

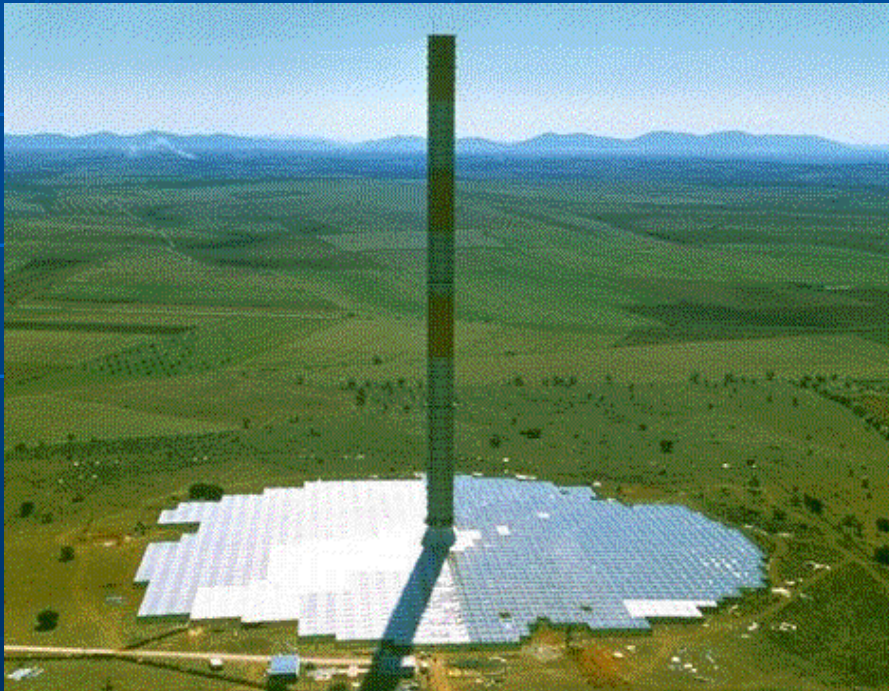


# Progress with the EnviroMission Solar Tower

Martin Thomas  
Chairman - EnviroMission Ltd



# Pilot Plant Manzanares, Spain





# Pilot Plant Manzanares, Spain

- Commissioned by SBP in 1982
- Operated till early 1989, initially with some shutdowns for modification, eventually running continuously for 32 months at 95% availability
- Tested range of collector materials
- Proved design principles and validated basis of subsequent computer modelling



# Schlaich Bergermann und Partner - Stuttgart

- Developed Solar Tower design technology – 20 years R&D - over A\$75M expended
- Acclaimed structural engineers
- Equity accepted for consultancy
- Engineers work with EVM project team



