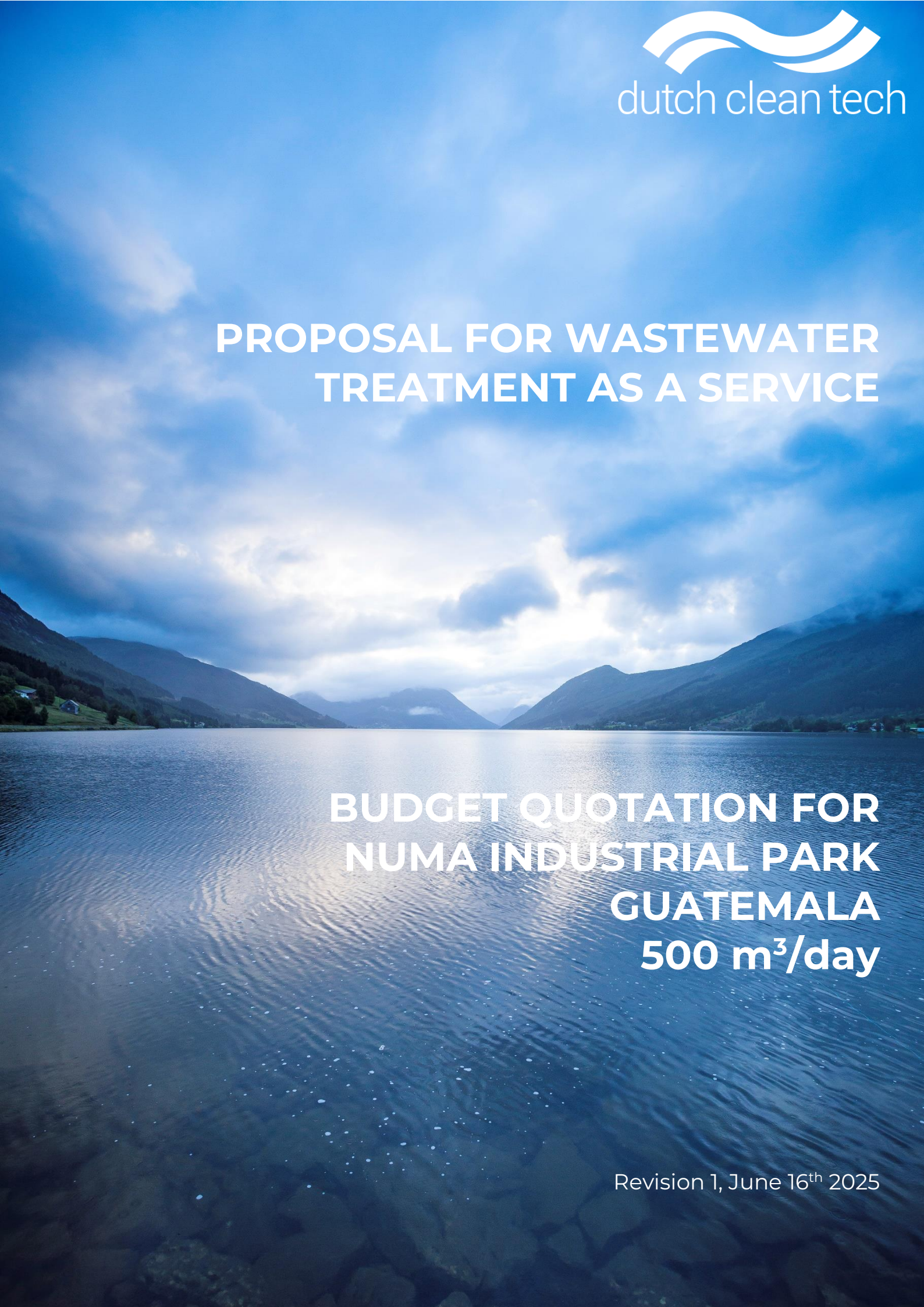
dutch clean tech

PROPOSAL FOR WASTEWATER TREATMENT AS A SERVICE



BUDGET QUOTATION FOR NUMA INDUSTRIAL PARK GUATEMALA 500 m^3/day

Revision 1, June 16th 2025

BUDGET QUOTATION

Date : June 16th 2025
Client : Inversiones Agroganaderas Las Victorias
Project : Sewage Treatment Plant
Location : Quiche, Guatemala
Revision : 1

