

# **The Ecological Land Management of the Ruhr Regional Association RVR – A New Path to the Preservation of Open Spaces**

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**Keywords:** Ecological land fund, land management, impact mitigation regulation, compensation measures, pooled space, Ecological credit account, Ecological credit points, forest conversion, compensation measures in forests, soil sealing, unsealing of surfaces, nature and landscape

## **SUMMARY**

In order to encounter the consumption of nature and landscape and hence also the decline in the number of species in Germany, the impact mitigation provisions of the Federal Nature Conservation Act were created in the former Federal Republic of Germany in 1976. According to the German Federal Nature Conservation Act, measures must be taken for ecological compensation in all places where nature and landscape are jeopardized by the construction of residential, commercial and traffic areas, for example through the elimination of habitats and soil-sealing. For any intervention in the natural environment, the polluter is responsible for the planning and implementation of the appropriate measures of compensation. In 1998, the Rules of Intervention were integrated into the German Baugesetzbuch (Town and Country Planning Code) to serve as a planning instrument. This amendment to the law enabled the temporal and spatial decoupling of impact and compensation, in other words, compensation measures can be implemented spatially separate from the site of impact. Following the amendment of the Landscape Act of North Rhine-Westphalia 2005, compensation measures in forests are possible in particular with interventions in forests and deteriorations of forest-related functions.

Hereby the range of services includes the provision of suitable areas for compensation measures for communities and other project sponsors, the implementation of compensation measures and a 30 years maintenance service rendered by the RVR, a long-term guarantee for compensation measures by the RVR after 30 years, the opening of ecological compensation accounts for RVR properties thus being effective, time- and cost-saving “turnkey offers”, the creation of pooled space for the targeted and planned provision of suitable areas, the common land management for compensation measures for communities, the adoption of designated compensation areas of third parties to the assets of the RVR and the continued maintenance by the RVR, the implementation of measures out of payments from compensatory allowances as well as the compliance with quality guidelines and the targets of the German Association of Land Agencies (Bundesverband der Flächenagenturen in Deutschland e.V.).

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## **1. THE RUHR REGIONAL ASSOCIATION**

The Ruhr Regional Association (RVR) is the oldest and largest association of its kind in Germany. It was founded in Essen on 5th May 1920 as the „Ruhr Coal Area Settlement Association" (SVR) and legally authorized by the State of Prussia. At the time national and local town planning had reached crisis levels in the Ruhrgebiet and it was generally agreed that certain problems could only be solved by cooperation and an umbrella body. The Problem was to limit the damage caused by the meteoric and reckless seizure of land for industrial purposes and to improve living conditions by easing transport problems and environmental pollution. Robert Schmidt, the intellectual father and first director of the Association, devoted his energies to three planning targets which are still relevant today: putting forward proposals for allocating specific uses to areas throughout the region, setting up an efficient traffic network, and interlinking green spaces.

On 1st October 1979 the Association of Local Authorities in the Ruhrgebiet (KVR) was inaugurated as the successor to the SVR on a modified legal basis. Exactly 25 years later, on 1st October 2004, the KVR was swallowed up by the newly-formed Ruhr Regional Association (RVR) whose headquarters are in Essen. Like its predecessors the RVR is a public body regulated by its elected organs. The RVR area comprises eleven municipal authorities. By means of a levy they each contribute funds to finance the Association which also receives project help from the European Union, the German Federal Government and the Federal State of North-Rhine Westphalia.

### **1.1 The Authority's Organs**

The RVR works on a federal legal basis. Its organs are democratically legitimized. The organs are the Association Assembly, the Association Board and the Association Director. The Association Assembly is made up of elected representatives of the municipal councils and district assemblies, their Lord Mayors and Heads as automatic members, as well as eleven advisory members from important groups in the region like employers' organizations, trades unions, sporting, cultural and nature protection associations and local authority equal rights offices.

The Governing Board of the Association consists of leading civil servants from member bodies and the general secretaries of the political parties represented in the RVR. The Association Director is elected for a period of six years by the Association Assembly after an open request for nominations.

### **1.2 The Land Management of the Ruhr Regional Association**

Since its foundation in 1920, the Ruhr Regional Association (RVR) considers the preservation of space to be one of its most important regional tasks. Experience has shown that the transfer of open spaces into the ownership of the public sector is a very effective way of preservation and development of open spaces.

