

# Information about the construction of the Yeshe Khorlo 3-year retreat houses in Umbusi, Estonia.

## Works necessary to do before or alongside with the construction of the retreat houses

### Road

Approx. we would need 400 meters of road in length. The width should be at least 2 meters. This makes 800 m<sup>2</sup>. Besides that, a little parking lot of 10x5meters (50m<sup>2</sup>) is necessary. It has to be decided if a small road up to each retreat house is necessary. The road built in a proper way would require 30-40cm of earth removal and to be filled with stones with the fraction 32/64. Below that goes geotextile and on one side of the road, a trench for rainwater removal should be excavated. We have now an offer of 13, 000 euros for roadworks and 6000 euros on the account to partially cover the cost of the road works.

**Cost: 13,000 euros.**

### Water

- A deep drilled well is necessary. It has to be around 30 meters deep and with the construction permit. An estimated cost is 1600 euros. (As of September 2020, money is here but the access to the land with the heavy vehicle has been impossible up to now. The road has to be constructed before the well can be drilled).
- The water pump and pipe works will be an extra cost. Pump's cost with hydrophore is around 1200 euros. Excavation of two main trenches for the water pipes that the water could reach each individual house costs roughly 30 euros per meter. Pipes have to be layed around 1,5m underground (to avoid freezing during the winter). The work has to be done by excavator.
- The approximate length of the pipes of the water line (pipes should reach the kitchen and each individual house (there are now four foundations made and one trench for two houses is necessary). The distance from the well to the closest retreat house is 40 meters (plus ten meters to the next house). Another line will be 50 meters of length (plus ten meters to the furthest house). Altogether, the approximately 150 meters of trenches is necessary. The total cost of excavation works of the trenches is around 4500 euros.
- However, it is possible to do the works so that the water pipes, sewage pipes and electricity cables will be laid in the same trench.

The cost of the plumbing works in the houses are calculated by hourly rate and is an extra cost.

Cost: drilling the well: 1600 euros (there is enough money ready).

**Water pump with accessories: 1200 euros (minimum).**

**Excavating the trenches for pipes: 4500 euros. If there are four houses now, it makes 1425 euros per house (including the kitchen).** If there were more houses, cost will be less.

## Heating

After long considerations and calculations (with several offers for different systems from several companies), we have come to the decision that the air-air heat pump is the most reasonable option.

It costs less than 1000 euros per house and new models are very energy efficient. Also, silent mode can be used.

For hot water, a small boiler is necessary (around 100 euros).

**Total cost for each house for the heating system (kitchen needs a separate heat pump): 1100 euros.**

## Sewage treatment system

The type of the land here needs a biological cleaning system. It is a septic tank with a special cleaning system that cleans the wastewater to the point that it could infiltrate into the ground or even straight to the river, as it is purified. For 10 persons, the cost of the system is 10 000 euros including the equipment and pipeline works until the exterior wall. The pipes must be at least 1,2 meters underground (to avoid freezing during winter, but the same trenches can be used as for water). Inside the house, pipe works for the sewage system are not expensive.

**Total cost: 10 000 euros.**

**Cost per house (four houses plus kitchen): 2500.** One bio cleaner is sufficient up to ten houses (ten persons).

## Electricity

There is already electricity connection on the land. All the works including digging, building of the substation, 25 amperes, permits and etc costed 4000 euros (already done). Some digging work will still be required as the best is when the electric cable would be underground (this part which has to reach each retreat house). Electric cable should be underground at least 50 cm, the best would be 70 cm deep. At some point it will be possible to use the trenches where the water pipes are put, so it will keep the costs lower. The work has to be done by excavator. The length of the work from the switchboard outside on the plot to the kitchen is roughly 100 m (as it is a shallow trench of 50 cm, the work is done by hourly rate and we cannot tell the approximate cost yet, it will be an extra cost). From the kitchen up to individual retreat huts, trenches for water pipes can be used. Each house will require a switchboard inside the house, but if keeping it simple, it will not be expensive - approximately 100-200 euros per house, inclusive of the materials and work done by an electrician.

Cost for each individual house: **switchboard: 200 euros.** Pipe works from the switchboard to the kitchen: cost not known yet (100 meters of digging 50 cm deep trench)

It does not include kitchen switchboard which will have a similar cost.

## Kitchen with the maintenance room

It is also necessary to have a small maintenance room in the kitchen house where the water pump is situated. The maintenance room needs to be able to keep at least +10 C degrees all year round. It needs to be a room around 3m<sup>2</sup> in size. It will be a part of the kitchen.

**Cost to build a kitchen: around 30, 000 euros.**

A cost of the construction of one retreat house together with simple finishing: around 10, 000 euros.

To that, the above-mentioned costs should be added:

Water works: 1425 euros per house (including kitchen).

Heating system: 1100 euros (kitchen not included).

Sewage treatment system: 2500 euros (including kitchen).

Electricity: 200 euros (kitchen not included).

**Total extra cost for each house: 5225 euros.**

These are approximate calculations, some works might be cheaper in the end, some more expensive. It does not include construction works of the kitchen (approximate budget is 30 000 euros but it does not include final finishing, kitchen equipment etc), and the road (13 000 euros of which we have 6000 euros on the account).

**To finish the road and four retreat houses, an amount of (at least) 67 500 euros is necessary.**

For one more retreat house: 10 000: construction works; 1100 euros for heating system; sewage system: already included. Electricity: only a switchboard: 200 euros.

Pipe works to reach from one house to the next: 20 meters: 600 euros.

**Total cost of the construction of the fifth and sixth etc retreat house: 11 900 euros.**

Also, a retreat center needs a proper fence (at least two meters high). The total length can be only decided later when the exact number of retreat houses is known, but it is at least 250 meters long). The cost of one meter can be as high as 75 euros (it is maybe possible to find a cheaper options but one thing is clear – it will be not very cheap because it has to be two meters high and totally untransparent).