

## Development Proposals

### Overview

- 3.1 The Committee has received many proposals for major capital infrastructure developments which would require direct government funding for facilitation.
- 3.2 This chapter lists these proposals and briefly identifies preconditions needed for them to proceed. The proposals are listed by category, then alphabetically. The projects described in this chapter are priority-listed in Chapter 5.

### Road Infrastructure Proposals

- 3.3 Roads are the vital connection for service delivery and the transport of produce between regional towns and centres across the nation. The condition of roads in the North is variable, with many being unsealed, or partially sealed, and subject to seasonal flooding.<sup>1</sup>

### National Highways and Major Arterial Roads

- ***Bruce Highway*** – upgrading for flood mitigation, safety and capacity improvement north and south of Mackay and the provision of a dual carriageway between Edmonton and Gordonvale would sustain major developments north of Cairns and secure access to southern ports during severe weather events.<sup>2</sup> Federal funding of \$6.7 billion has been allocated

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1 Australian Government, *Green Paper on Developing Northern Australia*, Canberra 2014, p. 33.

2 Mr Andre Wessells, Interim Chief Executive Officer, Regional Development Australia (RDA) Mackay–Isaac–Whitsunday, *Committee Hansard*, Mackay, 31 March 2014, pp. 1–2; Mr Tim Miles, Chair, Mackay Region Chamber of Commerce, *Committee Hansard*, Mackay, 31 March

for upgrades over 10 years which include \$3 billion for north Queensland.<sup>3</sup>

- **Central Arnhem Highway** – Katherine to Nhulunbuy, Northern Territory – upgrading, with further upgrades of the Stuart Highway, would support community and industry development after the closure of Rio Tinto Alcan’s bauxite refinery in late 2014.<sup>4</sup>
- **Great Northern Highway** – Pilbara and Kimberley region to Port Hedland, Western Australia – upgrading would improve the Pilbara-Kimberley road network. Federal funding of \$307.8 million has been allocated for upgrading.<sup>5</sup>
- **Hann Highway** – between Lynd Junction and Hughenden, Queensland – upgrading an unsealed 105 km section, and 35 km on the Torrens Creek to Aramac Road, would provide a continuous sealed route from Cairns to Melbourne via Bourke, in central West New South Wales, at an estimated cost of \$150 million. This would reduce travel time from the North to Melbourne by two days, diverting traffic from the heavily used Bruce Highway coastal route, and enable the use of triple (multi-combination) road trains.<sup>6</sup>
- **Outback Highway** – Laverton, Western Australia to Winton, north Queensland, via Alice Springs and Boulia – upgrading 1700 km would enhance regional productivity, consolidate the mining and freight sector, improve market access in remote shires and Aboriginal communities, and establish a new adventure self-drive tourism route. Federal funding of \$33 million has been allocated for upgrading 230 km.<sup>7</sup>
- **Peninsula Development Road** – Weipa to Bamaga, Cape York – upgrading would improve access to land for agriculture and markets for primary produce, with enhanced prospects for viable economic development in remote Aboriginal and Torres Strait Islander

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2014, p. 54; Mr Trent Twomey, Chair, Advance Cairns, *Committee Hansard*, Cairns, 28 April 2014, pp. 3, 4.

3 Hon. Warren Truss MP, *Submission 239*, p. 3; Premier of Queensland, *Submission 219*, p. 66.

4 Mr Djawa Yunupingu, Traditional Owner, Gumatj Aboriginal Corporation and Miwatj Employment and Participation (MEP) Ltd, *Committee Hansard*, Nhulunbuy, 21 May 2014, p. 1.

5 Chamber of Minerals and Energy, *Submission 93*, p. 22; Hon. Warren Truss MP, *Submission 239*, p. 3.

6 Flinders Shire Council, *Submission 12.1*, pp. 1-2; Councillor Greg Jones, Mayor, Flinders Shire Council, *Committee Hansard*, Townsville, 2 April 2014, p. 17; *Exhibit 86: Etheridge Shire and Flinders Council Project – Upgrade of Hann Highway (Pave and Seal)*.

