additional services
consideration of alternatives • Preliminary consultation with authorities and other specialist parties involved in the planning on approvability; where applicable, participation in negotiations on subsidies and cost sharing • Participation in explaining the remediation concept to third parties at up to three meetings • Cost estimate, comparison with the financial framework • Preparation of a schedule with the essential activities of the planning and construction process • Summary, explanation and documentation of the results	investigations, e.g. shaft location, possibly geophysics)

SP 3 Design planning – abandoned mine remediation

Essential services	Additional services
• Development of the design on the basis of the preferred option from the preliminary design, by means of drawings to the required extent and level of detail, taking into account all subject-specific requirements • Graphic representation of the overall design at different scales for meaningful traceability and legibility • Provision of the work results as a basis for the other specialist parties involved in the planning, as well as integration and coordination of the specialist planning • Explanatory report using the contributions of other specialist parties involved in the planning • Subject-specific calculations, excluding calculations from other service profiles • Participation in explaining the provisional design to third parties at up to three meetings and revision of the provisional design • Preliminary consultation on approvability with authorities and other specialist parties involved in the planning • Cost calculation in accordance with DIN 276, including the associated determination of quantities • Cost control by comparing the cost calculation with the cost estimate • Updating of the schedule (planning and construction services) • Determination of the essential remediation/construction phases, taking the	• Clarification of property matters • Elaboration of special optimisation measures beyond the usual extent that arise from legal provisions and the generally recognised rules of technology • Updating of cost-benefit analyses • Demonstration of the imperative reasons of overriding public interest for the necessity of the measure (e.g. habitat and species protection in accordance with Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7)) • Determination and justification of the eligible costs, participation in drawing up the financing plan and preparation of funding applications • (Mine) surveying and (continued) keeping of mine plans • Participation in administrative agreements and special agreements (e.g. participation rights and obligations of affected parties, associations, etc.) • Preparation of the species protection report (recording, assessment and explanation), description of the object with explanation of compensation and replacement measures in accordance with the impact mitigation regulation under nature conservation law

Essential services	Additional services
construction period into account • Summary, explanation and documentation of the results (as an explanatory report using the contributions of other specialist parties involved in the planning)	

SP 4 Approval planning – abandoned mine remediation

Essential services	Additional services
• Preparation and compilation of the documents for the necessary procedures under public law, approval procedures or consents, including applications for exceptions and exemptions, as well as necessary negotiations with authorities, using the contributions of other specialist parties involved in the planning • Completion and adaptation of the planning documents, descriptions and calculations • Consultation with authorities • Participation in approval procedures, including attendance at up to four explanatory and discussion meetings • Participation in drafting statements on objections and suggestions in up to ten categories	• Participation in obtaining the consent of affected parties • Preparation of documents for special review procedures • Technical and organisational support of the client in the event of objection procedures, conciliation and legal proceedings • Amendment of the approval documents as a result of circumstances for which the planner is not responsible • Participation in explanations to citizens/the public • Preservation of evidence before the start of remediation (expert assessment of existing damage to third-party property within the zone of influence of the remediation, including photo documentation)

SP 5 Detailed design – abandoned mine remediation

Essential services	Additional services
• Preparation of the detailed design on the basis of the results of SP 3 and SP 4, taking into account all subject-specific requirements – in particular conditions arising from a species protection report and other conditions under approval law – and using the contributions of other specialist parties involved in the planning, up to a solution ready for execution • Graphic representation, explanations and calculations belonging to the object planning, with all details necessary for execution, including detailed drawings at the required scales • Provision of the work results as a basis for the other specialist parties involved in the planning, as well as coordination and integration of services • Updating of the schedule (planning and	• Cross-object, integrated planning of the construction process • Coordination of the overall project • Preparation of sequence plans and network plans • (Continued) keeping of mine plans; subsequent georeferencing

Essential services	Additional services
construction services) • Checking of the necessary assembly plans for the building structures and structural installations planned by the object planner (e.g. shaft covers) for conformity with the detailed design	

