The Economics and Industry Standing Committee Questions

Q 1. As the history of the North West Shelf project shows, the amount of gas in a reservoir is often difficult to determine with precision, particularly during the exploration phase. Though it is estimated that the combined Brecknock, Calliance and Torosa fields contain approximately 15.9 trillion cubic feet of natural gas, the precise size of these fields is not yet known. How does reservoir size impact upon the viability of FLNG technology as a method for developing a particular offshore gas field?

A.1 Volumetric uncertainty is something that is routinely encountered in field development planning, as the precise size of these fields is never known. To manage this, the commerciality of the development is assessed over a range of possible field volumes. Further appraisal can be undertaken if the range of volumes is too wide to make a clear development decision. In the case of Browse significant appraisal (wells, new seismic, seismic reprocessing, well tests) and studies have been completed since the Retention Leases were issued on 30 December 2003. This includes 12 wells of which three were tested and 9 new seismic datasets. This data, together with detailed studies have been used to narrow the volumetric uncertainty for the three fields.

FLNG technology is viable across a broad range of reservoir sizes as fields can be developed with single or multiple units. FLNG also provides flexibility that mitigates the risk of a downside reservoir case. Furthermore, in the case of Browse where there are multiple fields, it is possible to move an FLNG unit from one field to another in order to optimise the extraction rate of the natural gas across the various fields.

2. How does field composition – that is, the amounts of condensate and LPG alongside natural gas in a field – affect the business case for using FLNG technology?

A.2 The design of the FLNG facility is usually finetuned to the field gas composition. There is very little difference between FLNG and an onshore plant. Ultimate recovery of the field is similar.

In general terms, the liquid products will tend to improve the business case for using FLNG technology.

3. Does FLNG technology allow an operator to upscale their production? For example, if the fields in the Browse project do contain more gas than is currently estimated, will FLNG technology allow Woodside to upscale production?

A.3 FLNG technology is viable across a broad range of reservoir sizes as fields can be developed with single or multiple units. Furthermore, in the case of Browse where there are multiple fields, it is possible to move an FLNG unit from one field to another in order to optimise the extraction rate of the natural gas across the various fields.

4. In what ways does the capacity to upscale affect the business case around using FLNG technology?

A.4 The Basis of Design (BOD) and Front End Engineering Design (FEED) phases of the project will determine the commercial viability of the FLNG option. Any opportunity to upscale will be assessed at the time an opportunity, if any, emerges. However it is worth noting that FLNG provides a level of flexibility that is not provided by an onshore plant. (See also response to Question 1).

5. FLNG technology is claimed to offer the major benefit of lower capital expenditure when compared to an onshore project. However, FLNG will require a greater devotion of resources to operational expenses. Does this accurately describe the difference between the different phases of onshore and offshore projects? If so, how does this impact on the business case for using FLNG technology and the timing of the development?

A.5 Although the operational expenditure for FLNG is expected to be higher than the James Price Point development concept, this is more than offset by the substantially lower upfront capital expenditure.

6. The James Price Point onshore LNG option was established as the basis of design condition for the Browse retention leases. Could you please advise how this eventuated?

A.6 Following necessary dialogue with the State and Federal governments associated with the renewals of the Browse retention leases, a condition was established that required that the lessees select the development concept likely to be commercially viable at the earliest time. This condition stipulated that the development concept would be based on the processing of gas at the Western Australian Government's proposed Kimberley LNG Precinct at James Price Point. Woodside and the Browse Joint Venture participants agreed to this condition upon accepting the renewal offers for the Browse retention leases in December 2009.

7. How much less capital expenditure is required to develop the Browse Basin using three FLNG vessels in preference to using an onshore facility at James Price Point?

A.7 At this stage (only two months into BOD), it is too early to accurately estimate the final cost of the proposed Browse FLNG facilities, including capex. The total project cost will be subject to a final investment decision (FID).

However, FLNG carries strong economic appeal and allows companies to phase capital expenditure on large developments. Woodside estimates that the life-of-field capex savings using FLNG technology are between 35-50%.