7 Ms Helen Lewis, General Manager, Outback Highway Development Council, *Committee Hansard*, Alice Springs, 19 May 2014, p. 11.

communities.<sup>8</sup> Funding is being allocated for road and infrastructure upgrades in the Cape York region.<sup>9</sup>

- ***Roper, Stuart and Barkly, Plenty and Sandover Highways*** – Mataranka, central Northern Territory to Mount Isa, central Queensland – upgrading of these roads would support development of the region’s oil, gas and mining and cattle industries. An estimated \$2 billion is required for road upgrades and associated infrastructure.<sup>10</sup>
- ***Tanami Road*** – Halls Creek to Yuendumu – upgrading a 750 km section at an estimated total cost of up to \$1 billion would provide a freight corridor from the Kimberley region to southern markets, reduce mining operating costs, secure strategic defence interests, and improve safety and access for tourism. Federal funding of \$110 000 is required to assess the feasibility of development as a toll road.<sup>11</sup>
- ***The Savannah Way*** – Cairns to Broome through Cape York’s Gulf Country – also known as the Gulf Developmental Road, upgrading and sealing would improve safety, stimulate tourism-related development, community renewal, and improve access for biosecurity control and strategic defence interests.<sup>12</sup>

## Other Arterial Roads

- ***Buntine Road, Barkly and Murrniji Stock Routes, Duncan and Buchanan Highways*** – linking Carpentaria Shire, Queensland, to the Stuart Highway in the Northern Territory’s Barkly and Victoria River regions, then west to the Kimberleys in Western Australia and south to South Australia – these roads are core arterial routes for northern region beef producers. Upgrading of unsealed and worn tar surfaces in the network would enable year-round road access and reduce travel times resulting in benefits for the cattle industry and tourism.<sup>13</sup> Federal funding would be required for the road upgrade, at a cost of around \$900

8 Cairns Regional Council, *Submission 40*, p. 11.

9 Hon. Warren Truss MP, *Submission 239*, p. 3.

10 Hon. Adam Giles MLA, Chief Minister, Northern Territory Government, *Committee Hansard*, Darwin, 20 May 2014, pp. 9, 10; Association of Mining and Exploration Companies Inc., *Submission 182*, p. 5.

11 Shire of Halls Creek, Tanami Action Group, Kimberley Cattlemen’s Association and Central Kimberley Chamber of Commerce, *Submission 103*, p. 3.

12 Gulf Savannah Development Inc., *Submission 33*, pp. 2–3; RDA Far North Queensland and Torres Strait Inc., *Submission 56*, p. 7; Research Australasia, *Submission 39*, pp. 3–4; Burke Shire Council, *Submission 16*, p. 4.

13 Mr Troy Setter, Chief Executive Officer, Consolidated Pastoral Company Pty Ltd (CPC), *Committee Hansard*, Darwin, 19 August 2014, pp. 8–9; Mr David Warriner, President, Northern Territory Cattlemen’s Association; *Committee Hansard*, Darwin, 19 August 2014, p. 22.

million for the Northern Territory arterial network.<sup>14</sup> Provision of a cattle transfer and trucking yard on the route south of Alice Springs or near Port Augusta would improve driver safety and animal health, at an estimated cost of \$3 to \$5 million.<sup>15</sup>

- ***Burke Development Road*** – Normanton to Cloncurry, Carpentaria Shire, Queensland – upgrading 60 km of the old ‘Beef Road’ with a new bridge over the Flinders River would provide maximum benefit to the industry for minimum investment.<sup>16</sup>
- ***Cape Leveque Road*** – Broome to Dampier Peninsula, Western Australia – sealing 80 km would support new tourism opportunities and investment in regional Aboriginal communities.<sup>17</sup>
- ***Clermont-Alpha and Peak Downs Roads, and Bowen Developmental Road*** – Galilee and the Bowen Basin area, central/north Queensland – upgrading these roads to mitigate against flooding would support mining developments, improve export access for fresh produce in the Whitsunday region and enhance tourism.<sup>18</sup> Upgrading the highway between Clermont and Roma would allow large road trains to travel north to south, thereby reducing freight costs and heavy vehicle traffic on the Bruce Highway.<sup>19</sup>
- ***Kakadu Roads*** – Northern Territory – providing all-year access for safe transit throughout the national park would assist the tourism industry.<sup>20</sup>
- ***Kata Tjuta-Docker River Road*** – Northern Territory – upgrading would enable wet weather access, improve safety and facilitate development of the camel meat and tourism industries.<sup>21</sup>
- ***Kuranda Range Road*** – Cairns and the Atherton Tablelands – providing a dual carriageway route would remove a major road bottleneck and improve freight transfer and facilitate tourism development.<sup>22</sup>

14 Estimates at 2005. Exhibit 99: Northern Territory Cattlemen’s Association, *NT Road Network Brief 2005*, p. 4.

15 CPC, *Submission 312*, p. 4; Ms Tracey Hayes, Chief Executive Officer, Northern Territory Cattlemen’s Association, *Committee Hansard*, Darwin, 19 August 2014, pp. 22–23; Mr Setter, CPC, *Committee Hansard*, Darwin, 19 August 2014, p. 9.