That is why, since the 1960s, the association uses the independent acquisition of land as a powerful tool for the preservation of open space. Today the overall area of the RVR's property amounts to approx. 18,000 hectares. Two thirds of these areas are forests. Thus the RVR is one of the greatest municipal land and forest owners in the whole of Germany. Besides that the RVR mostly acquires waste land and conversion areas for ecological restoration.

### 1.2.1 Real Estate Property Transactions

In 2006 the Management Board clearly defined the fields of activity with respect to the acquisition of land in the "Guidelines of Property Management of the RVR". According to these guidelines the association primarily purchases land from institutional and private owners for sports and tourism facilities, stuck piles for continued development (stuck pile tourism, local recreation), for the construction of cycle and foot path connections (e.g. railway tracks), for tourism purposes (e.g. tracks for railway museums), for reforestation and forest development and for ecological development measures (e.g. compensating measures). The guiding principles for the then following ecological restoration are geared towards the "quiet recreation", the promotion of biodiversity and more and more the use of renewable energies.

### 1.2.2 Management of Funds

For the financing of the acquisition of land and the subsequent construction of, for example, cycle paths, stuck piles, landmarks, the RVR makes use of different support programmes. The project-related communication with the fund providers (such as local governments and state ministries) over the total duration of the project, from the application form to the report on expenditure of funds, is an important element of land management. Depending on the location, kind and extent of the projects the following support programmes are available: Ökologieprogramm im Emscher-Lippe-Raum (ÖPEL) (approx.: *Ecological Programme in the Emscher-Lippe Region*), Städtebauförderung (approx.: Urban Development Funding), Kommunaler Radwegebau (Cycle Track Construction by local authorities), Tourismusförderung Erlebnis.NRW. (Promotion of Special Events Tourism.NRW). In those cases where a co-financing by the European Union is possible, the RVR makes use of it. Now and in the future it is absolutely necessary to provide respective support programmes. In the period from 1960 to 2010 the Association received a total of approx. 250 mio. Euros from supporting funds for regionally important projects, which, together with its own capital resources, will - as an investment in the future - inure to the benefit of the structural change of the Metropolis Ruhr.

### 1.2.3 Surveying

The acquisition, administration as well as the possible sale of properties in the framework of land management require a number of surveying services such as surveying of properties (partitions) for acquisition and sale, boundary advice in the context of real estate management, the

survey of landfill sites on behalf of third parties, the elaboration of site plans, construction monitoring, survey monitoring of stuck pile development, stake-out in construction projects, and the vocational training for surveying technicians.

#### 1.2.4 Real Estate Management

The management of a real estate of approx. 18,000 hectares makes high demands on the required human and technical resources. The management of a portfolio of approx. 6,000 parcels in 1,000 land registers comprises, among others, the grant of use for real estate and buildings to third parties, the implementation of requirements of the nature and landscape conservation guidelines on farmland owned by the Ruhr Regional Association, the smooth management of the Association's real estate, the safeguarding of public safety and order and the enforcement of rights in real estate of third parties in favour of the Ruhr Regional Association.

## **2. THE ECOLOGICAL LAND MANAGEMENT OF THE RUHR REGIONAL ASSOCIATION RVR**

With the entry into force of the new Building Code, at the end of 1998, the Ruhr Regional Association decided to offer its properties appropriate for compensation measures as a new service to its members and third parties - calling the programme: "Ecological Land Management". In the course of land management the appropriate areas owned by the Association are offered to companies, investors and member communities for compensation measures, since especially in the urban agglomeration of Metropolis Ruhr there are only few areas for compensation available.

The steady demand for compensation areas by the members of the Ruhr Regional Association and other organisation attests, that this service of the Ruhr Regional Association represents a strategic land management and active property policy and can thus give strong support to its members in facing the increasing spatial resource conflicts in safeguarding the future. The Ecological Land Management of the Ruhr Regional Association supports the target-oriented strengthening of the preservation and development of open spaces in the region, which is a statutory duty of the Association, for example by further networking and ecological upgrading of the green spaces typical of the Ruhr Region, its landscape parks and the pits.

### **2.1 Legal Basis**

In the Federal Republic of Germany the Impact Mitigation Regulation is the important instrument of nature conservation for the protection of nature and landscape as well as the scenic qualities of the landscape in the whole of Germany. The regulation ensures that the balance of nature and landscape will not be worsened by disadvantageous measures, and aims to counteract the abusive use of nature and landscape and the decline in the number of species caused thereby. It provides that the feared impairment of the complex interaction of nature and landscape (the functioning and efficiency of the natural balance) have to be avoided and that unavoidable impairments must be compensated or replaced by the polluter (owner or holder of rights of use / project investor).

