The Rijnmond-Drechtsteden region requires an enormous amount of primary material for different construction activities but also needs to deal with a high amount of waste material which needs to be integrated in the urban ecosystem.

In order to reduce the material consumption within the sand and gravel metabolism of the Rijnmond-Drechtsteden region, options need to be found in alternatives for the continuous demanding drivers such as fill sand for subsidence and for recycling opportunities of waste flows from dredging or demolition waste, see ‘A material conscious approach for urban design’ and ‘Catalogue of Solutions’.

Overall, Circular sand metabolism is a multi-scalar system where regional demand and supply is embedded in the local urban designs. These improvements require new flows and supplies which results in industrial spatial transformation of environments elsewhere.

A material conscious approach for urban design

Material conscious approach for urban design integrates the four stages of a construction process from the life-cycle perspective (situation, construction, maintenance and end-of-life) with its related material consumption for each construction where the material efficiency strategies will be applied on: prevention, reuse, recycle. A crucial tool is the LCA scheme which clarifies the material consumption of a design.

Spatial intervention regarding material consciousness are integrated in the Catalogue of Solutions where each intervention contributes to a material efficiency strategy within the construction ecosystem. These intervention relate to the conditions within the sand and gravel metabolism. The designs seek to reduce material demand, reuse structures or recycle material through spatial solutions where each design is integrated in the Catalogue of Solutions where each

Examples of material conscious design approach

Examples of sand sensitive solutions

Catalogue of Solutions

Material conscious approach for urban design integrates the four stages of a construction process from the life-cycle perspective (situation, construction, maintenance and end-of-life) with its related material consumption for each construction where the material efficiency strategies will be applied on: prevention, reuse, recycle. A crucial tool is the LCA scheme which clarifies the material consumption of a design.

Spatial intervention regarding material consciousness are integrated in the Catalogue of Solutions where each intervention contributes to a material efficiency strategy within the construction ecosystem. These intervention relate to the conditions within the sand and gravel metabolism. The designs seek to reduce material demand, reuse structures or recycle material through spatial solutions where each design option has an different spatial, systematic and environmental impact.