# SBP - Solar Technology





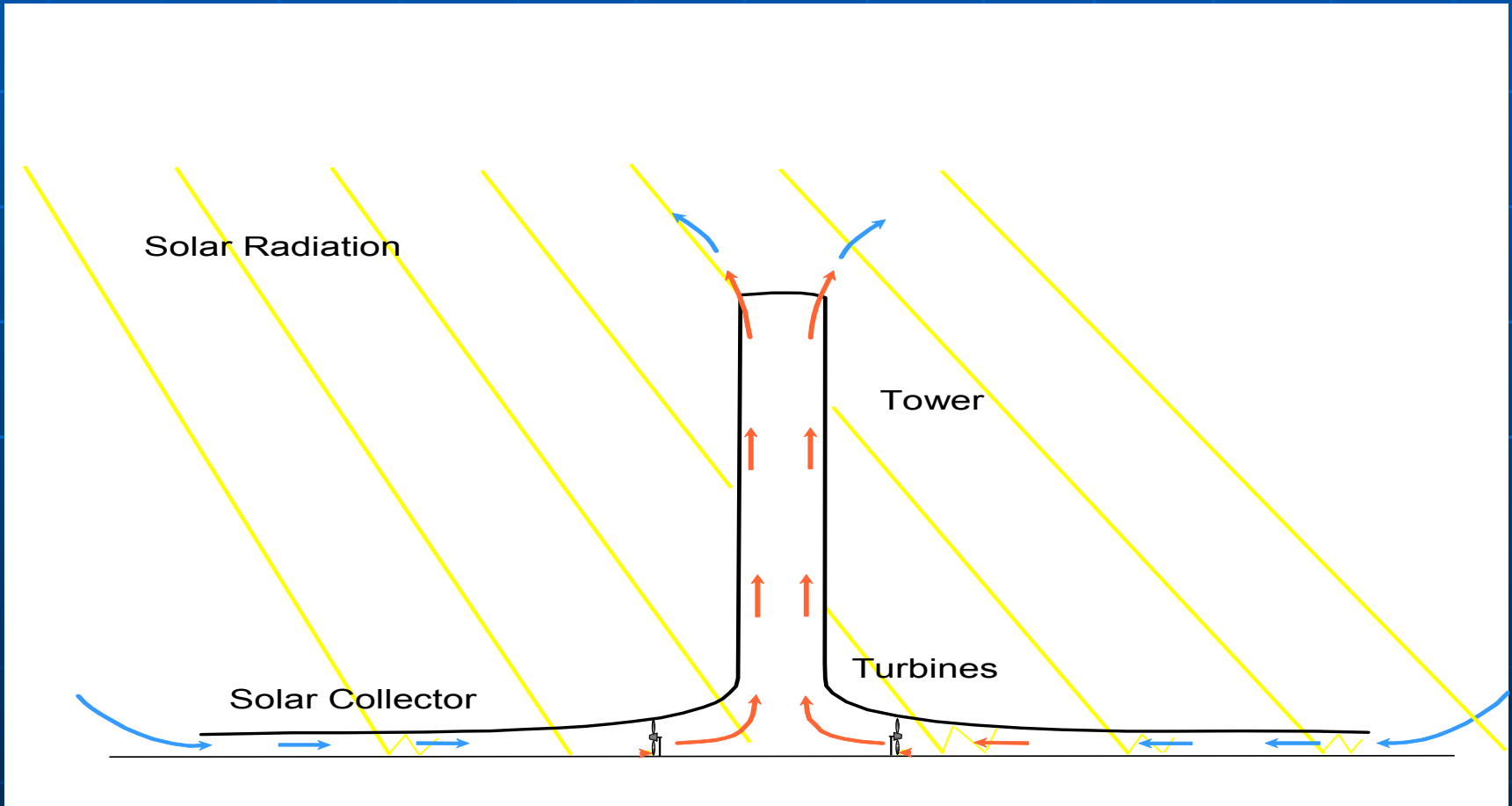
# EnviroMission Solar Tower Project

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# Solar Tower Technology





# Solar Tower Dimensions

- **Tower**
  - 1,000 metres high
  - 130 metres diameter
- **Collector**
  - 7000 metres diameter
  - glass/polycarbonate/plastic film
- **Turbines**
  - 32 X 6.25 MW
- **Footprint**
  - 4,000 hectares under option
- **Construction**
  - 34 months
- **Jobs**
  - 1200+ at peak of construction



# Solar Tower Output

- Design output - 200 MW plus
- Gross annual energy - 650 GWh/a
- Capped annual energy - 622 GWh/a
- Capacity factor (capped) - 37%



# Technology Differentiation

- Large-scale – 200MW
- Grid connected
- Reliable load following energy source
- Peak or base load operation
- High gross income retention
- Diverse revenue streams
- High abatement (>600,000t CO<sub>2</sub>)
- Significant (>6%) MRET delivery