The Impact Mitigation Regulation is a part of the first general framework of the Federal Na-

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ture Conservation Act (*BnatSchG*) of November 10, 1976. Subsequently, the implementation of the law was ruled in the Nature Conservation Acts of the federal states (Bundesländer). The Impact Mitigation Regulation has already been changed several times, and sometimes significantly, by the Investitionserleichterungs- und Wohnbaulandgesetz (approx.: Investment Easement and Residential Land Law), the so-called Building law compromise, of 22 April 1993, the Gesetz zur Änderung des Baugesetzbuches und zur Neuregelung des Rechts der Raumordnung (BauROG) (approx.: Law for the Amendment of the Building Code and for the Reorganisation of the Building and Regional Planning Law (BauROG) of 1 January 1998, as well as by the Gesetz zur Neuregelung des Naturschutzes und der Landschaftspflege (approx.: Law for the Reorganisation of Nature Protection and Landscape Conservation) of 2002. The amendment to the law of 2005 brought a substantial change. The amendment provided for the temporal and spatial decoupling of impact and compensation, in other words, compensation measures can now be implemented spatially separate from the site of impact. Further more, compensation measures can be realised in advance in so-called Ecological compensation accounts and these measures resp. Ecological credit points can be allocated to later measures. Another innovation applies to forest areas. Compensation measures in forests, and in particular with impairments of forest-specific functions, are given a first priority status. Following the amendment of the Landscape Act of North Rhine-Westphalia 2005, compensation measures in forests are possible in particular with interventions in forests and deteriorations of forest-related functions. With the Gesetz zur Neuregelung des Rechts des Naturschutzes und der Landschaftspflege (approx.: Law for the Reorganisation of Nature Protection and Landscape Conservation) of 2009, entering into force on 01 March 2010, nature conservation was fully ruled by national legislation. This was also followed by several amendments to the Impact Mitigation Regulation and had practical consequences.

## 2.2 Objectives

The Ecological Land Management of the Ruhr Regional Association aims to the target-oriented strengthening of the preservation and development of open spaces in the region, a statutory duty of the Association. Thus the ecological land resources may make a contribution to the ecological development or the Association's properties, as well as to a spatial bundling of greater connected areas, in order to re-nature large-scale axes of ecologically important spaces and to link the regional green corridors, the landscape parks and the mine tips. The consolidation of compensation areas enhances an effective and cost-effective maintenance and development management for compensation measures. In cooperation with the members of the Ruhr Regional Association, we offer a common land management for compensation measures, which is also designed to secure the future of company sites and the development of companies in towns and cities, of construction development sites and infrastructural improvements. Of the total property of 18,000 hectares owned by the Ruhr Regional Association, around 1,200 hectares farm land and more than 4,000 hectares of the forest stand are suitable for Ecological Land Management.

## 2.3 Scope of Supply

The Ruhr Regional Association offers a variety of products for the conservation of landscape and forests on its own land and in its own pool of measures. The Ecological Land Management offers a complete package of compensation measures to project sponsors, in keeping with the required quality standards of the Bundesverband der Flächenagenturen in Deutschland (BFAD) (approx.: Federal Association of Land Agencies in Germany), of which the Ruhr Regional Association is a member. The complete package comprises the securing of land as well as all engineering services such as planning, preparation, monitoring, accounting and quality control. The compensation and maintenance works area carried out against payment by Ruhr Grün – a kind of owner-operated company of the Ruhr Regional Association. The areas provided for compensation measures remain in the assets of the Ruhr Regional Association, they will be maintained by Ruhr Grün, also after the 30 years period financed by payments. The implementation of compensation measures as well as the establishment of Ecological credit accounts and land pools is carried out in close cooperation with the responsible authorities of the members of the Association and with the regional forestry offices.

Due to the Impact Mitigation Regulation the towns and cities designate particular areas for compensation measures on the territories of the Association in the structure plan. With the designation of these compensation territories and the other designated open space planning by the Ruhr Regional Association and its members (such as landscape plans, open space planning, regional green corridors etc.), the association reviews its real estate with respect to whether these spaces are located in the compensation areas, whether they are appropriate for compensation measures and how they can be ecologically upgraded. These basic conceptual aspects are also taken into consideration for the acquisition of further open spaces and their possible use as compensation areas.

