

Prepared for Parliament – Talking Points (7 May 2015)

Hon Sally Talbot to move: “That this House recognizes the urgent need to diversify jobs in Western Australia’s economy and condemns the Liberal National Government for failing to adequately prepare for diversification”.

- Natural resources will remain the bedrock of the State’s economy.
- The Western Australian resources sector is the most sophisticated mining and petroleum industry in the world.
- Diversification of the State’s economy should focus on its natural advantage in natural resources including agriculture.

Western Australia is moving to a new “smarter” economy through scientific research and innovation

- Science is central to Western Australia’s future development, and the State is ideally placed to expand its capacity and expertise in areas that build on our natural and competitive advantages.
- The Western Australian Government has identified five priority areas for the application of science to diversity and strengthen the economy:
 - ✓ • mining and energy,
 - agriculture and food,
 - biodiversity,
 - ✓ • health and medical research, and
 - radio astronomy.

Mining and energy

- Perth is a centre for scientific and technological innovation driven by the needs of the resources sector.
 - It is home to the technology divisions of major international mining, energy and associated services companies, and numerous research and development (R&D) initiatives including:
 - BHP Billiton, Rio Tinto and Roy Hill’s Remote Operations Centres

- Chevron's Perth Global Technology Centre
 - Shell, Curtin University and the Challenger Institute's partnership in the Global Centre for FLNG Learning and Research
 - GE (General Electric) Oil & Gas Skills Development Centre
- The research sector is marked by active collaboration between government bodies, industry and universities:
 - Australian Resources Research Centre (ARRC), a major initiative of the State, CSIRO and Curtin University, developed in collaboration with the petroleum and mining industries, established to enhance petroleum and mining exploration and extraction research and development.
 - The National Resource Sciences Precinct (NRSP), a collaboration between CSIRO, Curtin University and the University of Western Australia, is a network through which organisations can readily connect with world-leading expertise and gain access to infrastructure to tackle the complex challenges facing the resources industry.
 - The Western Australian Energy Research Alliance (WA:ERA) comprising the CSIRO, Curtin University and the University of Western Australia, with industry partners Woodside, Chevron and Shell. The WA:ERA delivers direct access to a critical mass of leading researchers to meet current industry challenges and lay the foundation for future energy developments.
- Western Australia is at the forefront of global mining innovations such as exploration and mining software (EMS), and remote control and automation.
 - According to a September 2013 Austrade report, industry research indicates that 60% of the world's mining software was developed in Australia, and the EMS segment is concentrated in Western Australia, which has 45% of Australia's EMS companies.
 - The world's first fully autonomous heavy-haul long distance rail system, Rio Tinto's AutoHaul rail system, had its first proper trial in the Pilbara in late 2014. This follows the use of driverless trucks in Western Australia by the three major miners Rio Tinto, FMG and BHP.

- The success of the Western Australian resources sector has relied on technology and innovation to remain competitive, discover new mineral and petroleum reserves, minimize impact on the environment, and improve working conditions.

Agriculture and food

- Agriculture is cemented as an area in which Western Australia truly excels.
 - Agriculture and food industries such as cropping, livestock production, horticulture, fisheries and aquaculture, represent the state's second biggest export industry.
 - We are also one of the most pest and disease free agricultural production areas in the world, giving us an advantage in our export based agricultural and food sector.
 - We are now looking at opportunities to further grow and develop this sector to provide for the growing global demand for premium, safe food, particularly from Asia.
 - The application of science to agriculture is a key component in realizing more agricultural opportunities.
 - The Western Australian Government is investing in research and development projects to respond to the challenges of a changing environment and to remain internationally competitive by improving the productivity and long-term profitability of the State's agriculture and food industry. Priorities include:
 - Boosting grain productivity: For example, the breeding of new high-performing wheat varieties which have good disease resistance and excellent yields, and a new open data exchange system to provide growers with timely weather and crop information to make informed management decisions about their cropping program.
 - Water for food: Identifying sustainable water resources, improving current water use efficiency, investigating desalination solutions and other water technologies and developing irrigation technologies.
 - Better managing biosecurity risks: Modelling, e-surveillance and other new technologies are being developed to aid the early detection of pests, diseases and weeds. Another innovation is the use of smart phone technology to encourage biosecurity recording, reporting and investigation.

- There are strengths in other food sectors:
 - o Our high quality fisheries, almost all of which are now sustainable, are major world suppliers of lobsters, prawns and pearls.
 - o Western Australia's flock of about 14 million sheep produces high quality meat and some of the world's finest wool. We apply advanced technology, genetic management systems and equipment such as tracking systems to ensure food safety.

Marine and terrestrial biodiversity and conservation

- Western Australia is home to some of the most unique biodiversity on earth. We are home to three of Australia's five marine bioregions, two of Australia's four marine based World Heritage Areas, and eight of 15 Australian global biodiversity hotspots.
 - Our rich biodiversity can be attributed to the State's size spanning across a range of geographical, soil and climatic conditions.
 - Science research will improve management decisions to protect terrestrial and aquatic ecosystems and reduce costs and delays in development approval and monitoring.
 - Western Australia is increasing its scientific collaboration with its Asian neighbours to promote biodiversity conservation.
 - o In 2014, Memoranda of Understanding (MoU) was signed between Western Australia and China to establish our first sister park relationship and strengthen collaboration in plant conservation research to promote biodiversity protection.
 - o The University of Western Australia (UWA) and the University of Mumbai in India are collaborating in marine and ocean science to share the UWA Oceans Institute's research strengths in oceanography, ecology, engineering and resource management.
 - o Perth now has one of the top capabilities for marine science in the Indian Ocean due substantially to the research capability retained and developed through the State's investment in the Western Australian Marine Science Institute.
- The proposed Kimberley National Park was one of the Liberal Government's key election commitments in 2013 and along with the

creation of the Great Kimberley Marine Park, is a central component of this Government's Kimberley Science and Conservation Strategy.

