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Construction of a horizontal Greywater Filter

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Women Engage for a Common Future

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Scheme

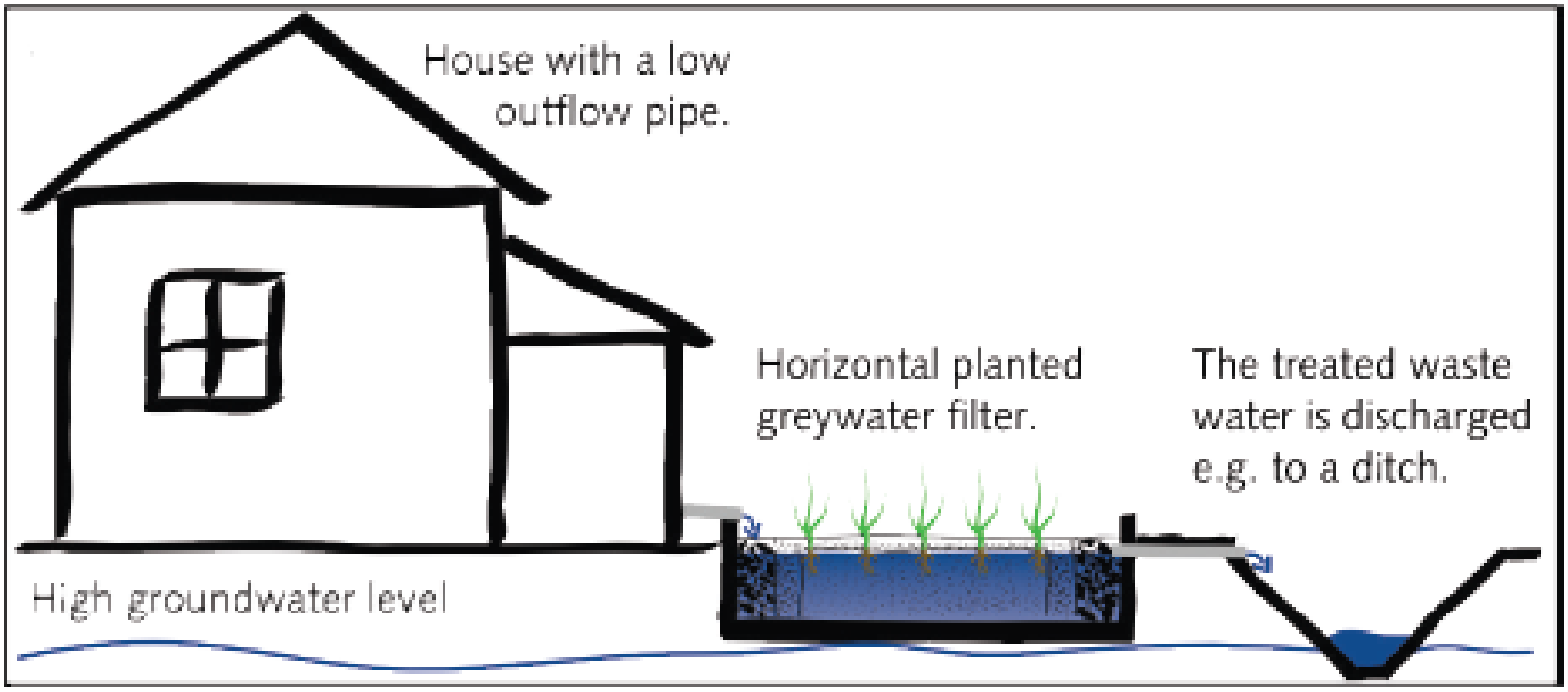

Fig. 1: Scheme showing the functioning of a horizontal greywater filter system

→ Water is flowing horizontally across vertical gravel and stone layers

→ Height difference between inflow and outflow pipe of the filter is minimum 5 cm