There is a variety of compensation measures for the ecological upgrading of land, such as, for example, reforestations, layout of forest edges, conversion of forest stands to near-natural conditions, maintenance of old and dead wood stands, planting of trees, hedges and field trees, layout of orchards, extensification of farmland, production-related measures in agriculture, measures for the development of seam structures, unsealing of surfaces, layout or restoring of waters as well as measures for the sustainable improvement of biotope and species protection.

This service of the Ruhr Regional Association has some advantages – as well as for the project sponsor as for the region. The process of construction is accelerated, as the project sponsor does not need to do time-consuming research, negotiation and planning activities. The compensation measures are implemented on the appropriate properties of the RVR, a sustainable securing of the areas through effective and long-term maintenance measures, and the securing of functionality and space monitoring are guaranteed. The project sponsor does not need to care for anything. The region's open spaces can thus be strengthened and developed in a target-oriented way through spatial bundling and concentration of compensation measures in regional key regions. Dysfunctional eco-systems can be restored and the scenic quality of the landscape can be upgraded. The effectiveness of nature protection is strengthened by a reasonable regional involvement and a target-oriented linking of near-natural areas.

## 2.4 Results 1999-2011

During the past 12 years, the Ruhr Regional Association was able to provide compensation areas in almost all member communities. Since start-up of the programme they have concluded more than 80 contracts for more than 113 hectares of land, and a financial volume of nearly 5.6 mio. Euros for the provision of land and the implementation of measures, inclusive of maintenance services for a period of 30 years. To facilitate a more flexible use of the tool Land Management in the future, the Ruhr Regional Association has already "collected" approx. 16 hectares of implemented measures and more than 1 mio. Ecological credit points in Ecological Credit Accounts – and has built up pools of appropriate spaces for compensation in nearly all towns and cities.

The increasing demand for compensation areas by the members of the Ruhr Regional Association and third parties is a proof of evidence that with this service the Ruhr Regional Association provides a strategic land and active property management in the Ruhr region with respect to the impact mitigation regulation and that they are giving strong support to their members who are facing more and more spatial use conflicts in the process of safeguarding the future of their towns and cities.

## 2.5 Example Projects

The following sections review the ecological land management, by means of some practical example projects.

### 2.5.1 Pooled Space for Compensation Measures in Forests

The Ruhr Regional Association manages approx. 13,000 hectares forest areas in North-Rhine Westphalia and thus is one of the largest municipal forest owners in this federal state. In 2006 and 2007 the Ruhr Regional Association initiated a study on the possibilities and costs for the ecological improvement of forests, in order to offer the additional product "Ecological credit points in Forests".

With this study, and in particular by the data-based processing of results, but also by the coordination with the responsible authorities, the Ruhr Regional Association can easily hold its ground on the "compensation market".

#### 2.5.1.1 Particular Legal Requirements for the Preparation of the Study

Since the draft amendment of the Landschaftsgesetz (Landscape Act) of North-Rhine Westphalia in 2005, in case of impairments of forest functions also the development of forest stands to near-natural conditions is recognized as a compensation measure. Therewith also the extent of compensation measures on farmland should be reduced to the absolute necessary minimum.

In accordance with the „Rules for compensation in forest areas“ concretising the law of the NRW Ministry of the Environment and Conservation, Agriculture and Consumer Protection, compensation areas and measures in forests must derive from a specialised concept. In principle, compensation measures in forests may be recognized for all kinds of interventions, as far as the legal provisions for a functional and special compensation resp. replacement are given.

This applies in particular to interventions in forests and the impairment of forest-specific functions. But, however, it is possible to compensate for any intervention on natural environments outside the forest by compensations in the forest, as far as these compensations are necessary in well-forested areas (proportion of forest more than 40 %) resp. in communities in conurbation areas with a high proportion of forest area in open space.

### 2.5.1.2 Content and Methodology

On the basis of legal provisions and the requirements resulting thereof, we created a methodological concept for the ecological upgrading, set up a catalogue of proposals for areas and measures to be taken, and made a rough estimate of costs and for the calculation of Ecological credit points.

