

## **ECONOMIC EFFECTS OF RAISING THE WATER LEVEL**

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### **Introduction**

An important measure in nature restoration projects is raising the water level, which reduces agricultural yield, changes the operational management for the farmer and decreases the commercial value of the land.

The implementation of this restoration measure has consequences for ownership and land use, which are adequately compensated.

### **Materials and methods**

To determine the changes in ownership and land use, classification plans are drawn up to compare the situation prior to and after completion of the project. First the cultural value of the soil types (soil texture, drainage and profile development) and recoverable value of the parcels are determined. After the measure is realised, a new proposal for the cultural and recoverable value is calculated by means of an accurate assessment of the yield losses that will occur as a result of the water balance changes.

The classification plans determine the contribution and consolidation for each owner and user. The contribution relates to the situation before, the consolidation concerns the situation after implementation. Compensations are awarded by comparing contribution and consolidation.

The compensations for the farmers or the land users are in proportion to the impact of the measure on the operational management.

### **Results and discussion – case land development for nature project ‘Uitkerkse polder’**

The project area ‘Uitkerkse polder’ is located in the domain of the municipalities Blankenberghe (borough Uitkerke), De Haan (borough Wenduine) and Zuienkerke in an open polder area between these. It is about 402 hectares in size and mainly consists of low-lying meadows that are criss-crossed with many ditches.

The Uitkerkse polders are part of the Nature 2000 network, a European network of protected areas. It is especially valuable because of its wintering geese, its salty meadows and because of the meadow birds that breed here.

Over the last century, the nature value (diversity of both fauna and flora) in the polders has strongly declined because of the intensification of agriculture. The meadow bird populations as well as the well-established ditch vegetations and the moderately rich

grassland have strongly declined. The loss of as a result of this intensification must thus be compensated by an optimum organisation of a number of core areas such as the Uitkerkse polder.

An important measure in the nature restoration of the Uitkerkse polder was raising the water level.

Realization of these measure changes the ownership and usage situation. This is suitably compensated.

In order to cost the modification in ownership and usage situation, classification plans are drawn up for the situation before the execution and after completion of the project. Before drawing up the classification plans, the cultural and recoverable value of the soil types is determined for both situations (before and after realization). The soil types with a comparable cultural and recoverable value are grouped in value classes. The results of this are the classification plans.

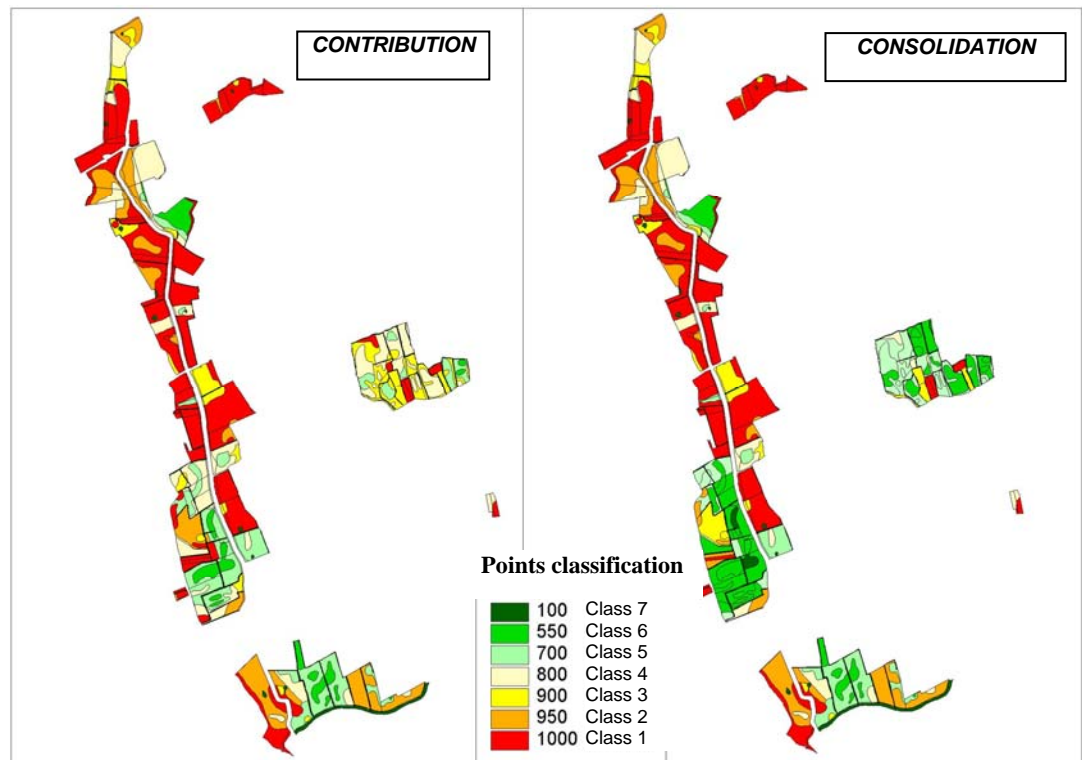


Figure 2: classification plans for the current situation (contribution) and the new situation (consolidation)

It is customary to award 1000 points to the soil type in the area where the overall suitability for agricultural uses is the highest, e.g. to that soil that is most suitable to the predominant cultures in that area.