Contents

1. INTRODUCTION

1.1 Background

The treatment plant is design to treat the sewage from the housing development called “Las Victorias” consisting of 600 houses.

1.2 Confidentiality

We regard and treat all information received from you relating to this proposal as confidential. We shall not disclose any information to third parties without your written consent.

The technical and commercial information, calculations, and drawings we provided in this proposal are confidential. All rights to this information remain with Dutch Clean Tech Central America BV. Without the explicit consent of Dutch Clean Tech Central America BV, this information may not be disclosed to third parties.

2. DESIGN CONSIDERATIONS

2.1 Design parameters

For this proposal, we have used the following basic parameters for our design:

Parameter	Design value	Unit
Design capacity wastewater	500	m^3/day
Design influent water temperature	15-25	°C
Average air pressure	840	mbar abs
Altitude	1500	masl

2.2 Influent parameters

Since we don't have an analysis of the wastewater available. We assume the wastewater consists only of domestic sewage. As such, we have taken the following parameters for our design.

Inlet	Design value	Unit
COD	800	mg/l
BOD	350	mg/l
COD/BOD	2.3	-
TSS	400	mg/l
TKN-N	60	mg/l
TP-P	8	mg/l
Oil & grease	50	mg/l
Fecal coliforms	1,4 x 10^7	NMP/100 ml

2.3 Treated water parameters

The treated water has to be suitable for safe discharge into water bodies. To achieve this, we use the following considerations based on the European standards:

Outlet	Design value	Unit
COD	< 125	mg/l
BOD	< 25	mg/l
TSS	< 35	mg/l
TKN-N	< 10	mg/l
TP-P	< 1	mg/l
Oil and grease	< 15	mg/l
Fecal coliforms	≤ 240	NMP/100 ml

We have not taken into account the removal of herbicides, pesticides, PFAS and pharmaceutical residues. These can be removed by adding membranes or a combination of membranes and Advanced Oxidation.

2.4 Design considerations

The purpose of the wastewater treatment plant is to reduce concentrations of oil & grease, BOD, COD, TKN, TP and TSS levels. In addition, we want to remove turbidity, and coliform bacteria.

We will build a new wastewater treatment plant. The plant is designed to operate 24/7. We have included either redundant equipment or a stock of capital spare parts to prevent downtime.

2.5 Wastewater treatment plant

We have assumed that the wastewater is transported to the wastewater treatment plant through existing pipelines. If required we can add pipelines and pumping stations to our scope of supply.

At the plant, we receive the raw wastewater in a small buffer tank that also acts as a pumping station. Before the water enters the buffer tank, we intercept large solids, hard waste, and fats and greases.

The wastewater is then routed to our Sequencing Batch Reactor (SBR) to reduce BOD, COD, TKN and TP-P levels.

The SBR uses Activated Sludge treatment technology. These plants are used for industrial wastewater treatment and for sewage treatment.

There is one crucial difference between our SBR and conventional flow-through plants.

Dutch Clean Tech activated sludge treatment plants are based on the Sequencing Batch Reactor (SBR) process. This, in combination with our unique operating system, offers several important advantages as compared to traditional continuous plants:

- 30% lower energy consumption
- 40% less waste sludge
- Automated sludge management

- Superior treatment results
- No bulking sludge
- Small footprint

The SBR process is well-known and is considered a proven technology. We have used SBRs for more than 30 years, mainly for industrial applications, but there are also many successful examples of SBR type sewage treatment plants.