16 Carpentaria Shire, *Submission 7*, p. 5.

17 Shire of Broome, *Submission 240*, p. 5.

18 Councillor Anne Baker, Mayor, Isaac Regional Council and Mr Scott Waters, Chief Executive Officer, Whitsunday Regional Council, *Committee Hansard*, Mackay, 31 March 2014, pp. 7–8, 13.

19 Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Submission 108*, p. 17.

20 Mr Anthony Hayes, Global Managing Director, AAT Kings, *Committee Hansard*, Darwin, 20 May 2014, p. 79.

21 Mr Alexander Knight, Manager, Land and Culture, Ngaanyatjarra Council, *Committee Hansard*, Alice Springs, 19 May 2014, p. 24.

- ***Tom Price, Karratha and Karijini Roads*** – Pilbara region, Western Australia – sealing for improved access and safety. Sealing the last 10 km before Karijini would develop eco-tourism in the Karijini National Park.<sup>23</sup>
- ***Weipa–Bertiehaugh Road*** – Western Cape, Queensland – a new 50 km road and causeway would complete a loop road from the central cape through Weipa to improve access and stimulate the local tourism industry.<sup>24</sup>

## New Major Roads

- ***Douglas–Daly and Litchfield to Darwin Loop*** – would create a loop road through Kakadu to Pine Creek, Edith Falls, Katherine Gorge, then back to Darwin bypassing the Stuart Highway. The link would facilitate new tourism investment and agricultural ventures throughout the region.<sup>25</sup>
- ***Port of Karumba to Cardwell*** – would connect the north-west Cape to the north-east coast of Queensland via green corridors and provide improved access to developed areas, existing roads and an alternative safe route during flooding.<sup>26</sup>
- ***West–East link, Pilbara to south Tanami Road*** – would provide a more direct route from Port Hedland via Marble Bar and Telfer to Alice Springs, and provide access to potential hydrocarbon and mineral provinces.<sup>27</sup>

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22 Councillor Tom Gilmore, Mayor, Mareeba Shire Council, *Committee Hansard*, Cairns, 29 April 2014, p. 8; Chamber of Commerce and Industry Queensland (CCIQ), *Submission 107*, p. 13, Cairns Regional Council, *Submission 40*, p. 11.

23 Mr Rhys Edwards, Vice Chairman, Tom Price and Paraburdoo Business Association, *Committee Hansard*, Tom Price, 8 April 2014, p. 11.

24 Mr Richard (Stretch) Noonan, Deputy Chair, Weipa Town Authority, *Committee Hansard*, Weipa, 3 July 2014, pp. 10, 15; Mr Vance Wallin, President, Western Cape Chamber of Commerce, *Committee Hansard*, Weipa, 3 July 2014, pp. 19, 24–5.

25 Mr Steven Rose, Member, Katherine Region, Chamber of Commerce Northern Territory, *Committee Hansard*, Katherine, 22 May 2014, p. 38.

26 Great GreenWay Tourism, *Submission 80*, p. 1.

27 The route would be 299 km of sealed road from Port Hedland, 1326 km east on unsealed tracks to the sealed section of the Tanami Road, 117 km to the Stuart Highway (sealed road), and 20 km south to Alice Springs, or a further 48 km along Stuart Highway to join the Plenty Highway. Dr Roger Higgins, *Committee Hansard*, Port Hedland, 10 April, 2014, pp. 21–3; Port Hedland Dental Care, *Submission 203*, pp. 4–5.

## Rail Infrastructure Proposals

3.4 The Committee has received several proposals for major rail infrastructure to enhance freight efficiency by linking primary production and mining centres with ports.

