



Mill Energy Services at Titanic Mill

A resident-owned energy service
company

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Energy for Sustainable Development Limited



Project aims



- Regeneration
 - Historic & architectural importance
 - Valuable resource
 - Economic resurgence
- CO₂ Neutral
 - Global issue, local response
 - Refurbishment challenge – low energy
 - Renewables demonstration





Project team



Developer	Lowry Renaissance Limited
Architect	Lowry Design
Structural engineers	Thomassons
Mechanical and electrical engineers	Key Engineering
Metering and billing	Switch2 Energy Solutions
Sustainable energy consultant	ESD Ltd



Reducing energy demand



Summary: Domestic Accommodation (Flats)	Heating	DHW	Cooking gas	Electricity	Heating	DHW	Cooking gas	Electricity	total
	kWh	kWh	kWh	kWh	kg CO2	kg CO2	kg CO2	kg CO2	kg CO2
Base Case	697,344	232,000		547,520	132,495	44,080		240,909	417,484
Design	154,272	232,000		287,680	29,312	44,080		126,579	199,971
% reduction	78%	0%		47%	78%	0%		47%	52%

NB: Heating and DHW represent demand without boiler conversion efficiencies

Summary: Non-domestic Accommodation	Heating	DHW	Cooking gas	Electricity	Heating	DHW	Cooking gas	Electricity	total
	kWh	kWh	kWh	kWh	kg CO2	kg CO2	kg CO2	kg CO2	kg CO2
Base Case	612,876	542,731	275,000	807,390	116,446	103,119	52,250	355,252	627,067
Design	427,816	390,125	242,000	584,770	81,285	74,124	45,980	257,299	458,688
% reduction	30%	28%	12%	28%	30%	28%	12%	28%	27%

NB: Heating and DHW represent demand without boiler conversion efficiencies

Summary: All Accommodation	Heating	DHW	Cooking gas	Electricity	Heating	DHW	Cooking gas	Electricity	total
	kWh	kWh	kWh	kWh	kg CO2	kg CO2	kg CO2	kg CO2	kg CO2
Base Case	1,310,220	774,731	275,000	1,354,910	248,942	147,199	52,250	596,160	1,044,551
Design	582,088	622,125	242,000	872,450	110,597	118,204	45,980	383,878	658,658
% reduction	56%	20%	12%	36%	56%	20%	12%	36%	37%

NB: Heating and DHW represent demand without boiler conversion efficiencies

	Heat. kWh	DHW kWh	Cook gas kWh	Elec kWh	Heat kgCO ₂	DHW kgCO ₂	Cook kgCO ₂	Elec kgCO ₂	Total kgCO ₂
% red	78	0		47	78	0		47	52
% red	30	28	12	28	30	28	12	28	27
% red	56	20	12	36	56	20	12	36	37



Renewable energy supply

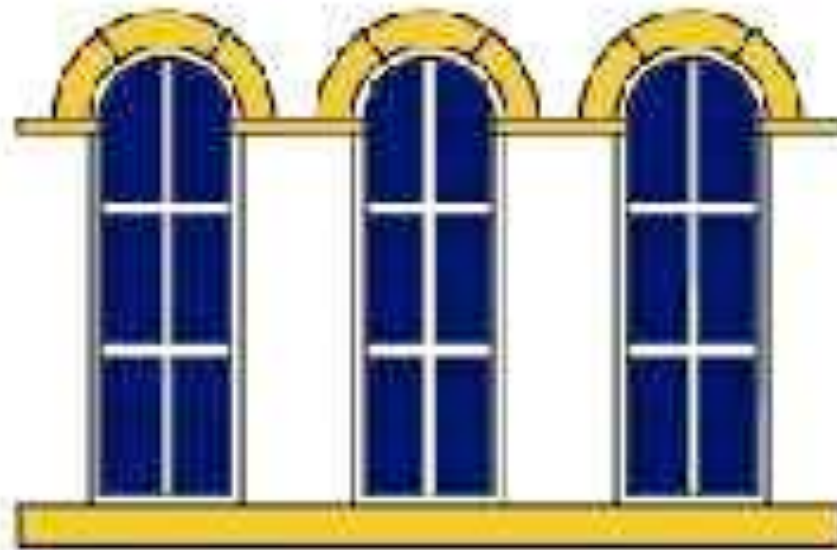


- Biomass CHP:
 - 100kWe -> 700MWh/yr
 - 140kWt -> 1,000MWh/yr
 - Phased introduction, full occupancy



