

# Clean Rivers Trust

Registered Charity Number: 1037414

## Local Sewerage Utility

*The Clean Rivers Trust has an objective to find ways of cleaning up pollution of rivers.*

The project to 'Sewer Addis Ababa' devised by the Trust has been commissioned by the Ethiopian Government. The capital of Ethiopia is a city of around 3.5 million people. The project addresses a situation where much of the city's sewerage and waste goes to the river system, the Akaki; Little and Big. The river systems provide irrigation for agricultural areas to the south of the City. Once the pollution is removed the risk to human health in the Awash catchment will be dramatically reduced. Water power generation can be resumed in the silted up a Aba Samuel reservoir that once generated substantial power supplies and the organic wastes in the lake can also be used to provide an alternative source of power generation and soil improvers.

The Local Sewerage Utility will tackle several immediate issues in a constructive and sustainable way. Using proven technology the Trust is developing a new form of Sewerage disposal by Utilisation. The proposal includes the integrated opportunity for new enterprises and job creation. There will be a need for a new manufacturing and assembly facility in Addis Ababa which will produce LSU's for location initially within the City. Potentially there are also many further suitable locations in outlying areas and villages. The opportunity will be there to expand the enterprise to the production and shipment of LSU's to further Africa and Middle East destinations.



Prototype containerised core unit

In view of the immediate impact which will be made by LSU's on the sanitation and health challenges, it is intended to provide production lines capable of building rapidly up to 50 LSU's per week. It is possible that the need for such units in Addis Ababa at the present time could be for up to 3-4000 units with some units being linked together this might equate to about 750-1000 locations in the city. Some will be used in association with the redevelopment housing sites and attached to Condominiums. Some will be configured to service industrial and commercial areas and the majority will be provided in needy areas and lead to the elimination of the use of 'earth closets' and 'open sewerage lagoons'. The consequence will be a pollution free healthier environment.

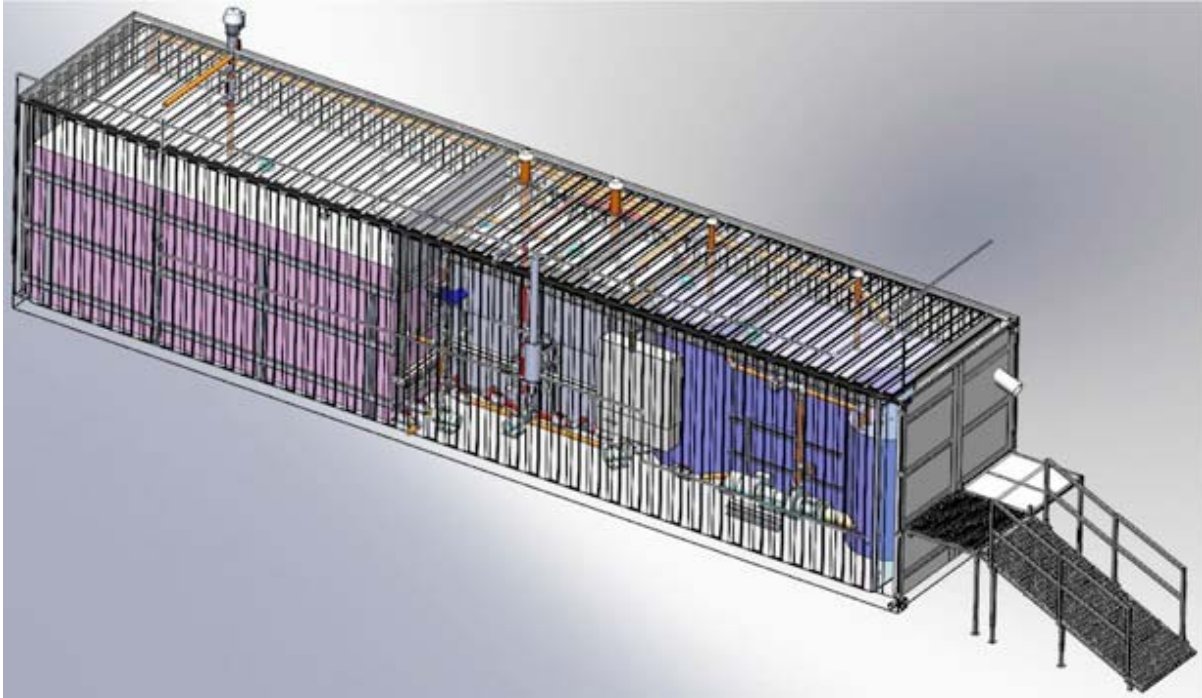
Prototypes will be provided for early installation and trials using technology developed in the UK. The UK company will provide element of the design, monitoring installations and support services. The new LSU company in Addis Ababa will provide a manufacturing and assembly facility, a transportation and installation operation, a training facility for LSU local enterprises and a marketing operation based around a community health education program and business enterprise advice.