The basis for the uniform definition of appropriate areas and upgrading measures were the digital technical and geological data of the forestry and the digital forest type map of North-Rhine Westphalia – as a reference for the “natural” variety of tree species. Of the comprehensive upgrade measures defined in the above-mentioned regulations, two of them could be analyzed by now based on these basic data. The first measure is the “Upgrading of forest stands untypical for habitats” and the second “Upgrading of forest stands by accounting for protection of natural dynamics”. A total of approx. 4,000 hectares of forest areas have been identified as upgradeable, 3,900 hectares thereof have been proposed for measures for the “Upgrading of forest stands untypical for habitats”, and nearly 100 hectares are already valuable with respect to nature conservation and are suitable for assessment for the protection of the natural dynamics by closure of site. For these 4,000 hectares of forest areas the calculation of Ecological credit points has been made on the basis of the current assessment model of the Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen (LANUV) (approx.: Regional Office for Nature, Environment and Consumer Protection) of North Rhine-Westphalia. These calculations showed approx. 125 mio. achievable Ecological credit points.

### 2.5.1.3 Examples of Improving Measures

The upgrading of forest stands untypical for natural habitats requires different packages of measures – depending on the age and composition of the existing stand and the desired composition of the targeted stand.

The development of an actual stand of single-layer old-growth conifers to a 30-year-old pole wood or minor wood from near-natural hardwood species improves the ecological value by 3 points/m<sup>2</sup>. For that the following measures are necessary – depending on the respective environment of the reviewed forestry:

- Use of approx. 30 % of the existing stand and screening of 70 % of the area,
- Planting of near-natural hardwood species on 30 % of the area,
- Pre-planting of near-natural hardwood species on 70 % of the area,
- Use of the top layer in two further stages.

For some of the above-mentioned measures the creation of a nearly 100 % near-natural broad-leaved forest within 30 years, the forest management must incur higher efforts in comparison to the cultivation of mixed stands by means of the natural regeneration of the common spruce.



In addition in broad-leaved forests the forest management will only much later generate a positive contribution from timber harvesting. These additional costs and losses must be offset against the proceeds of the sale of marketed Ecological credit points, if the ecological improvement measures shall have a positive effect.

#### 2.5.1.4 Possible Use of the Study

For the Ruhr Regional Association and the authorities involved the study has the following advantages:

- The evaluation of Ecological credit points according to a transparent specialist concept and on a uniform basis of data for the forests of the Ruhr Regional Association between Wesel and Hamm creates greater transparency for the buyers of Ecological credit points and for the authorities involved.
- The database-supported overview of the spatial distribution of the different proposals for upgrading is the basis to finding areas which are suitable in terms of location and function prior to planned interventions (the compensation of interventions should therefore in most cases take place within the boundaries of a town or a communal district).
- Thanks to the future-oriented concept, the targets of the forest management can be met in a target-oriented way, professionally and structurally integrated.
- As costs have also been established, the basis is laid for an economic implementation.

The proposed measures shall be carried out successively, not only in the case of concrete interventions, but shall also be implemented at an early stage: In line with the Landscape Act of North-Rhine Westphalia and the applicable regulations for Ecological credit accounts, these measures can then be recognized as Ecological credit accounts, in close coordination with the responsible authorities of the members of the Ruhr Regional Association.

#### 2.5.2 Pooled Space/ Ecological Credit Account Auberg

In the south-west of the city of Mülheim/Ruhr lies the former military training area "Auberg", which was abandoned by the German army at the beginning of 2006. In December 2004, the Lord Mayor of the city of Mülheim asked the Ruhr Regional Association to examine, whether the Association would purchase the whole area, as the city itself, due to its financial situation, was not able to buy the area. A fragmented sale according to economic interests of the user would be the end for this last unique and wide-spread meadow landscape in the western and central Ruhr Region.

The "Auberg" in the western Ruhr region is a unique landscape and cultural area of approx. 120 hectares. It mainly consists of grassland areas (approx. 74 hectares) and forests (approx. 44 hectares). For this reason the city of Mülheim was convinced that the "Auberg" might be a project of special interest and suitable for acquisition by the Ruhr Regional Association – which over the decades is committed to securing open spaces and green corridors in the Ruhr region by means of acquisition and development. In January 2008, the Association acquired the "Auberg" with a view to optimise the variety of this ecologically valuable landscape and to provide long term recreational and leisure facilities suiting local conditions, at the same

time taking into consideration the interests of nature and landscape protection, and also of leisure and culture (connectivity to the Ruhr valley and the Ruhr Valley Cycle Path).

In close cooperation with the National Agency for Environmental Protection the Association initiated the elaboration of a concept for ecological development indicating compensation measures for interventions in nature and landscape taking account of the use for recreation.