- Solar PV system:
 - 50kWp – roof integrated
 - 40,000kWh per year
 - Roof access/safety
 - Warranty issues – whole-roof system





MILL ENERGY SERVICES

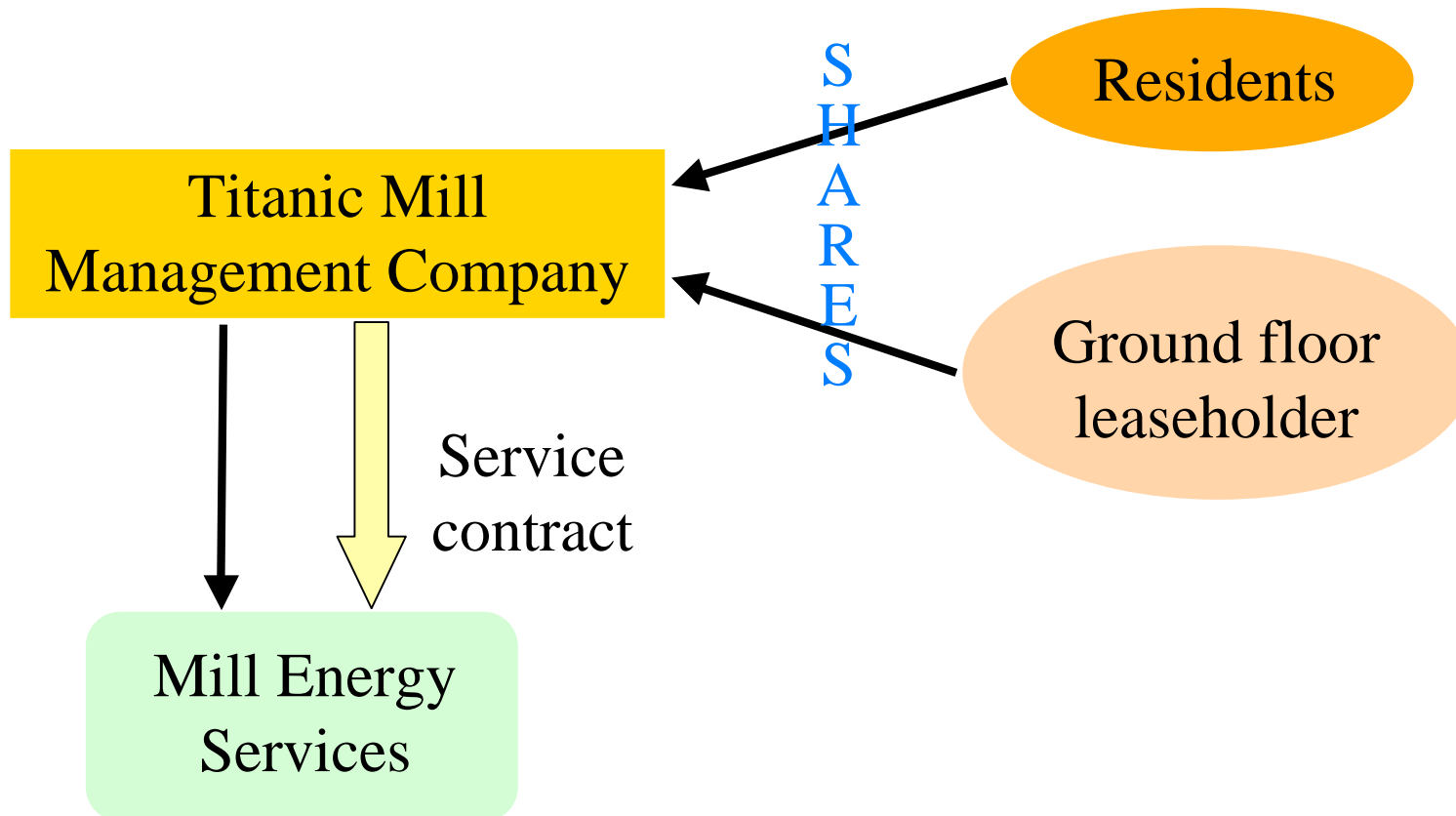
Vision



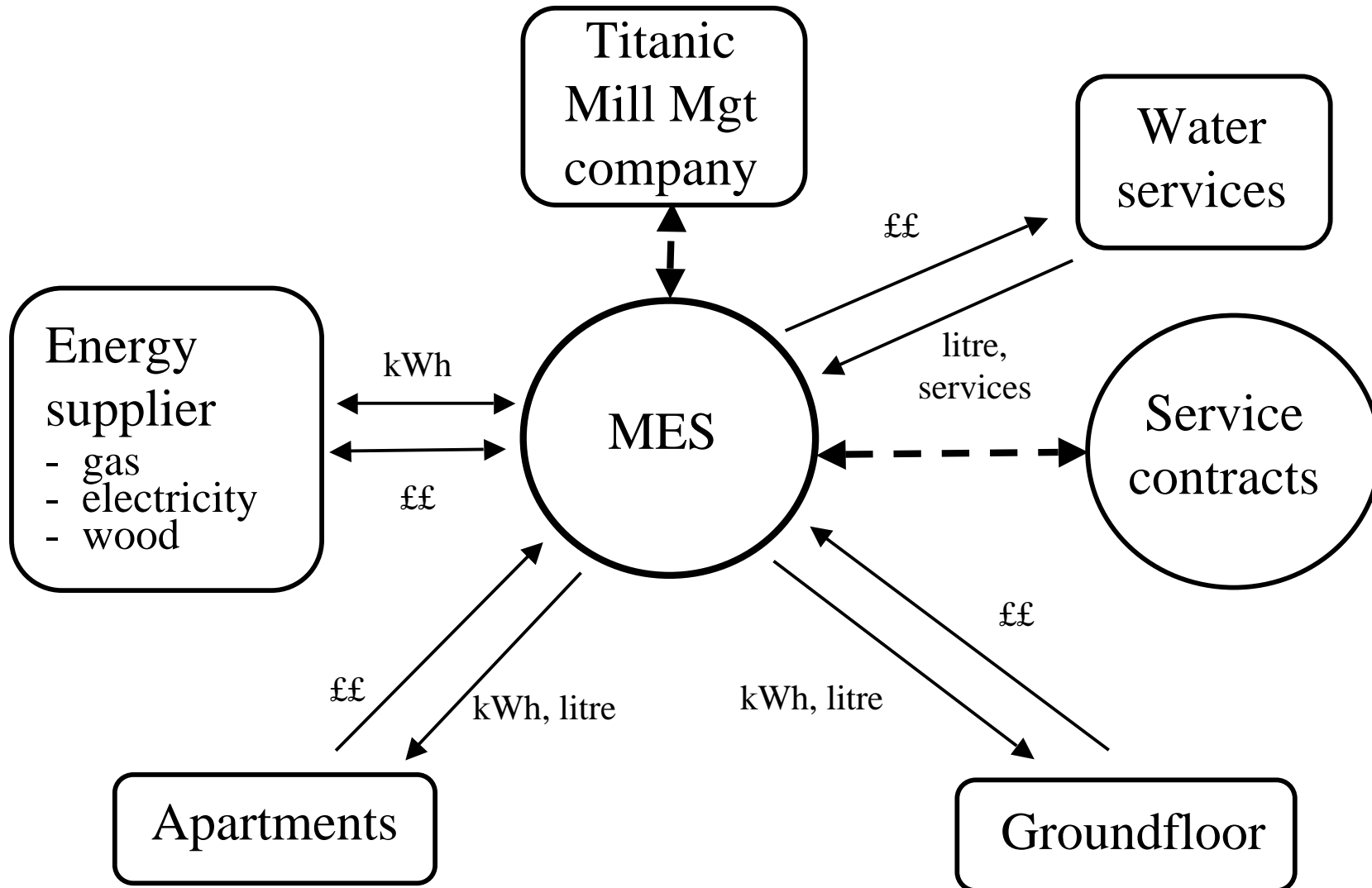
- Ground-breaking
- Small-scale energy service company
- Holistic approach to energy demand and supply
- Delivery of carbon neutral energy services
- Private sector domestic consumers
- Commercially viable basis.