SP 6 Preparation of the award – abandoned mine remediation

Essential services	Additional services
• Preparation of specifications of services with bills of quantities by trade, including contract conditions • Determination of quantities by individual item • Coordination of the interfaces with the specifications of services of the other specialist parties involved in the planning • Determination of costs on the basis of bills of quantities priced by the planner • Cost control by comparing the bills of quantities priced by the planner with the cost calculation of SP 3 • Advice on the selection of subject-specific evaluation criteria, references, etc. for an award procedure • Compilation of the tender documents	• Detailed planning of construction phases in the case of special requirements

SP 7 Assistance with the award – abandoned mine remediation

Essential services	Additional services
• Obtaining tenders • Checking and evaluation of the tenders, preparation of the price comparison • Coordination and compilation of the services of the specialist parties involved in the award • Participation in negotiations with bidders • Preparation of the award proposals, participation in the documentation of the award procedure • Comparison of the tender results with the bills of quantities priced by the planner or with the cost calculation • Compilation of the contract documents • Participation in the award of the contract	• Checking and evaluation of alternative tenders with effects on the agreed planning • Preparation, checking and evaluation of price comparisons according to special requirements • Technical preparation of and participation in review procedures • Checking and evaluation of documents that must be analysed according to an evaluation matrix (scoring)

SP 8 Construction supervision – abandoned mine remediation

Essential services	Additional services
• Supervision of the execution of the object for conformity with the permits and/or consents, the detailed plans and the specifications of services as well as the generally recognised rules of technology and the relevant regulations • Supervision of the local site supervision, coordination of the specialist parties involved in object supervision, one-time checking of plans for conformity with the object to be executed and participation in their release • Preparation, updating and monitoring of a schedule (bar chart) • Cost control, checking of claims for additional payment • Supervision of the execution of load-bearing structures with reference to Section 63(1) nos. 1 and 2 HOAI with the proof of stability • Keeping of a site diary • Initiation of and participation in putting the executing companies in default • Determination of costs, comparison of the final costs with the contract sum • Acceptance of construction work, services and deliveries and of other specialist parties involved in planning and object supervision, identification of defects, preparation of minutes on the result of the acceptance • Supervision of the tests of the functionality of the system components and of the overall system • Application for and participation in official acceptance inspections • Handover of the object • Listing of the warranty periods • Supervision of the rectification of defects identified on acceptance of the construction work • Compilation and handover of the documentation of the construction process, the as-built documents and the maintenance instructions	• Preparation of final documentation • Preparation of as-built plans and (continued) keeping of mine plans, subsequent georeferencing • Local site supervision • Plausibility check of the setting-out • Supervision of the execution of the construction work • Participation in briefing the contractor on the construction measure (kick-off meeting) • Supervision of the execution of the object for conformity with the documents released for execution, the construction contract and the client's specifications • Checking and assessment of the justification of claims for additional payment • Performance or initiation of control tests • Supervision of the rectification of defects identified on acceptance of the services • Documentation of the construction process • Participation in joint measurement with the executing companies and checking of the measurements • Participation in official acceptance inspections • Participation in the acceptance of services and deliveries • Checking of invoices, comparison of the results of the invoice checks with the contract sum • Participation in supervising the testing of the functionality of the system components and the overall system • Participation in supervising the execution of load-bearing structures for conformity with the proof of stability • Preservation of evidence after completion of remediation (expert assessment of damage in comparison with the situation before the start of remediation, including photo documentation)

SP 9 Object support – abandoned mine remediation

Essential services	Additional services
• Technical assessment of the defects identified within the limitation periods for warranty claims, but at most until the expiry of five years after	• Supervision of the rectification of defects within the limitation period

Essential services	Additional services
acceptance of the service, including the necessary inspections • Inspection of the object to identify defects before the expiry of the limitation periods for claims for defects against the executing companies • Participation in the release of securities	