For decades the acquired area had been used for military purposes and had thus, thanks to the extensive usage pattern, preserved its regionally important landscape scenery and, with respect to the proximity to a metropolitan region, its unique character, which in other places has been lost long ago due to the intensive agricultural and forestry-related activities. The site is shaped by forests and grassland, orchards, water bodies, fallow land, hedges and other valuable structures. The grasslands with its relatively rare low-nutrient sites are diversely structured and are extensively used in large parts.

Because of the proximity to the urban agglomeration, the well developed network of paths for walkers and riders and a diverse surface structure with some magnificent views, the territory provides important over-local recreation facilities for the people of the western core of the urban agglomeration.

Apart from the importance as a local recreational area, botanical and zoological examinations have shown that the area has an outstanding importance for nature conservation. In particular the damp and wet meadows host a variety of endangered plants. The amphibian fauna is represented by almost all potential species, some of which are endangered in the Ruhr region. The whole region is of significant importance for the protection of biotopes and species, so that the potential of these areas should absolutely be used for the further development of the natural habitats and biocoenoses.

Currently the uses are as follows:

The meadows are mown and partly grazed by sheep in spring and summer. Even prior to the end of use by the "Bundeswehr" (German Armed Forces), people had free access to the territory. Thanks to the opening of the terrain numerous leisure, sport and recreational uses could establish (such as cycling, jogging, hiking, dog walking, riding, kite flying etc.). And for years people had been doing model flying on designated and authorised areas outside the training times of the army.

An integral element of the purchased land is a constructed area of approx. 1.3 hectares. This is the former "Geländebetreuungsstelle" (approx.: site reception office) of the "Bundeswehr", consisting of a homestead ("Növerhof") with a complex farmhouse and two open machine halls and a historic half-timbered farmhouse with a garden (orchard). For this homestead the Ruhr Regional Association and the city of Mülheim are setting up a utilisation concept.

As from spring 2008, many discussions on the further development of the area have been made between the Agency for Environmental Protection of the City of Mülheim, the Ruhr Regional Association and different user groups. There was (and is) an urgent need for action with respect to visitor guidance, in particular in the area of existing and planned nature preservation terrains, and in particular because of the increasing use since the end of use by the German army by unleashed dogs, dogs schools, riders as well as walkers and bikers.

The draft of this ecological development concept was finished at the beginning of 2009, discussed in detail with the city of Mülheim, then discussed in the Committee for Environment and Energy, in the district committee and was then presented to the Landschaftsbeirat (ap-

prox.: landscape advisory council) who approved it.

The planning target of the development concept is as follows:

In order to prevent conflicts between the ecological land development and the requirements for recreational functions, some additional regulatory measures have been proposed in the sense of a nature-compatible recreational use. The related planning of measures is based on findings made by current inspections/ mappings as well as on the evaluation of the existing documents.

The planned measures for the ecological upgrading and recreational use are divided into those measures connected with an eligible upgrade (compensation measures), and those serving mainly for the purpose of recreational use, thus not leading to a quantifiable upgrade with respect to the rules of intervention under nature conservation law.

Measures for the development/upgrade of woods are planned on an area of approx. 16.2 hectares. The near-natural forest conversion holds the biggest share in it. This includes the successive removal of alien tree species (not typical for the habitat), their replacement by indigenous species, the undergrowth planting of single age forests with domestic species and finally by increasing the structural variety. Furthermore it is planned to layout forest fringes and, in particular south of the "Auberg", the layout of rows of trees and shrubs as barriers between territories for ecological development and recreational areas.

For managing, the extensive grasslands are divided into three important sectors:

- Areas with complete elimination of fertilizers and without complementary feeding outside the pastures; probably sheep grazing (low-nutrient sites).
- Areas with minor permitted maintenance fertilisation, extensive use of meadows on previously nutrient-rich sites
- Rewetting areas with measures for the maintenance/development of humid grasslands.

In principle the application of fertilizers and pesticides is forbidden for all areas.

Existing orchards shall be conserved permanently/be replanted and realigned. The planned realignment areas amount to approx. 2.5 hectares.

Measures on water bodies include the improvement of passability by removal of a pipe work (upper courses of the Hambach river) and by the construction of a water clearing system on the upper courses of the Schmitterbach river.