The classification plans are used in determining the contribution and consolidation for each owner and user. The contribution relates to the situation before execution, the consolidation concerns the situation after execution. On the basis of a comparison of contribution and consolidation, the compensations are awarded.

1. Determination of the contribution (situation before execution of the project)

For each owner and user, an accurate inventory is drawn up of the cultural and recoverable value of all parcels that are part of his contribution to nature.

The contribution is determined by means of multiplying the surface area of each value zone per owner and user according to the cadastral data with the number of points for that particular value zone. The result is therefore a certain amount of points per owner and user.

2. Determination of the consolidation (situation before realization of the project)

When determining the consolidation, the following is taken into account:

- a change in area of land,
- a change in cultural and recoverable value.

The change in area of land is a result of the realization of a number of measures such as the layout of the banks along the Blankenbergse Vaart or the construction of a green belt.

The cultural and recoverable value of parcels changes in those zones where the water level is raised.

The new proposal of the cultural and recoverable value is realized by means of an accurate assessment of the losses in yield that will occur as a result of the changes to the water balance.

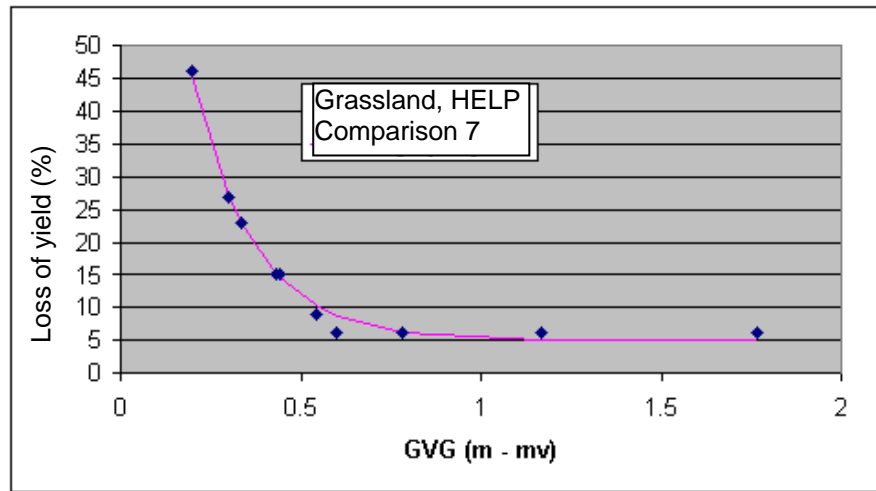


Figure 1: Loss of yield for the purpose of GVG (meters under ground level) for soil type "clay with heavy sub soil" and for grassland

The consolidation is determined by means of multiplying the surface area of each value zone per owner and user with the number of points for that particular value zone. The result is therefore a number of points per owner and user, which will be less than at contribution.

### 3. Determination of the compensation

Comparison of the total amount of points at contribution and at consolidation per owner and user enables a financial settlement to be drawn up.

As part of this financial settlement, a value per point needs to be determined. This is achieved by keeping track of the sales prices within the project area.

The compensation as received by the owner is equal to the difference in points at contribution and consolidation multiplied by the value per point.

The compensation as received by the user is equal to the compensation for the owner multiplied by a factor. This factor reflects the impact of the measure on the operational management. This factor becomes maximally 1, when it is possible to establish a large impact to the operational management.

The compensations are regulated by the nature act.

## Conclusions

An important measure in nature restoration projects is raising the water level, which reduces agricultural yield, changes the operational management for the farmer and decreases the commercial value of the land.

Bij determining the total amount of points at contribution (before the measure) and at consolidation (after the project) per owner and user, it is possible to calculate a financial settlement and to compensate the land user and owners according to the proportion of the impact on the operational agricultural management. The project 'Uitkerkse polder' was a pilot project in Flanders. Meanwhile the method has been applied in other projects (Meetkerkse Moeren, Oostends Krekengebied) and has proved its value.

### **Acknowledgements**

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