SBRs have a very straightforward configuration. Separate primary clarifiers, aeration basins and secondary clarifiers are not required. Let alone separate basins to remove TKN.

All necessary process steps take place in a single basin or tank. Equalization, aeration and clarification take place in a time sequence rather than in separate tanks, which is the conventional space sequence of a continuous flow system.

There is no need to return activated sludge from the secondary clarifiers to the aeration basins.

Instead, the surplus activated sludge (SAS) is transferred to a sludge stabilization reactor (SSR) located next to the SBR tanks. In this reactor, we mineralize the sludge by aeration with the purpose of reducing the water content and sludge volume. The dry solids content increases from 0.6% to 3%. This greatly saves costs on sludge disposal.

In the unlikely event toxic wastewater reaches the SBR plant due to an accident, this will be immediately noticed, as the aeration stops automatically.

In such a case, only the filling SBR tank will be fatally contaminated. The contaminated activated sludge has to be removed and replaced by a fresh batch of uncontaminated activated sludge from the SSRs.

If this happens in a conventional flow-through plant, the whole system gets toxified. After the clean-out operation, the plant needs to be started up from scratch, which will take several weeks.

For this project, we have designed an SBR consisting of two tanks, complemented by one Sludge Stabilization Reactor (SSR). After treatment, the water needs to be disinfected before being discharged.

2.7 Sludge dewatering package

The waste sludge from the SBR biological treatment plant is not, or very limited, contaminated with chemicals and pollutants. The dry solids content after the SSR is approximately 3%.

For this project, you could use sludge drying beds. After sufficient drying time, the sludge can be mixed with soil to make compost. This can be sold to farmers.

Of course, we can also process the SBR waste sludge in a sludge storage tank and chamber filter press. This increases CAPEX and OPEX.

2.9 Connected

Our treatment plants are all connected to the internet. That allows for remote monitoring of the performance and intuitive maintenance. This reduces operating costs.

In addition, we can collect and analyze all sorts of water-related parameters. You can use this data to monitor demographical developments, for instance.

We use the data to continuously monitor the performance of the plant. After all, if we don't perform, we cannot invoice our clients.

We plan to publish the analyses of the treated water online so that all our clients can see what they buy at any moment.

2.10 Technical background

In the attached brochures you can find more information about our technologies.

- Sequencing Batch Reactors (SBR)

3. FINANCIAL MODEL

3.1 Private investment fund

Dutch Clean Tech is the first company to bring the sharing economy to the water industry.

We offer a smart combination of ecotech and fintech

Water projects are often not very 'bankable', and commercial banks usually don't finance these projects.

Until now, most water projects have been financed by development banks and organizations, like the World Bank, the EBDR or USAID. It can take years until a project is approved and financing is put in place. Moreover, development banks often have a political agenda. And finally, they don't have the means to finance a large number of water projects.

Dutch Clean Tech operates its own investment fund. We attract funding from private and institutional investors in Europe. With this money, we construct water treatment plants, which we operate and maintain based on long-term contracts.

Our investors make a fair return, while our clients don't have to invest. Instead, they pay a transparent monthly fee per cubic meter.

We believe in water treatment as a service

As a private company with our own investment fund, we can act fast. Moreover, we are flexible and independent.

3.2 Special Purpose Vehicle

We establish an SPV (Special Purpose Vehicle) for each new water treatment plant. That can either be a local entity or a Dutch entity with a local branch office.

The SPV attracts funding from the Dutch Clean Tech Investment Fund and uses those funds to procure the water treatment plant and everything that is related to it. For example, a land plot, piping infrastructure and pump stations.

Our sister company, Pielkenrood, designs, engineers and builds all our wastewater treatment plants. This way, we control the whole process, and we can guarantee the highest quality and standards.

We use as many local sub-contractors and suppliers as possible to increase the local content. That contributes to the economic growth in the regions where we work.

