

Ricardo Energy & Environment



#### **Overview**



What are the best arrangements for the design, construction and operation of the WtE facility?

- 1. Key risks to be managed and allocated
- 2. Works Phase Development Options
- 3. Service Phase Payment and Offtake & Power Purchase Agreements



#### **The Development Life Cycle**





# Key risks

- Feasibility & Procurement:
  - Feedstock Characterisation and Availability
  - Technology Bankability
  - Power Evacuation and Offtake Markets
  - Sites
  - Affordability & Value for Money
- Works Stage:
  - Site and Consents
  - Design
  - Capex
  - Commissioning
  - Timeline
- Operational Stage:
  - Changes in Feedstock Characterisation and Availability
  - Plant Availability and Load Factor
  - Training / Maintenance / Spares







# **Developer Options**



Developer	Benefits	Challenges
Pure Private (Free entry or Merchant)	<ul> <li>Free market economics</li> <li>Market competition</li> <li>No risk to the public sector</li> </ul>	<ul><li>Upfront capital investment</li><li>Securing feedstock</li><li>Securing sites</li></ul>
Pure Public (Closed entry)	<ul> <li>Access to feedstock</li> <li>Cheaper finance than private sector</li> <li>Availability of sites</li> </ul>	<ul> <li>No market competition</li> <li>Capability to develop and operate a sustainable business</li> <li>No risk share – limited due diligence</li> </ul>
Private Public Partnerships	<ul> <li>Market competition</li> <li>Share risks – brings innovation and international best practice</li> <li>Access to private finance (debt and equity)</li> <li>High levels of due diligence</li> <li>Availability of sites</li> </ul>	<ul> <li>Long term relationship</li> <li>Future proofing</li> <li>Long procurement period</li> <li>Price is king <ul> <li>Affordability</li> <li>constraints</li> <li>Value for money</li> <li>considerations</li> <li>Bidding costs</li> </ul> </li> </ul>

### **Development Options - Financing**



- Government finance
  - Suitable for DBO projects and projects where public sector is well placed to manage the risk
  - Government support (often in kind) often used to support PPP approaches
- Corporate finance
  - Lower transactional cost and simpler than Project Finance
  - Suits smaller projects but ability of corporate entity to borrow depends upon size of balance sheet
- Project finance
  - Suits large PPP projects with complex risk profile
  - High transaction costs, comprehensive lenders due diligence
  - Government support (in-kind) often involved

### **Typical PPP Contracting Structure**





### **Payment and Risk Profile**





c/o Deloitte, Panama PPP Seminar, October 2014

**Service Phase – Typical Payment Mechanism** 

• Key means of risk transfer during Service Phase

- Payment = Unitary Charge Deductions + Rewards + Gain Share ± Other
  - Unitary Charge is tonnage based
  - Deductions made when output specification standards are not achieved
  - Rewards where output specification standards are exceeded
  - Gain Share allows additional income to be shared with Municipality and Generator
  - Other, e.g. commissioning payments, pass through costs, reconciliation mechanisms, indexation provisions





### **Service Phase – Offtake Arrangements**

- Modern WtE can produce various revenue streams:
  - Incinerator Bottom Ash / Aggregate
  - Recyclates
  - Power
  - Biofuels
  - Don't forget Heat!
- Market demand now and in the future
  - Product specification
  - Revenue, cash neutral or a cost?
  - Inflation and FX risk
- Logistics for offtake / evacuation
  - Connection Arrangements
  - Power Purchase Agreement
  - Connection Agreement









#### **Service Phase – Power Purchase Agreement (PPA)**



- WtE is a waste treatment and not a power station:
  - The sale of power to the Utility alone is unlikely to cover the WtE development and O&M costs (PPA)
  - Necessary for the Generator to charge waste producers (e.g. the Municipality) a tonnage based gate fee for the treatment of waste (Project Agreement)
- Contract with Utility that governs the supply and purchase of power.
  - The Generator's terms and conditions for the production and delivery of power to the Utility
  - Performance guarantees (Plant Availability, Load Factor, etc.)
  - How the Utility will accept and pay for power
  - Any Generator credit provisions
  - Term starts from Full Service Commencement

### **Connection Agreement**



- Connection Agreement governs the connection of the WtE plant to the electric grid.
- Any costs for connection are the responsibility of the Generator
  - may include upgrading Utility transmission or distribution assets to accommodate the facility
  - Don't ignore at the feasibility stage!







# Making PPP projects attractive to investors

- Ensure excellent public sector capacity
  - Technical, financial and legal capabilities
  - Make good use of external advisors
  - Strong political support
  - Clearly defined project objectives
- Avoid 'Project on Project' risks
- Use bankable (i.e. proven) technology
- Realistic timelines (it takes longer than you think)
  - Identify risks early
  - Robust feasibility study
  - Consider providing a site
- Transparent and Competitive Procurement
  - Provides confidence to bidders and investors
  - Allow sufficient time for effective procurement
  - If the proposal seems to good to be true...