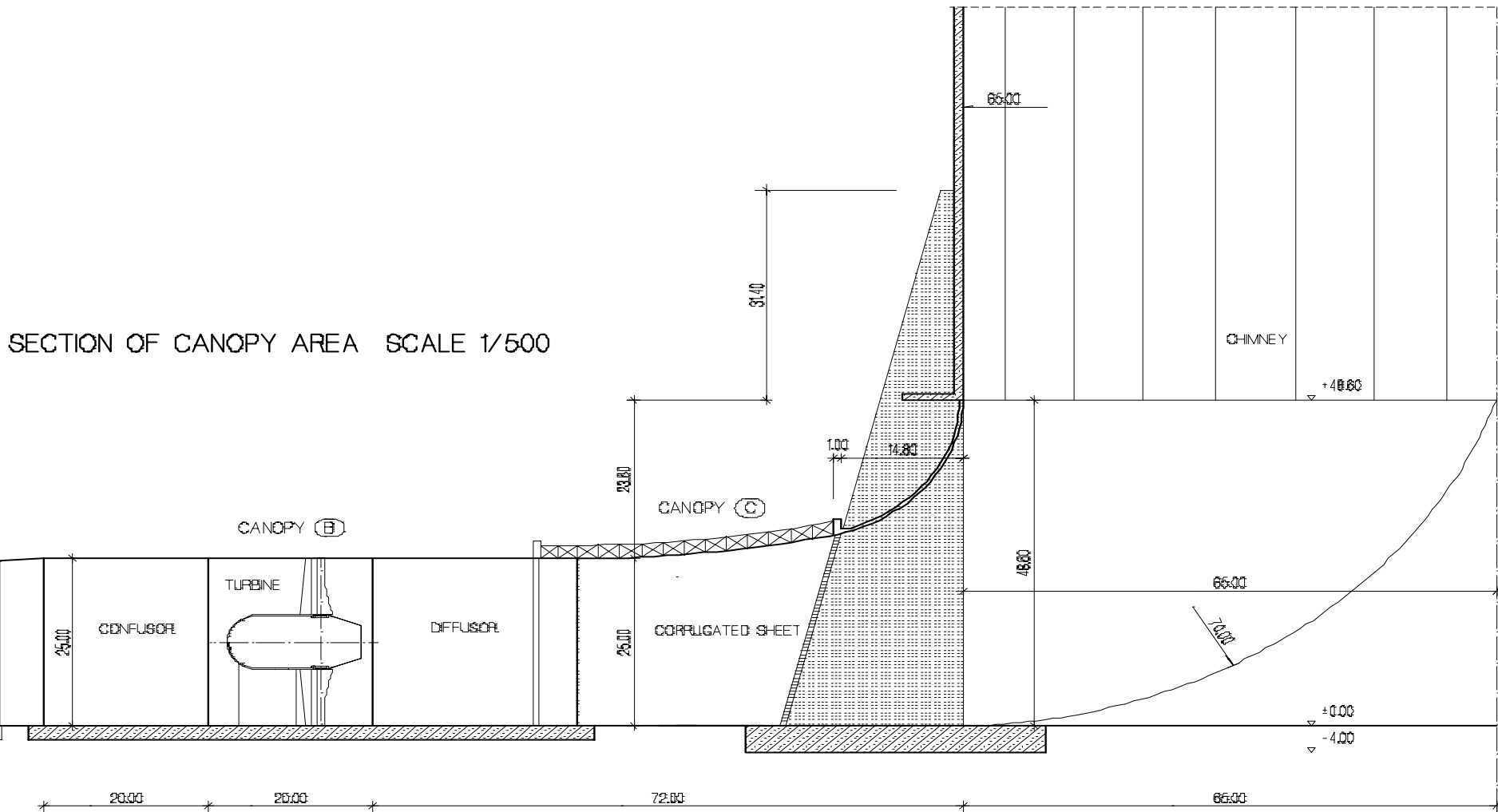


# Solar Tower Advantages

- Reliable output - can be modified using storage
- Generation broadly follows user load curve
- Environmentally responsible investment
- Ethical investment
- Reliable cash flow generation
- Large-scale renewable power station
- Technology not complex
- Icon status