Filter Design

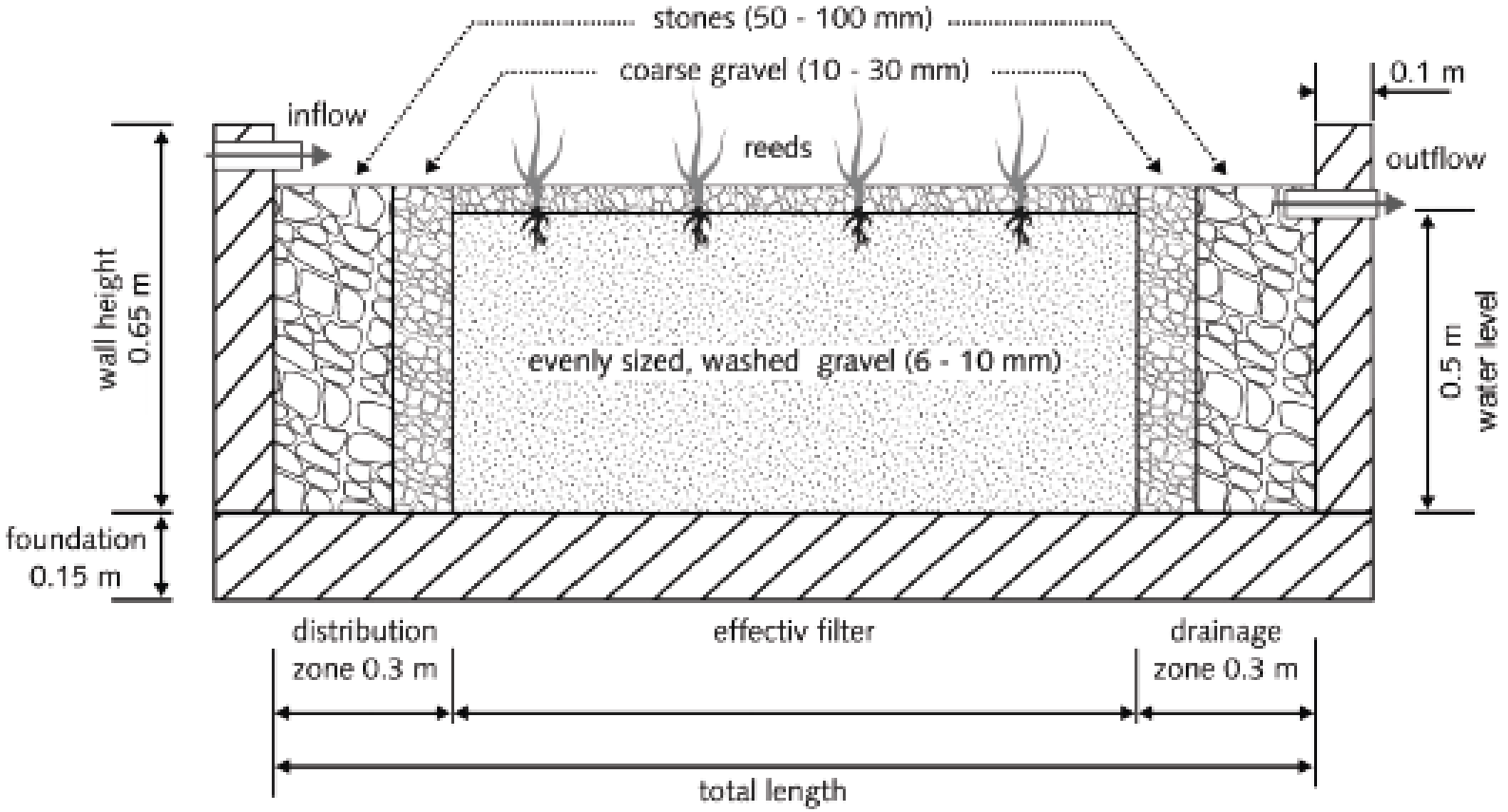

Fig. 2: Cross section of the horizontal, planted greywater filter design

1. Step: Constructing the concrete basin

- Inner height: 0.65 m
- Filter body: 0.55 m
- Min. height for inflow 0.55 m, for outflow 0.5 m
- Slope at least 2%
- Length at least 1.5 times the width:
  - Total length = 0.3 m distribution zone + 0.3 m drainage zone + effective filter
  - effective filter area coherent with amount of greywater. Minimum area: 2 m² per 100 L/day greywater

2. Step: Arranging the layers

Gravel and stones have to be arranged in vertical layers:

1. Distribution layer from 0.2 m of stones (50-100 mm grain size) and 0.1 m of coarse gravel (10-30 mm grain size).
2. Evenly sized, washed Gravel (6-10 mm) as filter media. The length is relative to the number of people and sinks connected to the filter.
3. Drainage layer from 0.1 m of the coarse gravel and 0.2 m of the stones.

The filter media is covered by a 5 cm layer of coarse gravel

- With gravel filled filter before planting:

3. Step: Creating a connection to ditch

- Treated greywater can be discharged into surface water (WHO guidelines 2006)

4. Step: Planting the filter

- Use of swamp plant species like reeds, which are naturally accuring in the area
- 4 - 8 seedlings per m² of filter
- Planted onto the washed gravel

End Result

Good to know

- Planted soil filters have a startup phase of 2 weeks during which the bio film develops
- Reeds need 1 or 2 vegetation periods to spread over the whole surface area
- In case of kitchen wastewater (much fat, oil, grease) a pretretment is recommended to avoid clogging problems

Thank you for your attention!

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