The SPV hires local staff for the operation and maintenance of our water treatment plants. We provide our operators with all the training they need, creating jobs for skilled workers.

The SPV always remains the (co-)owner of the wastewater treatment plant and invoices its customers for water treatment as a service.

Our clients don't pay anything during the construction period. We only start invoicing after the successful start-up of the plant.

Moreover, if we don't achieve the agreed performance parameters, our clients don't have to pay for our services.

If we don't perform, you don't pay. This is our commitment

3.3 Two models

We offer two different models:

1. Concession;
2. Cost-plus.

3.3.1 Concession model

Municipalities and other governments often select the concession model. In other words, they give us a concession to supply safe and clean drinking water to the population and treat their sewage. We pay these government institutions for the concessions.

Dutch Clean Tech charges the end user for water treatment. The actual billing and collection of the money is often done through the municipality.

Usually, we also make a municipality a shareholder in the company that operates the concession.

The advantage for the municipality and the population is that the prices are fixed for agreed periods of time.

The disadvantage is that the price per cubic meter is slightly higher because Dutch Clean Tech needs to absorb the currency risk, bad debt recovery and fluctuations in operating expenses.

3.3.2 Cost plus model

Private industries usually prefer the cost-plus model. Essentially, we charge them the actual cost plus an agreed profit margin.
As such, they absorb all the risks. For example, if the energy prices go up, we charge more and vice versa.

We build, own and operate the water treatment plants and invoice on a monthly basis. Not per cubic meter, but the actual costs incurred in that particular month.

The advantage is that our clients control the actual cost of their water. They sell the treated water to their customers per cubic meter.

Often, these projects concern wastewater treated to the extent that it can be reused for industrial purposes.

3.4 Scope of supply

Dutch Clean Tech is responsible for the process design, detail engineering and adaptation of all documentation to local standards and regulations.

We are also responsible for the complete turnkey construction, installation and start-up of the treatment plant.

We include all work related to the construction and safe operation of a water treatment plant in our scope of supply. That means that we supply:

- Complete design and engineering;
- All civil work;
- Buildings with HVAC;
- Telecommunications;
- Utilities;
- Security systems;
- Firefighting equipment;
- Tanks;
- Structures;
- Equipment;
- Rotating equipment;
- Pipelines;
- Manual valves;
- Control and safety valves;
- Instrumentation;
- Electrical equipment;
- Plant lighting;
- Automation;
- Site preparation;
- Site construction and installation;
- Commissioning and start-up.

We clearly indicate the tie-in points in our interface and connection schedule before the contract is awarded.

3.5 Operating cost

All operating costs are included in our cost calculations.

The main operating costs are:

- Power consumption of the blowers for the SBR plant;
- Chlorine dosing in the treated water line;
- Maintenance cost;
- Plant insurance;
- Operator salaries;
- Overhead;
- Financing cost.

Other operating costs are:

- General power consumption for pumps and utilities;
- Disposal of waste sludge;

In the concession model, all operating costs and our profit are included in our price per cubic meter.

In the ‘cost-plus’ model, we charge the actual costs plus a license fee.

3.5.1 Power consumption of the blowers

The blowers in the SBR plant are by far the largest energy consumers. The reduction of BOD and COD simply requires a certain volume of oxygen. And so does the removal of nitrogen and phosphorus.

There are no activated sludge treatment plants that consume less energy and achieve the same results.

In fact, our SBR uses approximately 30% less energy than the conventional flow through type activated sludge treatment plants.

Some companies offer to reduce the BOD and COD by dosing a polymer and using a filter, thus saving on energy consumption. However, with this method, it is not possible to reduce the BOD and COD concentration to the required levels, let alone the nitrogen and phosphorus levels.

Other companies say they can treat all types of wastewater, including sewage, with membrane reactors. The problem is that the membranes get clogged quickly if there is no proper pre-treatment.