- ***Darwin–Alice Springs Upgrade*** – the construction of the rail link in 2004 has opened opportunities for the mining sector. It was noted, however that the single rail line does not have heavy-load bearing capacity and there is limited capability to meet expanded freight demands. To support growth, passing lanes are required on the rail link and bulk handling facilities at Darwin’s multi-user port should be upgraded to address loading bottlenecks.<sup>28</sup>
- ***Link Tennant Creek to Mount Isa, Extension to Townsville Port*** – in addition to the upgrade of the Adelaide–Darwin line, the long planned extension of the rail line through Tennant Creek to Mount Isa, with further construction west from Katherine railhead to the Kimberleys, would complete a trans-north rail artery for tourism and produce. The 600 km Tennant Creek to Mount Isa link would provide alternative and direct access to markets north of Darwin for minerals or primary produce and enhance regional mining development around Wonorah near Tennant Creek and Burketown in Queensland. Further investment would be required to extend the existing eastern rail corridor direct to Townsville Port, to address existing bottlenecks associated with its present conclusion at Stuart, a suburb just west of Townsville.<sup>29</sup>
- ***Port Carpentaria Rail Project*** – linking Cloncurry via Normanton to a new offshore loading facility west of Karumba. A possible additional link would be from Mount Isa north to Gunpowder. The export of minerals through the proposed Gulf of Carpentaria port facility would be more efficient than through Townsville Port, enabling that port to be redeveloped and possibly replaced with a new deep water port nearby at Cape Cleveland. The projected cost was \$1.5 billion.<sup>30</sup>
- ***Project Iron Boomerang*** – an east–west transcontinental corridor accommodating a 3370 km heavy haul railway linking Queensland’s

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28 Mr Greg Bicknell, Chief Executive Officer, Chamber of Commerce Northern Territory, *Committee Hansard*, Darwin, 18 August 2014, pp. 34-5; Northern Territory Government, *Submission 92*, p. 5

29 Mount Isa and Townsville Economic Zone (MITEZ) Inc, *Submission 32*, p. 4; Tennant Creek Regional Economic Development Committee, *Submission 100*, pp. 1-4; Northern Territory Government, *Submission 92.2*, p. 5; Mr Glendon Graham, Chief Executive Officer, MITEZ, *Committee Hansard*, Mount Isa, 3 April 2014, pp. 3-5.

30 Mr David Fletcher, Chief Executive Officer, Carpentaria Rail, *Committee Hansard*, Mount Isa, 3 April 2014, pp. 28, 29.

Bowen Basin and the Pilbara mining region with iron ore smelters at each end. Coal from the east would be railed to a new smelter at Newman, Western Australia and iron ore from the west would be railed to another smelter at Abbot Point, Queensland. The rail project would cost \$18 billion and be funded through foreign investment, although Government facilitation was sought. The corridor would be available as a multi-user services corridor.<sup>31</sup>

- *Triangular Link Mount Isa-Karumba-Townsville* – this would establish a key transport corridor for major mining, cattle and agricultural development in the Gulf Country region of Queensland.<sup>32</sup>

## Regional Transport Hubs

3.5 Some regional communities anticipated that new road and rail infrastructure could host service corridors and transform population centres into regional service and transport hubs. Possible sites for regional hub planning and investment included:

- *Cloncurry* – situated at the junction of several highways in north-west Queensland – a rail extension to Cloncurry from the proposed Tennant Creek to Townville transport corridor would provide a regional service centre for mining and minerals processing, for the beef cattle industry and for the development of an industrial precinct.<sup>33</sup>
- *Katherine* – located on the road corridor between the Northern Territory and Western Australia and the rail corridor between Darwin and Adelaide – the town will benefit from the planned Stage 3 extension of the Ord irrigation development into the Northern Territory.<sup>34</sup> Upgrading existing and new road and rail infrastructure at the Katherine rail head would establish the town as a major transport/intermodal freight hub and gateway to Darwin. Implementation of a heavy vehicle movement strategy and development of a CBD bypass with second bridge crossing would address current and future development needs.<sup>35</sup>

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31 East West Lines Park Ltd, *Submission 6*, pp. 2–8; Mr Shane Condon, Project Founder and Managing Director, Project Iron Boomerang, East West Line Parks Limited, *Committee Hansard*, Brisbane, 20 June 2014, p. 37.

32 Ms Lara Wilde, Chief Executive Officer, Gulf Savannah Development, *Committee Hansard*, Cairns, 28 April 2014, p. 36.

33 MITEZ Inc., *Submission 32*, pp. 3–4, 12.

34 Northern Territory Planning Commission, *Submission 58*, pp. 4–5.

35 Mrs Neroli Dickens, Director, Works and Services; Deputy Chief Executive Officer, Katherine Town Council, *Committee Hansard*, Katherine 22 May 2014, p. 8.