Health and medical research

- ✓ • Western Australia has a proud history of medical research. The State's investment in new infrastructure has created a world class public health system.
 - Key strengths in our infrastructure are two major health precincts where tertiary hospitals, universities and medical research institutes, with established collaborations with other hospitals and universities within the state, are maximizing the opportunities for translational research.
 - Well established and internationally renowned research institutes including the Harry Perkins Institute for Medical Research (focusing on adult health) and the Telethon Kids Institute (focusing on child health).
 - Health and medical researchers in Western Australia have achieved worldwide acclaim including:
 - Dr Fiona Wood's development of a spray-on solution of skin cells for burns patients.
 - Professor Fiona Stanley's work on Cerebral Palsy and children's health.
 - Professor Ian Constable's significant contribution to the development of quality eye care in Western Australia and his founding of one of the largest eye research institutes in the southern hemisphere, the Lions Eye Institute.
 - The Institute's developments including the world's first soft artificial cornea, and has an international reputation for providing high-quality care, with more than 50,000 patients seen each year, including many from South East Asia.
 - Professor Barry Marshall and Dr Robin Warren's discovery of the bacterium causing gastritis and peptic ulcers for which they were awarded the Nobel Prize for Medicine and Physiology in 2005.

Radio astronomy

- Radio astronomy is a priority for Western Australia and the State has a thriving radio astronomy community with strong science and engineering capabilities.
 - Starting from almost nothing, in less than a decade we now have a world class research astronomy capability through the establishment of the International Centre for Radio Astronomy Research (ICRAR).
 - ICRAR has more than 120 staff and students and has built a world class centre of excellence in astronomical science, engineering and information and communication technologies, working on highly specialized science and engineering projects underpinning the Square Kilometre Array (SKA).
 - The SKA will be the world's largest and most sensitive radio telescope and will be used by international scientists to make ground-breaking observations and discoveries about the universe.
 - Over the next decade, Western Australia will continue to grow as a hub for radio astronomy and spin-off industries in supercomputing and data science, providing tangible opportunities for businesses to grow and revolutionary technologies to emerge.
 - One of these opportunities revolves around the challenges of big data. The SKA is poised to change the way we think about data, how we collect it, store it, process it and analyse it. The amount of data that is expected to be collected every day is around ten times the current global internet traffic. New technologies, skills and workforce capabilities will be needed to make sense of and create meaning from these massive data sets.

In addition

The Government is building infrastructure to accommodate our diversifying economy.

- Major regional projects include:
 - the Ord East Kimberley Expansion;
 - Pilbara Cities and Super Towns; and
 - Water for Food.

- i. These projects, largely funded through the Royalties for Regions program, aim to enhance the economic diversification and quality of life in remote regional areas of Western Australia.
- Major projects that are transforming the city include:
 - the Riverside Project,
 - Perth Children's Hospital,
 - New Perth Stadium,
 - City Link,
 - Fiona Stanley Hospital,
 - Gateway WA,
 - Elizabeth Quay,
 - Forrestfield-Airport Link and
 - the New Midland Hospital.

Western Australia's diversifying economy draws us closer to, and complements, the growing Asian economies in our region

- Western Australia is leveraging off its natural and competitive advantages in natural resources to provide scientific and technological innovations for the global resources sector:
 - We can assist Asian countries such as India and Indonesia to develop their mining industries through exporting Western Australian innovation and expertise.
- Western Australia is one of the most pest and disease free agricultural production areas in the world. We are seizing the opportunity to provide for the growing demand for premium and safe food from Asia:
 - For example, we are working with China toward trial shipments of live cattle from Western Australia to China. It is hoped that protocols and quarantine procedures can be established soon to allow this bilateral trade.
- The recent conclusions of a trifecta of free trade agreements with Western Australia's top three trade partners: South Korea (entered into force on 12 December 2014), Japan (entered into force on 15 January 2015), and China (concluded in November 2014) also opens

up exciting opportunities for Western Australian companies to provide products and services to these countries.

- The Western Australian Government's trade and investment offices in each of these locations assist Western Australian exporters take advantage of these opportunities.
- Countries like Singapore are also participating in this once-in-a-lifetime transformation of Perth through their investment across the city's property sector.
 - In December 2014, Singaporean company Frasers Property marked the completion of the first residential at the \$450 million Queens Riverside development, a key component of the Riverside Project.
 - In March 2015, Singaporean company Keppel REIT celebrated the completion of the top floor of the office tower in the historic Cathedral and Treasury Precinct, which is undergoing a \$700 million restoration. The tower is expected to be completed by the middle of this year.
- International collaborations in scientific research and innovation across all sectors of the Western Australian economy is essential in ensuring that the State remains globally competitive and at the forefront of development.