

LEGISLATIVE ASSEMBLY OF THE NORTHERN TERRITORY

WRITTEN QUESTION

Mrs Lambley to the Chief Minister:

Space Industry in the Northern Territory

1. How was it determined that the Northern Territory Government support a space industry in Arnhem Land?
2. Were other locations and sites in the Northern Territory considered by the Northern Territory Government?
3. If so, please provide all details of what sites were considered and who and what organisations were involved in these negotiations?
4. Were any sites in Central Australia considered in the process of establishing a suitable site for a space industry in the Northern Territory?
5. If not, then why not?
6. Please provide details of the when the Northern Territory Government commenced negotiations with Equatorial Launch Australia (ELA) for the proposed space industry in the Northern Territory?
7. At what stage are negotiations up to with the parties (Equatorial Launch Australia, the Northern Land Council and the Gumattj Corporation) to establish a space industry in the Northern Territory?
8. Is it too late for Central Australia to be considered as a site for a Northern Territory Space Industry?
9. What are the ideal climatic, geographical and physical conditions for a Space Industry to operate?

ANSWER

1. The proponent, Equatorial Launch Australia, identified the North East Arnhem region as ideal for its commercial purposes, and the NT Government is supporting this private sector led initiative in the same way it does for proponents of other prospective industries in other parts of the NT.

The Northern Land Council is currently consulting with Traditional Owners on a proposed lease and sublease of a site in East Arnhem upon which Equatorial Launch Australia intends to develop a space port.

The NT Government is interested in exploring opportunities to develop a space industry in the NT.

Opportunities in the space industry can be grouped into two broad streams – upstream, which relates to the provision of technology, and downstream which relates to the exploitation of technology. Some specific examples include:

- space enabled services and applications (equipment and services that require the data or services from space based system)
- launch activities and support systems
- space activity support services (professional services which support space-based activities)
- space-related research and development, and
- space education and training.

Space industry development complements the NT's existing defence, aerospace, agribusiness, and land and marine management sectors.

The global space industry has been growing at a compound growth rate of 9.52% from 1998 to 2015; more than three times the annual growth rate of world gross domestic product.

The Australian space sector currently produces annual revenues of \$3-4 billion, which represents only 0.8% of the global space economy.

Australia and the NT has the potential to capture a larger share of the growing global space market.

The Australian Government is undertaking a Review of Australia's Space Industry Capability (the Review).

The Chair of the Review, Dr Megan Clark, was in Darwin on 31 August 2017 gathering input from industry and government representatives on the right strategic framework to support growth of Australia's space industry.

A copy of the submission made to the Review by the Department of Trade, Business and Innovation is at **Attachment A**.

The Chief Minister has written to the Premier of South Australia and the Chief Minister of the Australian Capital Territory, as the jurisdictions most active in efforts to develop the Australian space industry, to express the NT Government's interest in working collaboratively with them on the development of this emerging industry.

2. The private-sector proponent identified the North East Arnhem region as ideal for its commercial purposes.
3. N/A.

4. The NT Government's approach is to ensure the NT is well positioned to attract industry proponents through ensuring land, industry and other necessary information supports private sector exploration of opportunities.
5. N/A.
6. Through the Gove Transition from 2015, the NT Government, Rio Tinto and Developing East Arnhem Limited (DEAL) partnered to promote the comparative advantages of the region through the East Arnhem Investment Guide. Equatorial Launch Australia made contact with DEAL in early 2015 through the channels advised through the Guide.
7. The NT Government is working with DEAL, Equatorial Launch Australia and Gumatj Aboriginal Corporation on a proposal to develop a spaceport in East Arnhem.

The Northern Land Council conducted consultations with Traditional Owners in July and August 2017 on the proposed space port site in East Arnhem.

The outcome from the consultations is anticipated in the coming months.

If land tenure is secured, there are a number of important regulatory processes to be undertaken (including those associated with environmental assessment and obtaining a space port licence) prior to the facility being able to be built and used.

8. No, there are opportunities for multiple regions in the NT to be part of emerging space industry in the future.

The NT Government's interest in exploring opportunities to develop the space industry in the NT does not specifically focus on any one region.

9. Conditions that are advantageous for launch sites, include those that are:
 - close to the equator (making it easier for rockets to achieve escape velocity and either minimise propellant use or maximise payload)
 - tectonically stable (low risk of earthquakes)
 - clear weather for much of the year (to support launches)
 - close to sea, and
 - sparsely populated.

However there are multiple aspects of the space industry and hence no one 'ideal' set of climatic or geographical attributes which would guide where businesses in the space industry are established.