# Turbine Generator Arrangement





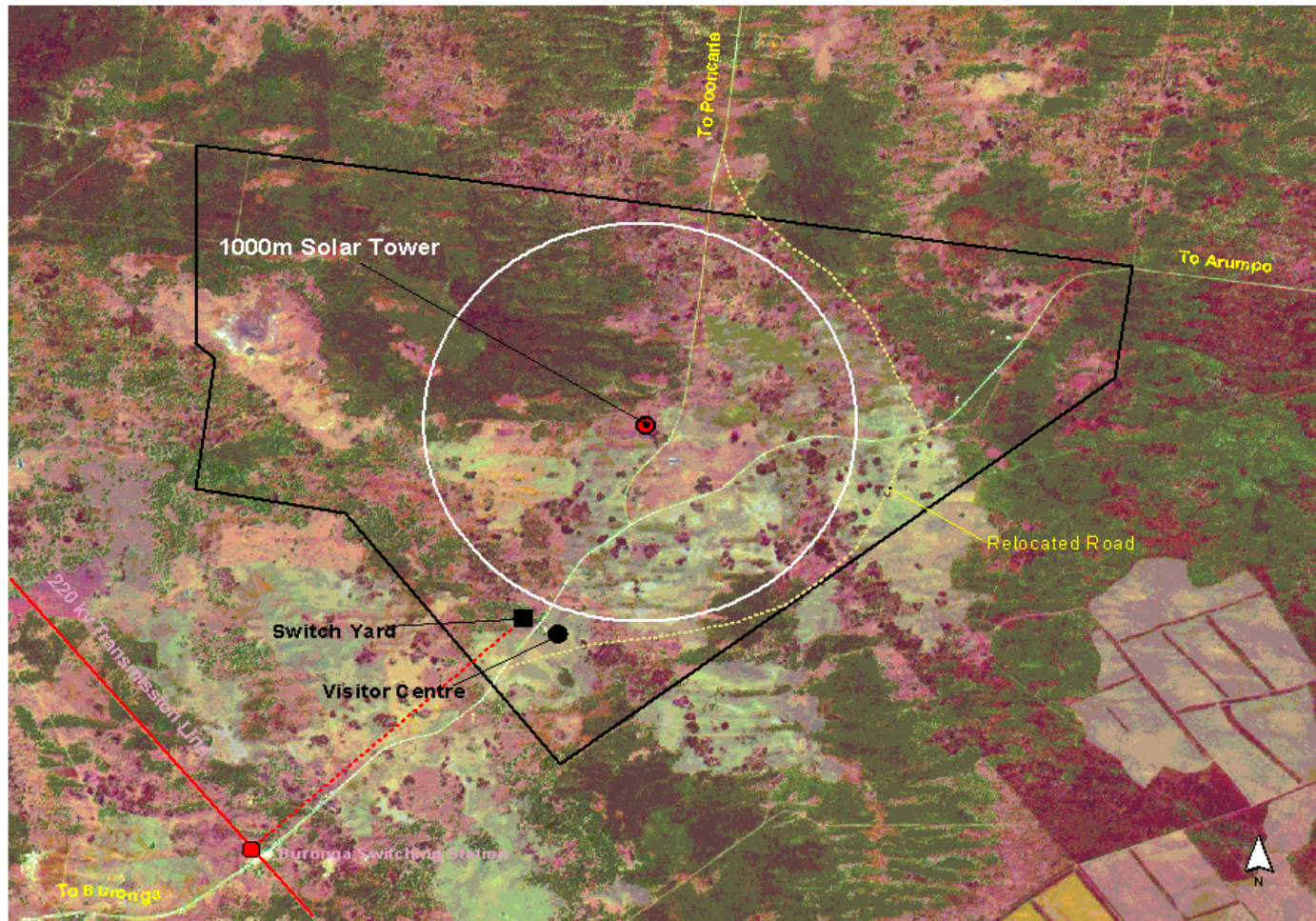
# World First Location

- Sunraysia Region
  - Wentworth Shire Council support
  - Mildura City Shire Council support
  - Established infrastructure and amenities
  - Supportive communities
- Commercially favorable site
  - Option taken over 9517ha near Buronga NSW
  - Grazing lease in perpetuity
  - Flat, semi-arid, salt bush
  - Controlled by DLWC in Wentworth region
- Gateway to outback – tourist destination