Ownership

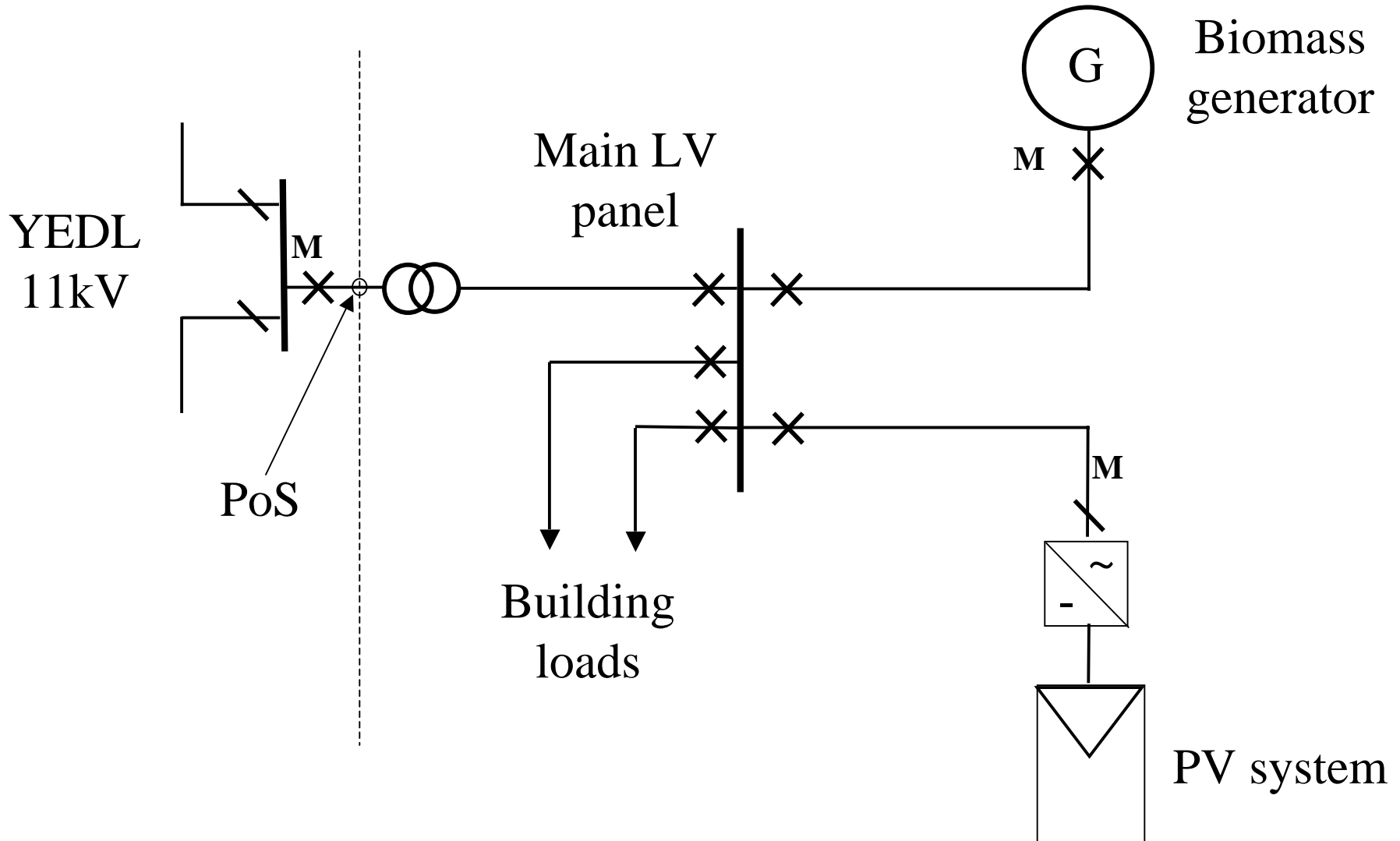


Operational Structure





Electricity trading





Key activities



- Customer information and advice
- Performance monitoring
- Operation and maintenance – energy systems
- Managing specialist contracts; inc:
 - Metering, billing and revenue collection
 - Energy supply contracts
 - Service providers

Conclusions



- Commitment of the developer
- Approach developed early and integrated into overall concept
- Long-term view
 - Ownership
 - Operation and maintenance
- The right team
 - Risk management
 - Contract management



<http://millenergyservices.energyprojects.net>

<http://www.esd.co.uk>