Membranes should always be used as a 'polishing step' and never to treat raw wastewater. Moreover, membrane reactors consume a lot of energy.

So, there is only one efficient way to reduce BOD, COD, nitrogen and phosphorus levels, and that is by means of an activated sludge treatment plant.

Especially the reduction of COD is directly related to the energy consumption of the plant. The more COD you need to reduce, the more energy you require.

3.5.2 Chlorine dosing

The cleaner the treated water, the less chlorine needs to be dosed. With a view to the treatment stages, the treated water will be very clean, so chlorine dosing is minimized.

Still, we need a certain concentration of chlorine per cubic meter of treated water to make sure the water can be safely reused.

3.5.3 Maintenance

Dutch Clean Tech is responsible for the proper maintenance of the plant during the contract period.

We make sure that our plants are always in superb condition because we want to prevent downtime and because we have to guarantee optimal performance at all times. As such, we have estimated a considerable maintenance budget.

This budget is based on the maintenance schedules we receive from our equipment suppliers and on the regular checks and inspections we need to carry out.

Dutch Clean Tech operators will carry out most of the maintenance. Specialist jobs are outsourced to external parties.

Replacement of filter media is also included in the maintenance cost.

3.5.4 Insurance

For obvious reasons, our plants are insured against theft and loss of equipment, natural disasters, fire and so on.

Moreover, we have a comprehensive insurance package for our staff members, including retirement and health insurance.

3.5.5 Operator salaries

Dutch Clean Tech hires local staff to operate its plants. Typically, the staff of a wastewater treatment plant consists of:

- Manager
- Administrator
- Cleaner
- Shift leaders
- Operators
- Skilled workers

There is only one manager, one administrator and one cleaner. The other staff members work in shifts, whereby the evening and night shifts consist of a skeleton staff.

We invest in our people because we find it important to attract skilled and talented employees.

3.5.6 Overhead

The overhead budget is for ICT, office supplies, tools and other general costs.

Moreover, we find it important that our staff is equipped with proper work clothing and PPEs. These costs are also paid out of the overhead budget.

3.5.7 Financing cost

The water treatment plant SPV borrows money from the Dutch Clean Tech investment fund. The SPV needs to pay interest and repay the loan. These costs are included in the operating costs.

3.5.8 General power consumption

General power consumption is for pumps, scrapers, dosing equipment, plant lighting and plant buildings.

3.5.9 Disposal of waste sludge

Waste sludge needs to be disposed of by an external party, especially the contaminated waste sludge. This costs money.

3.6 Dutch Clean Tech license fee

Dutch Clean Tech is a commercial company that needs to make a profit. Therefore, we charge you a yearly license fee of 10% of the invested capital.

Included in the license fee is the use of our control system, software, upgrades, remote monitoring, intuitive maintenance, operator training, access to operating data, 24/7 technical support, and guaranteed availability of spare parts.

The license fee must be paid throughout the contract period.

Our license fee is subject to yearly indexation based on inflation in the Eurozone.