DEPARTMENT OF
TRADE, BUSINESS AND
INNOVATION

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Via website: <https://consult.industry.gov.au/space-activities/review-of-australian-space-industry-capability/>

Dear Dr Clark

Re: Review of Australia's Space Industry Capability

The Northern Territory Government's Department of Trade, Business and Innovation (the Department) welcomes the opportunity to comment on the Australian Government's Review of Space Industry Capability issues paper (the Reviews issues paper). The Northern Territory (NT) is ideally placed to play a key role in developing Australia's space industry as it has:

- geographical advantage for the development of launch sites
- strategic location close to Asia, and
- demonstrated capacity to develop emerging industries and host niche high-tech strategic operations.

Space industry development complements the NT's existing defence, aerospace, agribusiness, and land and marine management sectors. The Department is committed to working with the Australian Government, the states and the Australian Capital Territory to understand how to best grow the space industry in the NT to improve national security, facilitate economic growth, and improve data and resource management.

The Department supports the Australian Government's commitment to a national strategy to grow Australia's space industry and is ready to be a host and partner in future space and defence-related research activities. This submission discusses the current development and future opportunities of the space industry in the NT, and responds where relevant to the questions posed by the Review's issues paper.

Development

The NT has long been considered as a possible location for space industry projects. The NT has a geographical advantage that offers launch sites that are:

- close to the equator (making it easier for rockets to achieve escape velocity and either minimise propellant use or maximise payload)
- tectonically stable (low risk of earthquakes)
- clear weather for much of the year (to support launches)
- close to sea, and
- sparsely populated.

The significant amounts of available land reduce the risks of launches and aids in the recovery of payloads. From a global perspective, the NT also offers a stable political environment and well-established logistics infrastructure.

The NT's proximity to Asia offers a competitive advantage to working with emerging space industries in the region. As recognised in the Review's issues paper, the space industry has had a compound growth rate of 9.52 per cent per annum between 1998 and 2015, and is expected to continue growing. Businesses in rapidly growing regional economies are looking to gain a foothold in the space industry, and attractive launch conditions in the NT could attract these businesses and seed a nascent space industry here.

The Department is committed to working with a tertiary institution, e.g. Charles Darwin University, to conduct events like the ConocoPhillips Science Experience which help to ensure students understand pathways to Science, Technology, Engineering, Arts and Mathematics courses to facilitate their participation in a growing space industry. The NT is also investing in the next generation of budding space-industry professionals by committing to implementing the teaching of coding in all NT schools, and upskilling teachers and trainers in digital literacies.

The NT has demonstrated a commitment to supporting educational advances with emerging industries by establishing the North Australian Centre for Oil and Gas. The Centre provides training and education programs, and research capabilities targeted at the specific needs of the oil and gas operations and developments in the region. The NT Government is similarly interested in maximising the educational outcome of potential space launch facilities and space-related research.

The NT's large footprint makes better satellite and geo-spatial data, critical to improving productivity and effectively managing natural and economic resources. Establishing a local space industry that could work collaboratively with major industry sectors would help drive development and innovation in land management, agricultural, pastoral and minerals exploration activities in the NT.

Better satellite coverage would also encourage growth, economic development and employment opportunities across the NT. More reliable, cost-effective and high quality internet access would help NT businesses capture the benefits of remote management and automation initiatives revolutionising the agribusiness, energy and minerals sectors. More tailored and accurate data could help improve the ability of remote businesses to participate in the national and global economy, and reduce the risk of relying solely on data derived from overseas.

There are a number of existing initiatives and projects that demonstrate the innovative use of data in the NT, and the potential benefit of better data and satellite access:

- The geoscience and mining industry uses innovative technologies to map buried geology and allow successful mineral exploration in areas where the prospective geology is buried beneath sand, soil or sedimentary cover. This includes the application of geophysical methods to image the composition and structure of the crust at all scales and using processing software to successfully integrate and model the data.
- The eTrend system (formally called the Precision Pastoral Management System) is a remote cattle management system developed by Ninti One and the Cooperative Research Centre for Remote Economic Participation, and was trialled at five cattle stations across Northern Australia. The eTrend system uses satellite data to assess pasture condition and links automatic measurements of cattle growth to allow pastoralists to monitor cattle and make decisions such as whether to hold on to stock, sell or feed supplement. The system tracks weight data from cattle as they walk over a weighing platform on their way to a watering point. The ear tag is automatically scanned as they pass over the weighing platform, and the data is sent back to the pastoralist. The system is now being commercialised and will soon be available to cattle producers.

- The Northern Territory Land Integration system manages the capture, organisation, management, integration and distribution of information about natural resources, the environment, land use, transport, communications, mapping, demography and socio-economic factors, where such information can be related to a geographical location.