# Tapio Station, NSW

Solar Tower Site Map - Tapio Station



0 1 2 3 4 5 6 7 8 9 10 Kilometres



# Regional Benefits to Project

- **Access to National Electricity Grid**
  - Lower capital cost – higher internal rate of return
  - Lower line losses – increased revenue
- **Access to Infrastructure**
  - Rail, roads, airport
  - Accommodation and amenity for workers
- **Non-Energy Revenue Streams**
  - Agribusiness under collector periphery
  - Tourism – leverage off existing regional tourism
  - Telecommunications
  - Naming rights
  - Other (possible desalination)



# External Benefits

- Regional employment multiplier
- Infrastructure development - road, rail, water, power
- \$1.5 - \$2BN estimated flow-on economic benefits
- Export potential for tower IP, engineering and project management skills
- Diverse add-on industry opportunities, eg blades
- Australian leadership in renewable energy



# Government Support

- Commonwealth - Major Project Facilitation status awarded by Industry Minister, Ian Macfarlane, Aug 2002
- State - NSW State Significant Development declared by Deputy Premier, Minister for Planning, Dr Andrew Refshauge, 2002
- Local - Strong and enthusiastic support from Mildura Council and Wentworth Council - continuing

**Government support achieved at three levels**



# Where We Were September 2001

- A proven technology - SKM reports "it can be built, it will work, but at what cost??"
- A conceptual design - embryonic, conservative, extravagant, expensive
- A listed ASX Company – August 6, 2001
- \$1,500,000 in the bank after formation costs

**BUT - A HUGE CREDIBILITY ISSUE-A HUGE TASK  
TO COMPLETE-A HUGE RISK FOR INVESTORS**



# Achievements

- Secured commercial site at Buronga NSW
- Secured Schlaich Bergemann support - fee and equity
- Signed HOA with Leighton Contractors - Nov 2002
- Worked in JV with EVM since March 2002
- Construction and technology credibility proved
- Capital cost issues continuously addressed
- Project alliances formed
- Government, industry, media and community credibility established
- AGLE power purchase MOU-June 2003
- Additional \$1.1M approx raised from new investors



# Where We Are

## June 2003

### **PRE FEASIBILITY CAPITAL ISSUES ADDRESSED**

- It can be built and it does work - Leighton's et al
- Construction and technology credibility achieved
- Leighton construction expertise provided under HOA

### **PRELIMINARY PROJECT ALLIANCES FORMED**

- Reconfiguration of tower construction - Laing O'Rourke - MOU
- Collector material alternatives – Pilkington, GE, Bayer, Lucite, NetPro - MOU
- Collector performance enhancement - GE, SBS
- Turbine design - GE Turbines, TLT - MOU
- SBS engineers seconded to EnviroMission



# Where We Are

## June 2003

### PRE-FEASIBILITY FINANCIAL ISSUES ADDRESSED

- Independent studies to substantiate bankable non energy revenue streams:
  - Telecommunications - underway
  - Agribusiness - underway
  - Tourism - to be commissioned
  - Naming rights - to be commissioned
- AGLE 100% power off-take MOU in place
- Government financial opportunities study – Ernst & Young
- Derivatives study – Ernst & Young, Cantor Fitzgerald, NGeS
- Financial model credibility – Ernst & Young
- All revenue streams to be verified - Ernst & Young



# Forward Decision Timing

- Completion of capital cost estimates
- Completion of income stream evaluation
- Ernst & Young Verification
- Feasibility Decision
- Final Design and Bankability

**TARGET - SEPTEMBER/DECEMBER 2003**



# Summary

- Large scale on-grid solar technology
- Engineering icon for Australia
- ASX listed company – controlled locally
- First round investment successful
- Engineering optimisation nearing completion
- Market awareness increasing
- Ethical and sustainable investment attracted



# Press

- “We will extend every possible assistance to **EnviroMission** to ensure it goes ahead in our region.” - Mayor of Wentworth Shire
- “..the engineering would be biblical in scale, the concept itself is simple..” - Stewart Taggart
- “..the solar chimney idea should work. There's no question about the principles ... it's so incredibly simple..” - Keith Lovegrove ANZSES



# Last Word

**"WHATEVER YOU CAN DO, OR  
DREAM YOU CAN DO, BEGIN IT.  
BOLDNESS HAS GENIUS, POWER  
AND MAGIC IN IT."**

*Goethe*