The Clean Rivers Trust will manage setting up the LSU manufacturing facility, the assembly training program, the purchasing and procurement department, the design and development department, the marketing and business development team. The Trust will seek to integrate a practical program of research, design and implementation of sustainable energy technologies and water conservation in conjunction with Addis Ababa University. It is proposed that the Board of Governance of the new LSU company will bring together representatives of The Clean Rivers Trust, the University of Addis Ababa, The Ministry of Energy and the Addis Ababa Water Authority. Shares in the company can be used to create responsible interest from all participants and attract suitable venture capital partners to provide initial and development funding. It is hoped that the nature of the program will bring sufficient health, energy and economic benefits to attract grant aid and loans from international institutions, government sources and corporate funding bodies.

The trial installations will need to provide experience of the different locational environments proposed and experience to enable the production process and program to be analysed in readiness for the product run and the incorporation of the various enhancement options. Experience and monitoring data from the trial run will be used in developing logistical procedures and procurement strategies to ensure confidence in LSU installations and accruing benefits.



The illustration shows a typical installation which includes the core process which will be secured in a 'containerised' installation at the heart of the LSU surrounded by robust secondary structures which may be linked to the core in a configuration to suit the individual application, usage and location.



Whilst the cost of the flood alleviation and principle drainage infrastructure for the city could well be \$100 million, new technology and manufacturing based 'spin offs' are expected to establish an industrial base of much greater value. Politically the city is the diplomatic hub of Africa and a good stepping stone to benefit other states and regions.

A simple core installation, produced in Addis Ababa and suitable for processing up to half ton of raw sewerage per day and providing a facility for about 600 people could be installed for about \$30,000 (inclusive of staffing costs) and with a modest range of secondary facilities would bring the cost up to \$50,000.