8. For the Browse project, Woodside has focussed on minimising CAPEX as a priority, while seemingly not giving as much emphasis on other investment criteria such as OPEX, risk, expansion opportunities, and long term cash flow. Could you explain this prioritisation?

A.8 Woodside focuses on the total project value and on quantifying the uncertainty/risk to assess commercial viability.

For LNG mega projects, Woodside's objective is to make quality investments where we have a high degree of confidence of adding shareholder value. A broad range of factors and sensitivities are considered including but not limited to the oil price, reserves, capex, escalation and opex etc. This is a business judgment that involves weighing up all of the risks and ramifications against all of the value and upside ahead of any final investment decision.

9. What proportion of a capital expenditure for the proposed onshore James Price Point project would have been spent on offshore componentry such as FPSOs and the like?

A.9 Based on the capital costs provided in the Supplementary Information to the Year Three Annual Report, offshore facilities would have accounted for approximately 54% of the life of field capital costs (including decommissioning) or about 52% (excluding decommissioning).

NOTE: There were no plans for FPSOs on the James Price Point development concept.

10. Woodside has stated that the proposed James Price Point project was not commercially viable. How does Woodside define 'commercially viable'?

A.10 Woodside's objective is to make quality investments where we have a high degree of confidence of adding shareholder value. This is a business judgment, commensurate with the risk involved, weighing up all of risks and ramifications against all of the value and upside (as per response to Question 8).

Economically we pay particular attention to downside risk. If our projects do not provide us with a positive net present value and create value for our shareholders, we do not invest shareholder funds in those projects.

This approach is in-line with industry practice.

11. While the proposed James Price Point project was deemed not to be commercially viable, would the project have been profitable?

A.11 Woodside's objective is to make quality investments where we have a high degree of confidence of adding shareholder value and managing any risk of eroding value (as per responses to Question 8 and 10).

This approach is in-line with industry practice.

12. How big a factor in FID is sovereign risk? For example, how did the proposed James Price Point project compare to the Leviathan project in Israel? Do industry observers have a tendency to overstate the significance of sovereign risk? How does Woodside determine Western Australia's sovereign risk?

A.12 Industry observers are mindful of sovereign risk but generally accept sovereign risk as a part of the oil and gas industry.

Woodside generally considers a threshold country entry question when looking at sovereign risk. Once we consider the country risk can be acceptably managed then we focus generally on quantifying all uncertainties including legal and fiscal uncertainty.

13. The recent Federal Court decision to impose fines on some of the workers involved in the Pluto construction phase is an indication that businesses in Australia operate in a fair and consistent environment, which further indicates that Australia has a low sovereign risk. Has that decision given Woodside confidence that Australia remains low-risk environment in which to do business?

A.13 The recent Federal Court decision has had no impact on how Woodside assesses the commercial viability of projects.

14. There is a seemingly small difference in the projected rates of return between onshore and FLNG production. What work has been done to assess the cost-benefits in relation to return and risk; that is, how does Woodside price risk? What is your thinking in weighing up and then deciding that higher risks are preferable to a lower rate of return?

A.14 Woodside's objective is to make quality investments where we have a high degree of confidence of adding shareholder value. This is a business judgment that involves weighing up all of risks and ramifications against all of the value and upside.

Economically we pay particular attention to downside risk including reservoir downside risk. If our projects do not provide us with a high level of confidence for creating value for our shareholders, we do not invest our shareholders funds in those projects.

This approach is in-line with industry practice.

15. The design life of Shell's FLNG vessels is 50 years, with dry dock maintenance scheduled to occur after 25 years. What attempts has Woodside made to independently verify these projections?

A.15 It is an appropriate assumption that a major refurbishment of an FLNG facility may be required after 25 years, but additional engineering work will verify this. Depending on the condition of the facility and the projected remaining field life, this maintenance work could be done "on line" (i.e. while remaining on the mooring) or taken to dry dock. At this stage (only two months into BOD), it is too early to verify this projection and as we continue to mature the FLNG development option all elements will be considered and assessed.