3.7 Land plot

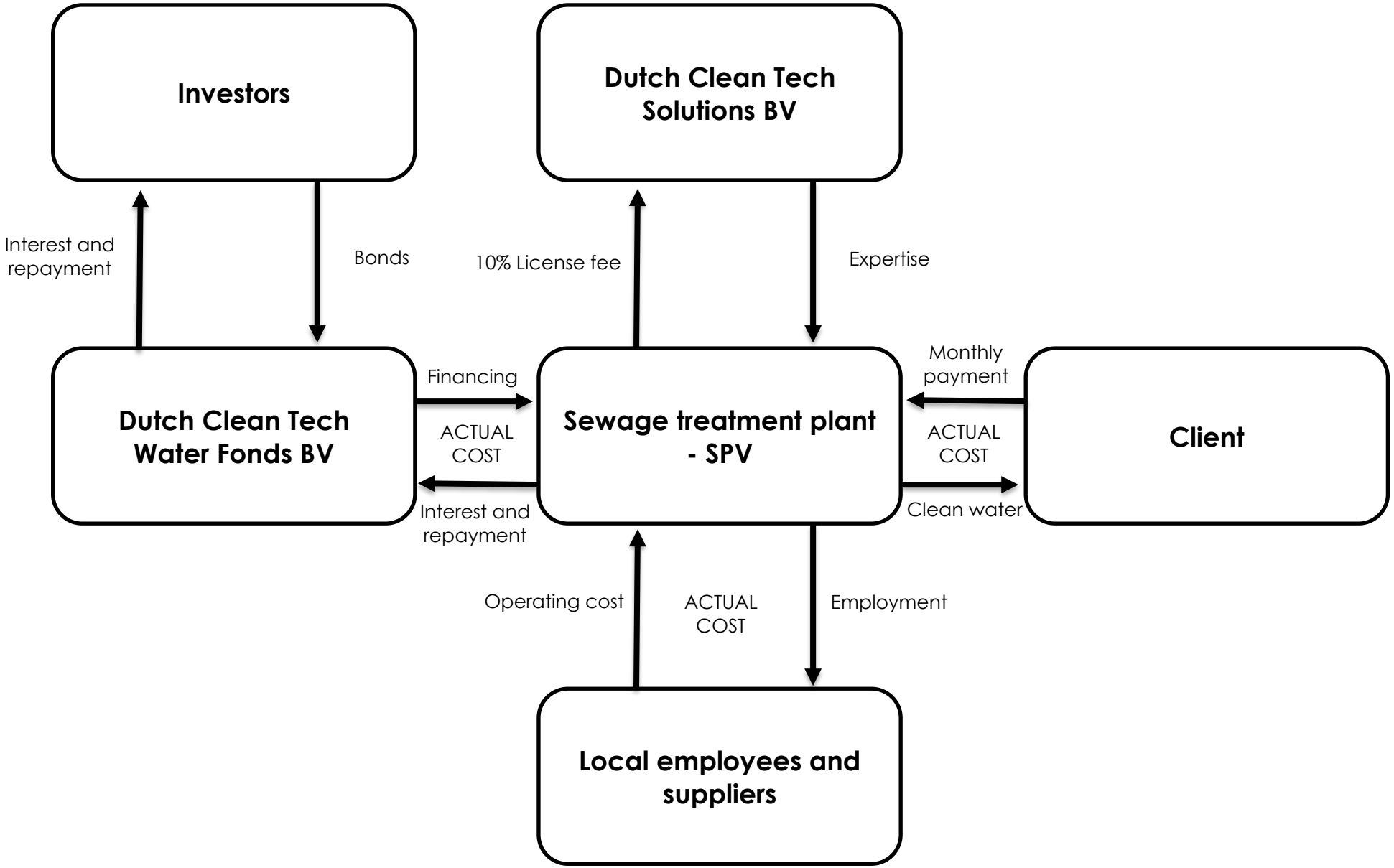
We have assumed that you will make available a land plot of sufficient size for us to construct the water treatment plant.

In case we need to buy or rent the land plot, we will include the costs in our price.

See also the attached plot plan.

3.8 End of contract

After the contract period expires, the client has two options: they can either purchase the plant at the market value or extend the contract for an additional 15 years.


Investors
Dutch Clean Tech Solutions BV
Interest and repayment
Bonds
10% License fee
Expertise
Dutch Clean Tech Water Fonds BV
Financing
ACTUAL COST
Interest and repayment
Sewage treatment plant - SPV
Monthly payment
ACTUAL COST
Clean water
Client
Operating cost
ACTUAL COST
Employment
Local employees and suppliers

4. FINANCIAL PROPOSAL

This quotation is based on the 'cost plus' model. The below figures are indicative and based on the current market prices.