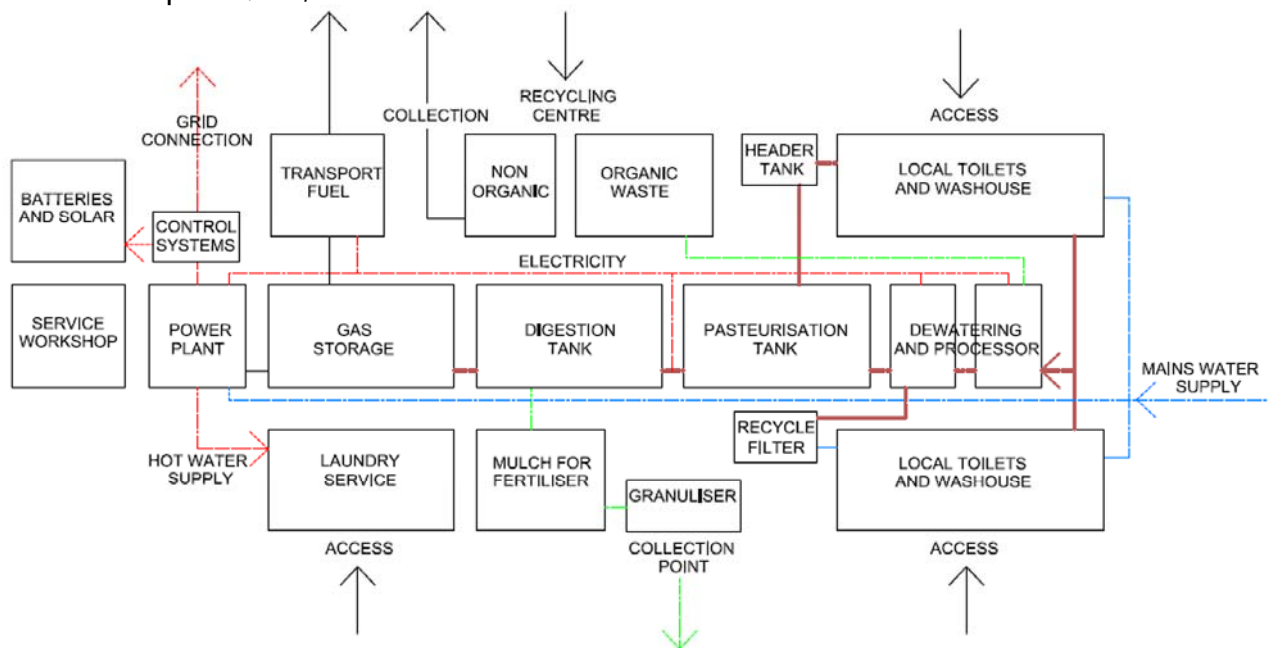


DIAGRAM SHOWING CORE WITH SECONDARY COMPONENTS

This installation might expect to make a modest rental return of \$2500 per year and would need to be matched in grant or subsidy monies to provide a reasonable return on investment. There would also need to be a maintenance element factored into acquisition costs.

For a peak turnover of 50 LSU units per week the factory would need about 3000 sm of floor area for assembly and allow container vehicle access in addition to a metal fabrication shop and a control assembly area. In addition there will be a training centre and office provision. The building will probably need to be 7500 sm with external storage, manoeuvre area, crange and a vehicle fleet with reliable road and distribution access. This could cost in the region of \$20million and would need to be commissioned immediately the trial runs and assessments are completed satisfactorily.



The turnover on 50 units per week would roughly be \$2,500,000. If the cost of the factory set up was recouped over 20 years at \$1000 per unit, at peak production the payback would only extend to about 10 years during which time 250,000 units could have been produced. No doubt over this period the product line could be adapted and the range extended to suit innovation and change. The demand for units in Ethiopia could be as much as 50,000 by the provision of LSU's to 50% of the population. Export potential could be significant.

In summary the Local Sewerage Utility project might never be fully sustainable as a stand alone business without subsidies. However it is designed to prevent pollution through crop irrigation and percolation to aquifers providing healthy sanitation and improving health prospects as well as a positive contribution to energy production. It will create businesses and jobs in manufacturing, recycling, fertiliser production, fuel and others at both local enterprise level and through networking. It will tend to reward creative initiatives and those who just need to work and it could provide important export opportunities. Negotiations are ongoing to carry through with the political momentum already generated and further financial models will develop and emerge. Government funding can be expected to back up the political will in Addis Ababa and it is hoped that sources of finance external to Ethiopia can provide the venture capital, with a reasonable return, required to drive the project forward.

# Financial Model for LSU Production

## Initial Funding to date

By Clean Rivers Trust

Survey work; Meetings in UK and Addis Ababa; Research; Solution Design and Development; Reports and Recommendations

## Future Development Fund Requirement

\$250,000

Detailed Survey work, Analysis of individual LSU site locations, Options and Recommendations for Secondary structures; Design, Fabrication and Construction of trial installations; Monitoring, evaluation and evolution of LSU design and performance

## Future Manufacturing capability

set up cost \$20million

Establishment of Board of Governance; Location and Construction of Fabrication Plant and Distribution Facility in Addis Ababa; Sourcing components and suppliers; Recruit workforce; Training program

## Future Production Support

Grant Aid Regime, Subsidies, Loan Repayments and Outcome proposals approved by Board of Governance; Production Line development; Commercialisation of Product; Marketing, and Exporting; Future Product range development work and extended product lines.

## Economic Value to be realised and ongoing Benefits

Monitor performance: Employment and Supply Chain expansion; Capital accumulation; Reduction in existing and proposed Infrastructure expenditure; Promotion of Socio-Economic benefits; Energy Contribution and Savings; Pollution Control; Improvement of Water Quality; Agriculture Crop Improvements; Better Health Education and improved Health; Business diversification; Knowledge Transfer

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