- **Tennant Creek** – on the Stuart Highway, south of the intersection with the Barkly Highway and 1000 km south of Darwin and 500 km north of Alice Springs – the town could function as logistical hub on a rail and services corridor. This could include a gas pipeline and possible connection to the national electricity grid between Tennant Creek and Mount Isa, with a new railway line between Tennant Creek and Kununurra in Western Australia.<sup>36</sup> The Northern Territory Planning Commission was developing a new strategic land-use plan for Tennant Creek to facilitate industry diversification.<sup>37</sup>
- **Townsville** – an existing key transport hub on the north Queensland coast – investment in increased rail connectivity to the Townsville Port and associated regional ports in Lucinda and Karumba, would meet increasing freight demand.<sup>38</sup> Upgrading the access road to Townsville Port to accommodate triple road trains would benefit the Gulf Country livestock trade.<sup>39</sup>

## Ports and Airports

3.6 Across Northern Australia access to sea and airports are vital for industries and communities, which are more dependent on them for import and export of products and services than are other parts of Australia.<sup>40</sup>

### Sea Ports

3.7 Ports may be developed privately to meet the needs of a specific industry, or be funded through partnership with governments to enable multi-user access.<sup>41</sup>

### New Ports and Significant Upgrades

- **Abbot Point Port** – re-development of the port, which is near Bowen Basin, as a multi-commodity deep water port with rail infrastructure and associated industry precinct.<sup>42</sup>

36 Tennant Creek Regional Economic Development Committee, *Submission 100*, p. 1.

37 Northern Territory Planning Commission, *Submission 58*, p. 5, and *Attachments E & F: Tennant Creek Land Use Framework*.

38 RDA Townsville and North West Queensland Committee, *Submission 54*, p. 3, 54, *Attachment B: 'Draft Regional Roadmap 2013-16'*, p. 19.

39 Councillor John Wharton, Mayor, Richmond Shire Council, *Committee Hansard*, Georgetown, 2 July 2014, p. 10.

40 Australian Government, *Green Paper on Developing Northern Australia*, Canberra 2014, p. 33.

41 North Queensland Bulk Ports, *Submission 57*, p. 7.



- **Darwin Harbour Upgrade and New Port**—scoping is needed for expanded shipping facilities at East Arm Wharf, a new port at Middle Arm, and rail extension to a further new port at Glyde Point. Cost estimates are \$350 million for a new bulk berth, \$15 million for a hardstand area and refrigerated containers, with \$12 million for a new container crane. These upgrades would support growth in the oil, gas and mining industries and facilitate freight movements throughout Asia.<sup>43</sup> A fuel bunkering facility with new cruise berths would support tourism.<sup>44</sup>
- **Bulk Minerals Port, Gulf of Carpentaria** – part of the Carpentaria Rail proposal, the new facility would be located near the Port of Karumba. The project would comprise a deep water offshore loading facility with a 40 km trolley tramway and an artificial loading island. Onshore facilities would include a balloon loop and rail unloader with dedicated covered storage for port. The port would initially service the mining industry, with an annual loading capacity of five to 10 million tonnes. Construction of a further modern facility at Cape Cleveland near Townsville would enable re-development of the historic Townsville Port site as an eco-marine leisure precinct. The project would require State and Federal government facilitation.<sup>45</sup>
- **Marine Support Facility, Beagle Bay**—a joint partnership between the engineer/developers and the Djabera Djabera Native Title holders to develop a low cost onshore wharf facility servicing the floating liquefied natural gas (FLNG) facility at Browse Bay. The project would have a heavy load out capability without expensive dredging by utilising the hydraulic capacity of Kimberley tides. The current facility and development site is 100 nautical miles away from Browse Bay and could cover excess capacity at Broome, Karratha, Port Hedland or Darwin ports. Upgrades of 130 km of road and basic marine infrastructure would be required to progress this port development. Government facilitation of this smaller project would significantly enrich the local economy.<sup>46</sup>

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42 Mr Scott Waters, Whitsunday Regional Council, *Committee Hansard*, Mackay, 31 March 2014, pp. 10–11; North Queensland Bulk Ports, *Submission 57*, pp. 4, 8–9; Premier of Queensland, *Submission 219*, p. 21.

43 Mr Gary Nairn, Northern Territory Planning Commission, *Committee Hansard*, Darwin, 20 May 2014, p. 19; Hon. Adam Giles MLA, Northern Territory Government, *Committee Hansard*, Darwin, 20 May 2014, pp. 9, 10.

