PIANOo DUTCH PUBLIC PROCUREMENT EXPERTISE CENTRE

RIJN EN IJSSEL WATER AUTHORITY WELCOMES VISITORS IN A CIRCULAR INSPIRATION CENTRE

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The Rijn en IJssel Water Authority opens the world's first Kaumera extraction installation. Visitors of the installation are received in the circular inspiration centre. The centre shows how the Water Authority turns circularity into practice: by transforming waste flows into raw material.

Source: https://kaumera.com/grondstoffabriek/fotoalbum/

Facts and figures

Organisations: Rijn en IJssel Water Authority
Product: Building as inspiration centre and core of the raw materials plant in Zutphen, the Netherlands, for the production of Kaumera. Procurement of the physical building.
Size: € 1.4 million (including other civil engineering works)
Tender period: April to July 2018
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The project

The Dutch Rijn en IJssel Water Authority has built an installation for the production of Kaumera in Zutphen. Kaumera is a new biological raw material produced from sludge granules. The projects consists of two parts: the construction of the building (inspiration centre) and the extraction installation itself.

Ambition of the Rijn en IJssel Water Authority

The Rijn en IJssel Water Authority has a clear vision on the production of raw materials from the water chain. Using the latest water treatment technologies, the water authority processes home and industrial waste water flows to produce raw materials.

It is the ambition of the Rijn en IJssel water authority not to let the launch of the world's first Kaumera extraction installation go unnoticed and to attract many interested parties to the site. The new building must support the story of the installation and the contribution of the water authority to the circular economy: transforming waste flows into raw materials. This means that the Inspiration Centre must utilize raw materials from the water authority to give concrete expression to circularity. It must also make the extraction process visible to visitors from different backgrounds, from primary school pupils tot highly skilled technicians. They are received in the visitors' area, where they are informed about the raw materials plant and the circular character of the building. The tender challenged the market to focus as much as possible on innovation, creativity and cooperation.

The procurement process

The Rijn en IJssel water authority decided to issue a restricted invitation to tender and make a dialogue part of the process. They invited three parties that already had a framework agreement with the water authority.

For this tender, the notion of circularity has been made concrete in three topics with various subtopics:

- From waste flows to raw materials
  - Circular architectural screen
  - Water as source of the building
  - Reconsider use of materials
  - Multifunctional design
  - Reuse of waste materials
  - From waste to raw materials
- Nature
  - Natural materials
  - Use water in design
  - CO_2 purifying materials
  - Nature as starting point
  - Biobased materials
  - Green facade
- Energy-neutral
  - Zero-energy building
  - Embedded energy

The procurement process consisted of the following stages:

Dialogue stage:

Prior to the dialogue stage the draft the assessment and award guidelines were shared. The assessment and award guidelines were addressed in four dialogue sessions. The first session was a plenary session at the site of the plant to provide all parties with an accurate impression of the project. This was followed by two individual sessions and concluded with a joint dialogue. In these last three sessions, the complexity of the tender and the reference design was an important topic for discussion, as were the high ambitions with regard to sustainability and circularity.

Award stage

The contract was awarded according to three criteria:

1) Providing a materials passport for the Inspiration Centre, which must include the following elements:
   - Weight and volume of building materials
   - Percentage of new and reused materials for the production of products (% of volume)
   - Functional and technical product life cycle
   - Waste scenarios for reuse, recycling, incineration or dumping of products (% of volume)
   - Ability to detach the product from the neighbouring product
   - Location of the construction materials in relation to the building section/component
2) Pricing, with a breakdown of the fixed contract price and specification of the materials used.
3) Agreement on functional requirements.

The award criteria have been defined as follows:

- GC1: Definition of a circular assessment framework. The bidders were asked to indicate their considerations with regard to circularity and the corresponding ambitions.
- GC2: Action plan to achieve the project ambitions (from waste flows to raw materials, nature and zero-energy). This had to include, for instance, how the cooperation with other fields of expertise is implemented.
- GC3: Providing a visual experience of how the Water Authority's raw material flows will be demonstrated to the visitor of the Inspiration Centre.

The award criteria were weighted as shown in figure 1:

AWARD CRITERIA	SUBCRITERIA	WEIGHT
GC1: Circular assessment framework		25%
GC2: Action Plan	GC2.1: Circularity	15%
	GC2.2: Cooperation & flexibility	30%
GC3: Experience	GC3.1: Visibility of the extraction process (NEO-alginate)	10%
	GC3.2: From waste flows to raw materials	20%

Figure 1: Award criteria and weighting factors

The assessment was performed by a team consisting of a project manager, purchasing officer and technical expert of the Water Authority.

Results

The main circular achievements are:

- The top 5 of raw materials from the water authorities (including Kaumera, phosphorus, cellulose) are clearly reflected in the design;
- Second-hand materials, such as staircases and furniture;
- Ceiling tiles are partly made from cellulose and have been largely redesigned based on cradle-to-cradle principles;
- In the finishing stage a lot of biobased materials and solutions were applied;
- Designed for disassembly with dry joints.

Success factors

The main success factors for both the run-up to the tender and its execution are:

- A proactive attitude of the contracting party and the participating consultants, that leaves ample room for ideas and suggestions in the dialogue stage and from the building team.
- One of the ideas was to apply raw materials from the water authorities in wall tiles. The tiles were developed by an artist, who incorporated vivianite (raw material of phosphorus) and Kaumera in the glazing, with a surprising result.
- Finding circular solutions for the 'shopping list' that would not affect the budget was a joint effort, and involved raw materials from the water authorities, reusable materials and biobased solutions.
- A pragmatic approach and clear focus ensured that the process was completed according to schedule with good results.
- The procurement department has been a key factor in this achievement. They have contributed proactively to the project and exploited the flexibility that the rules allowed.
- If sustainability had not been explicitly incorporated in this tender, there would not have been a building team during the execution stage. Due to the circular nature of the tender this turned out to be the optimal approach.
- External know-how and inspiration has greatly contributed to the use of second-hand and biobased materials.

Setbacks and lessons learned

- A tight deadline put pressure on the project and required a quick response from the market. This affects the available options and level of ambition. With more time, experience and research might have produced other and perhaps even more circular results, for example more reused materials instead of biobased and/or new, disassemblable products.
- The procurement was based on a final design. In retrospect, the tender could have been based even more strongly on functional specifications, which would have created more room for different sustainable solutions.
- The experience with circular building is still limited, especially within existing framework contracts that are not geared to this approach. This means that embedding circularity in the project requires an extra investment in time.

Tips

- Make sure you are familiar with the rules and regulations with regard to tendering. In many cases, there is more room for innovative constructions and solutions than you might think at first glance.
- If you want a fixed-price contract, make sure you have an up-to-date and well-substantiated cost assessment that you can use as a reference. This provides clarity with regard to your expectations and assumptions.