Measures for promoting nature-compatible recreational uses include, among others, the provision of an area for unleashed dogs of approx. 5 hectares (and mandatory leashing of dogs in all other areas), the closure of trails while improving the existing network of paths for visitor guidance, preservation of the two model flying sites, installation of information boards on the main roads to the "Auberg" as well as provision of information material.

All coordinated measures amount to a total of 1.5 mio. Ecological credit points. For these points the City of Mülheim will open an Ecological compensation account for the Ruhr Regional Association, which means, that for the performance of measures the points are credited, and may, on demand (compensation of interventions) be offset against payment.

### 2.5.3 Ecological Compensation Account/Pooled Space Ammunition Depot Hünxe

At the end of 2001, the Ruhr local government association (now Ruhr Regional Association) bought the land of the former ammunition depot in Hünxe, district of Wesel (start of construc-

tion works: 1977, opening: 1981) of approx. 47.2 hectares, from the Bundesvermögensamt (approx.: Federal Property Office). The fenced-in premises, used for military purposes from 1981 to 1999, are located on the territory of the community of Hünxe. The distance to the center of Hünxe is approx. 5.5 km. The territories are lying in a wide-spread connected forest area, which on the one hand provides excellent leisure and recreation functions, and which, on the other hand, is of high importance for the protection of nature and landscape. Like a barrier the ammunition depot lies between the northern and southern surrounding landscape. Currently the area is characterized by the predominant forest stand (partly near-natural, partly cultivated by forest management), and the corridors of military roads, the numerous above-ground bunkers (46) and the functional buildings (guardhouse, accommodation, workshop) in the entrance area. The premises stretch out over a length of approx. 1.9 km in west-eastern direction and a width between 130 to 280 m.

In the purchase agreement the Ruhr Regional Association had to undertake the demolition of all buildings on the property at its own expense – with the exception of the bunkers – and within 5 years from notarisation of the purchase agreement.

The community of Hünxe and the district of Wesel welcomed the purchase of the terrain of the former ammunition depot by the Ruhr Regional Association, particularly in consideration of the fact that private investors were planning other kinds of use, which would jeopardize the valuable ecological situation of the surrounding near-natural habitat. The acquisition of this property shall facilitate a near-nature and locally suitable usage of the ammunition depot – by removal of the buildings and the preparation and re-naturation of the area. The bunkers shall be prepared and maintained and as a refuge for small animals.

From the beginning the Deutsche Steinkohle AG (DSK) (approx. German hard coal company) had been interested to get these measures acknowledged as compensation for interventions at other places – by the implementation of appropriate development measures – as defined by the landscape and forest law. In cooperation with the KVR as the owner and the district of Wesel they have initiated an overall concept for an ecological development of the ammunition depot. This concept outlines the possibilities and developments, which shall facilitate the reintegration of these fenced-in former military premises into the forest landscape and an ecological optimization.

The planning and the implementation meanwhile carried out is particularly geared towards the conversion to a calm near-natural area with special biotopes on the basis of existing policies and options, the reforestation on former functional areas, the preservation and near-natural development of the forest, demolition and unsealing of the buildings and street surfaces. The future development will be carried out in accordance with the requirements of forest management. On site is planned the reconnection of the disrupted network of walking trails. The bundle of measures based on the overall concept lays the foundations for coordinated activities for the decommissioning of abandoned premises, for forestry care and use and for the development and maintenance of habitats being of particular importance for the protection of biotopes and species. These measures will be carried out with respect to the preservation and promotion of the faunistic population, particularly of reptiles, bats and bird species.

In the end this means the increase and the re-naturation of forests, the development of special sites and thus a reasonable increase with respect to the ecological value.

The following measures are planned:

- Demolition of existing buildings and premises in the entrance area, soil application and modelling for the reconstruction of the forest (already done),
- Unsealing of existing functional areas, partly reconstruction of the soil surface resp. the morphology (partly done),
- Site-related reforestation of former usable space (for example visibility zones, lawns, dirt tracks and other); (partly done),
- Redevelopment of coniferous wood populations to near-natural hardwood forests (partly done – ongoing process),
- Development of complex-structured, hot and dry, low-nutrient special sites for reptiles, insects, keeping of flight corridors, layout of fringes (partly done – ongoing process),
- Development of heath land and wetland areas (especially in the eastern part), (partly done),
- Preparation of bunkers for potential bat habitats (partly done),
- Local reestablishment / opening of historic roads.

The renaturation of the Rutenbach, crossing the area in the western part, shall be carried out as a stand-alone measure in association with the development of the Gartroper Mühlenbach.