16. If an FLNG on the Browse field has to come off point and go to land for repairs or maintenance, where will it be taken? What is Woodside's planned refuge port and what plans do you have to deal with this contingency?

A.16 The FLNG design life allows the facility to remain on station for the life of the project, even during category 5 cyclones. FLNG facilities are designed to 1 in 10,000 year weather events. Maintenance for an FLNG facility is undertaken on a more consistent basis "on line" compared to a traditional onshore LNG facility. The maintenance strategy also calls for a substantial part of the maintenance to be carried out during planned plant shut downs which are scheduled to occur every four years. These activities are also carried out online. Based on a potential major refurbishment of the FLNG facilities after approximately 25 years, appropriate dry dock facilities will be identified as part of future project planning.

17. While the James Price Point project was under consideration, what approaches did Woodside make to the Western Australian and/or Commonwealth governments for assistance, and what assistance was provided?

A.17 The Browse LNG Project was identified as a 'major project' by the WA Government. Through the State's 'Lead Agency Framework', Woodside as the proponent worked closely with a State appointed project development manager who facilitated the progression of the project via approvals and transparent communication between state authorities. This also extended to a Strategic Assessment of the proposed LNG precinct, based on an agreed terms of reference between the State and the Commonwealth.

18. Two of the leases for the Torosa field in the Browse Basin cover areas governed by Western Australia, rather than the Commonwealth. Does Woodside propose to drill wells in the state government area to extract the gas from the Torosa field?

A.18 The proposed field layout for the Torosa field for the Browse FLNG Development concept is similar to the layout planned for the James Price Point Development concept. The proposed layout for FLNG involves locating all permanent seabed infrastructure and the facilities themselves within Commonwealth jurisdiction. It is anticipated that approximately three (3) wells will deviate from the well head such that the bottom hole location is within the State lease area. As we continue to mature the FLNG development during basis of design, all elements will be considered. The precise number and location of the wells for the development will be detailed within the relevant Field Development Plan to be submitted to the regulators for approval.

19. Woodside's submission states that the Browse fields contain a combined contingent resource of about 15.9 trillion cubic feet of dry gas and 436 million barrels of condensate. What is your estimate of how much of this is in the state-governed areas? Please also provide the basis of this calculation.

A.19 Woodside estimates that about 10-11% of the gas within the Torosa field is within State leases (leases TR/5 and R2), which equates to approximately 5% of the total Browse reserve.

Woodside's Development reservoir team utilised 'ultimate recovery methodology' to estimate the allocation of gas and condensate between the R2 and TR5 retention leases. The percentage was calculated based on all interpreted seismic, well log data and geological assumptions, looking at each piece of information, like porosity, permeability, seismic interpretation, gas-water contacts.

20. Does Woodside foresee any problems getting the safety and environment case approved? What work has been done on the safety case and environment plans approval? Please outline the discussions Woodside has had with NOPSEMA to date.

A.20 Woodside is currently preparing the relevant documentation required for an Early Engagement Safety Case (EESC) submission on Browse FLNG to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). The submission of an EESC is currently a voluntary process which facilitates awareness of intentions and provides some certainty on assurance. Shell has successfully undergone Early Engagement with NOPSEMA on use of FLNG technology for Prelude. Browse FLNG will leverage from the Prelude FLNG design therefore success and lessons learnt from the Prelude EESC process will be utilised to improve the efficiency and quality of the final outcome for the Browse Safety Case. Communication with NOPSEMA has commenced on Browse FLNG in relation to the EESC submission.

Primary environmental approval will be required under the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act). Woodside is currently preparing the relevant documentation for referral to the Commonwealth Department of Environment under the EPBC Act. Impact assessment will leverage studies completed for the previously approved Prelude FLNG Project and the extensive range of environmental studies undertaken over the last two decades for the Browse Development. A number of the key environmental issues associated with the Development are unchanged by the shift to an FLNG concept. Secondary environmental approvals for installation and operation of the facilities will be progressed at a later stage with NOPSEMA.