4.1 Key parameters and assumptions

CAPEX parameters	
Investment cost	USD 1,843,380
Interest rate	9.5%
Interest rate renewal	Every 5 years, based on actual market rates
Financing structure	BOO
Construction period	9 months
Contract duration	25 years after commissioning
Technical life-time	30 – 40 years
Land plot required	23 x 32 meters

Operating parameters	Cost	Consumption per year
Energy cost	USD 0.21 per kWh	151,756 kWh
Potable water cost	USD 2.87 per m^3	110 m^3
Waste sludge disposal	USD 12.54 per m^3	193 m^3

Job description	Working days/week	Staff cost per year
Manager	1	USD 6,240.-
Shift leader	2	USD 6,960.-
Operator	2.5	USD 8,100.-
Workers	2.5	USD 5,625.-
Administrator	1	USD 2,250.-
Cleaner	1	USD 2,000.-
Totals		**USD 31,175.-**

The power consumption and consumables are based on the values mentioned in the design parameters section. The prices for energy, plant water, chemicals, civil works and the salaries are estimates based on an national average.

4.2 Cost per cubic meter

The prices in the table below are based on a contract duration of 25 years. If required, we can offer different contract periods.

Description	Cost in USD per year
Interest and repayment	195,323.-
Energy consumption	31,832.-
Water utilities	374.-
Disposal of waste sludge	2,426.-
Lease of land plot	-
Security	13,680.-
Insurance	12,904.-
Staff	31,175.-
Overhead	18,434.-
Maintenance and spare parts	29,494.-
Dutch Clean Tech license fee 10%	184,338.-
Total cost per year	***519,981.-***
Total cost per month	43,332.-
Cost per m^3	2.85

4.3 Exclusions

We have excluded the following from our prices at this stage:

- Pipelines and pumping stations required to transfer the wastewater to the treatment plant.
- Pipelines and pumping stations required to transfer the treated water to the discharge point.
- The energy cable connecting the plant to the power grid.

5. COMMERCIAL CONDITIONS

5.1 Cost basis

The above cost estimates are based on a construction period of a maximum of 9 months.

At this stage, we have estimated all costs with an accuracy of +/- 15%. Together with you and based on a feasibility study or FEED document (which we can do for you), we will optimize the cost calculation and adapt it to your local circumstances.

5.2 Price validity

The validity of the above-stated prices is 60 days as of the quotation date. The price stated is in dollars, fixed and not subject to escalation or currency fluctuations within the validity period. Prices exclude VAT.

5.3 Local currency

We accept local currencies. In case of currency fluctuation of more than +/- 5%, we reserve the right to adjust our monthly rates accordingly for the interest, repayment and license fee.

If we cannot exchange local currency for euros, we require payment in another currency, for example, dollars.

5.4 Financial guarantees

Dutch Clean Tech brings foreign investment and enters into long-term commitments and obligations. This implies certain risks. To moderate these risks, we require financial guarantees from our clients. As a minimum collateral, the treatment plant itself remains our property for the duration of the contract.

5.5 Default charge

We assume that we cover our investment risk through an investment protection agreement between the Dutch government and your government. As such, we don't charge a default percentage.

5.6 Delivery

The prices in this proposal are based on DDP delivery. We have estimated customs duties at 5%. We did not consider VAT or any other taxes at this stage.

5.7 Lead time

In case the time of construction exceeds the estimates stated in the table above, we reserve the right to charge additional costs.

5.8 Bonds and guarantees

Dutch Clean Tech doesn't issue bid bonds, performance bonds, advance payment guarantees or other bank guarantees.

5.9 Legal framework

Dutch Clean Tech hires expert local lawyers to ensure that we can implement our business model in accordance with local laws and regulations.

We are happy to engage our lawyers in detailed discussions with you to determine the terms and conditions of our cooperation.

5.10 Other conditions

During the contract period, all equipment, materials and constructions remain the property of the entity that owns the water treatment plant.