The Department recognises the benefits of democratising data access to provide Australian entrepreneurs with an opportunity to add value to the data through the development of new products and services tailored to local circumstances. To improve this capability, the Department calls on the Australian Government to continue exploring projects which would provide the community with low/no cost access to data generated through government funded space sector activities. Examples of these types of initiatives are the \$15.3 million for Digital Earth Australia project used for agriculture and evidence-based decisions for the environment, and the \$12 million testing of a Satellite Based Augmentation System (SBAS) to deliver positioning information across Australia.

Capability

Growing the space industry in Australia as it evolves and grows for defence, government and commercial applications requires collaboration between government, industry and academia.

The NT is well-positioned to support upstream space industries with Charles Darwin University establishing a new industrial transformation research hub for advanced manufacturing. The hub will help deliver new tools, skills and technologies to generate highly skilled jobs in the NT. The hub includes a world first 3D printer capable of rapid and low-cost production of metal parts without tools. It provides an example of innovation in the NT that could provide a service to the space industry in the quick, adaptable and affordable production of highly specialised parts. The 3D printer technology was invented by a Territorian who was a previous recipient of the NT Government's Business Innovation Support Initiatives innovation grants, and demonstrates the significant talent in the NT ready to take advantage of new and innovative industries.

The NT has a well-established logistics and construction industry to support the development of launch facilities, including experience in planning and delivering infrastructure in remote locations. The logistics and construction sector in the NT has a proven ability to meet the high security, workplace safety and environmental risk standards required by the defence, and oil and gas industries. This makes our construction industry well placed to work on sensitive or complex space facilities.

Recent developments in the offshore oil and gas sector have allowed the NT to demonstrate a capacity to develop emerging industries in the region. Darwin was chosen as the location for the US\$37 billion Ichthys LNG project despite the field being located 220km off the northern coast of Western Australia. The project includes installation of the world's largest semi-submersible platform, construction of an 890km subsea pipe, and a state-of-the-art onshore LNG production facility. To capitalise on this emerging industry, the NT is developing service and supply capabilities through investment in the construction of the Darwin Marine Supply Base and the provision of specialised maintenance services to the marine sector through the Darwin Ship Lift Facility and Marine Industry Project.

Guaranteeing the sovereignty of Australia's maritime borders and protecting significant onshore and offshore critical infrastructure, especially in Northern Australia, is a national priority. The NT's strategic location means it will continue to expand its role in Australia's defence and border security capabilities. The Department is aware the Department of Defence is focused on developing its capability in space, now considered the fifth domain of warfare, alongside land, air, water and cyber.

This commitment was recognised in the recently released Defence Industry Policy Statement which identified space capabilities as a transformational technology area, and identified space capabilities as a priority area of work for the Next Generation Technologies Fund. This provides the policy framework for the multi-billion dollar capabilities defined in the Defence White Paper 2016 that are space based, have a space related component or have a space services dependency.

To help fulfil these commitments, the Australian Government will need to explore what sovereign capabilities should be established to safeguard national interests. The NT has key defence assets supported by a well-developed defence industry that, combined with its other competitive advantages, presents an attractive location for defence space capabilities.

Governance

The Department supports the Review's issue paper, and recommends the Australian Government moves quickly to clarify responsibilities between state, territory and Australian governments.

We also note that this review and the ongoing process to establish a strategic vision for the Australian space industry should not prevent projects from progressing. Projects currently under development should continue to be pursued and progress as appropriate, considering existing state/territory and Australian government approvals. To encourage the growth of a local space industry, the Australian Government should adopt a pro-development attitude to space industry activities by streamlining Australian Government legislation and implementing project approval arrangements to encourage investment and smooth approvals processes.

The Department supports the establishment of an Australian space agency. Any such agency should focus on industry coordination, strategic planning and commercialising areas of competitive advantage. Another key benefit of an Australian space agency would be as the lead on international negotiations and coordination with other space agencies such as NASA and the European Space Agency. An Australian space agency could also coordinate engagement from across government with regional space bodies such as the Asia-Pacific Regional Space Agency.

Any Australian space agency should also have a role in coordinating industry input. Close collaboration between government and industry is critical to the success of establishing and growing the space industry in Australia.

To help facilitate the growth of this industry in Northern Australia, the Department is committed to facilitating collaboration between NT Small-Medium Enterprises and research institutions such as Charles Darwin University and the Centre for Appropriate Technologies.

Conclusion

The Department is excited about being part of the growth of this dynamic sector and working collaboratively with other jurisdictions to realise the vision of Australia securing a greater share of the global space economy.

Should you wish to discuss any of the material presented in this submission in greater detail, please contact Jason Schoolmeester, Executive Director, Northern Australia Development Office on telephone 08 8999 5081 or by email at jason.schoolmeester@nt.gov.au

Yours sincerely



Michael Tennant
Chief Executive Officer

29 August 2017