The number of ecological credits points for this concept of measures amounts to approx. 580,000. This has been mutually agreed by the landscape authority and the forest authority. In some cases the measures are suitable to serve as compensation for losses / impairments in other sites, in accordance with the applicable landscape and forest law.

The implementation is carried out successively. As far as possible, all suitable material (for example road surface material, pavements and other) will be recycled on site in the course of the implementation of measures. For non-usable material (for example from demolition of buildings, former petrol stations) a waste disposal concept has been prepared and implemented.

The first concrete measures by means of soil deposits - partly unsealing and local reconstruction of the drastically damaged former forest stand – were started at the end of 2003. Further measures such as demolition of buildings and reforestations were completed by the end of 2006.

## 2.6 Digital Data Processing

With regard to the development of the concepts for ecological upgrading for the different pooled spaces of the Ruhr Regional Association the data have been processed with the aid of GIS. The system already defines basic aspects of the computed data processing. The Ruhr Regional Association intends to refine this software tool so that all pooled spaces and measures can be integrated therein. This also includes the implementation of the 5 most important ecological evaluation systems used in the area of the Association with their associated lists of biotypes and evaluation points. In order to meet the requirements of Geodata management, the user-oriented interface "Management of Compensation Areas" will be designed as a database solution on the basis of the Microsoft-Office component Access, which is connected via the ArcSDE server to the Geodata database of the Ruhr Regional Association.

The user interface has been specified in agreement with the Ruhr Regional Association, so that the structure of the "Management of Compensation Areas" is shown in single steps. Thus,

for example, timely, spatially and qualitatively limited queries and aggregations according to different selectable criteria which are necessary for the management of compensation areas can be reached by pushing a button.

All required functionalities of the software tool are implemented in a data model. For this all existing data from the official land register of the Ruhr Regional Association can be integrated into the structure of the database via a 1:n relation. The prepared biotype catalogues of the 5 most important evaluation methods within the area of the Ruhr Regional Association are integrated via a 1:n relation. The check-in and check-out of Ecological credit points for contractually agreed suitable areas for compensation of interventions is documented in the software tool.

The visualisation of a selected compensation area from the user interface is done by the maps generated from ArcGIS using the ArcSDE structures. The basis hereof is the geometries of the underlying parcels from the land register of the Ruhr Regional Association together with their respective IDs. The compensation areas can be visualised in ArcGIS in a differentiated way and according to a variety of attributes in the database.

## **2.7 Outlook**

In the meantime, cities, companies and other real estate owners also provide appropriate areas and Ecological credit points and thus have become competitors for the Ruhr Regional Association.

That is why the Association can only hold its ground on the market, as long as it maintains the quality with respect to space planning, implementation of measures and maintenance, provides the necessary human resources and EDP technical equipment, and as long as it carries on acquiring large quantities of land in advance suitable for an ecological upgrading.

## **3 CONCLUSION**

The increasing demand for space for the implementation of compensation measures resp. Ecological credit points since the launching of the Ecological Land Management of the Ruhr Regional Association in 1998, as well as the contracts concluded since then and the income resulting thereof for the provision of land, preparation and maintenance of compensation measures show, that this service of the Association is a tremendous achievement. The Ruhr Regional Association does not only upgrade its areas, as stipulated in the Association's law, but also refinances all measures inclusive of the long term maintenance and the costs for the acquisition of land.

## **BIOGRAPHICAL NOTES**

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1987 - 1989 Employee, Westdeutsche Landesbank WestLB, Muenster  
1989 - 1991 Postgraduate Studies: Housing and Real Estate Management, FH Lippe  
1991 - 2007 Manager and Department Head, different Land Registry Offices in Lower Saxony  
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### **Publications**

#### **Automatisierte Erstellung von Gruppengutachten als begründete Ableitung von Anfangs- und Endwerten**

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#### **Der virtuelle Feldvergleich – Visualisierungssystem in der Gebäudevermessung**

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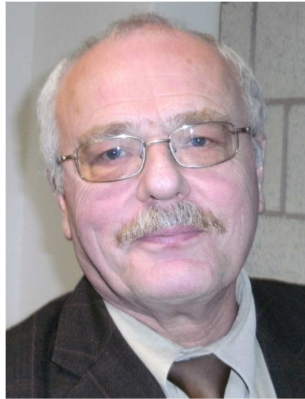
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