44 Tourism and Transport Forum, *Submission 237*, p. 5.

45 Carpentaria Rail, *Submission 65*, pp. 1–2, *Attachment A: Project Update 3 Carpentaria Rail, Port Carpentaria Railway Project*, p. 3.

46 Beagle Bay Marine Pty Ltd, *Submission 211*, pp. 1–2, 4, 9.

- ***Port Hedland Multi-cargo Development*** – planned for the inner harbour at Lumsden Point, two new general cargo berths and the development of a ‘Pilbara Fabrication and Services Common User Facility’ would provide for offshore shipping service and repair. Outer harbour development, formerly progressed as a dual project with BHP, would require private investment.<sup>47</sup> Federal seed funding would enable progression of the Pilbara Common User project.<sup>48</sup>

## Regional Ports—Queensland

- ***Karumba Port*** – currently used for the transshipment of zinc ore via a pipeline from Century Mine (closing in 2015), an upgraded port with deep water access and an offshore direct loading/unloading facility would support high volume trade between Queensland’s Gulf region and Asia.<sup>49</sup> Upgraded onshore refuelling, watering and loading facilities would develop the commercial fishing industry.<sup>50</sup>
- ***Mackay Port*** – upgrade of existing multi-use facilities at Mackay Port was identified as critical to sustainable development of diversified markets in the region.<sup>51</sup>
- ***Mapoon, Aurukun and Mourilyan Ports*** – upgraded infrastructure, ports associated rail and road infrastructure, would support production increases in the sugar industry in these remote western Cape York communities.<sup>52</sup>
- ***Port of Cairns*** – a major upgrade of maritime infrastructure including wharf expansion, barge ramp facilities and a heavy lift container crane to enable increased trade with Papua New Guinea and south-west Pacific nations.<sup>53</sup> Channel expansion would enable berthing of large cruise ships by 2025, potentially generating \$436 million over the next 25 years. The port also has capacity to further accommodate the development of HMAS Cairns.<sup>54</sup>
- ***Townsville Port and Gladstone Ports*** – planning and upgraded port infrastructure for these key regional ports, with associated investment in

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47 Mr John Finch, General Manager, Operations; and Harbour Master, Port Hedland Port Authority, *Committee Hansard*, Port Headland, 10 April 2014, pp. 2-3.

48 Town of Port Hedland, *Submission 217*, p. 8.

49 Gulf Savannah Development Inc., *Submission 33*, pp. 2-3.

50 Mr Gary Ward, Chairman, Gulf of Carpentaria Commercial Fishermen’s Association, *Committee Hansard*, Georgetown, 2 July 2014, p. 31.

51 North Queensland Bulk Ports, *Submission 57*, pp. 4, 8-9.

52 Canegrowers, *Submission 209*, pp. 10-11.

53 Cairns Regional Council, *Submission 40*, p. 13.

54 Mr Brett Moller, Chairman, Ports North, *Committee Hansard*, Cairns, 28 April 2014, p. 21.

access roads and rail, would sustain current economic activity and support future development and growth.<sup>55</sup>

- **Weipa Port** – a deep water port on the Western Cape, the facility is currently used predominantly for export of bauxite by Rio Tinto.<sup>56</sup> Government investment in a new jetty and marina precinct would provide post mining opportunities for yacht and cultural tourism, and stimulate the recreational and commercial fishing industries.<sup>57</sup> Upgraded and extended loading infrastructure would support the regional timber, live cattle and agricultural industries, and facilitate new mining ventures.<sup>58</sup>

### Regional Ports—Western Australia

- **Port of Wyndham** – requires an upgrade with development of a new barge loading facility in close proximity to the existing wharf. Dredging and docking would cater for larger ships and provide immediate benefits to the community, compared with an alternative proposal to establish a new port at a deep water location.<sup>59</sup>
- **Exmouth Boat Harbour** – built for recreation and fishing, the facilities currently service the oil and gas industry. Government investment is required to upgrade to a multi-user deep anchorage port for naval shipping, to support expansion of Learmonth defence facilities and establish a second-tier supply base in marine servicing for the minerals industry.<sup>60</sup>
- **Broome Port** – Federal funding or private investment of up to \$425 million is required to fund extensions to the wharf.<sup>61</sup> Further upgrades would accommodate larger cruise ships, with a proposed jetty-to-jetty boardwalk and marina complex establishing the town as a tourism destination.<sup>62</sup>

55 CCIQ, *Submission 107*, p. 13; Tracy Lines Consulting, *Submission 216*, pp. 9–10.

56 Premier of Queensland, *Submission 219*, p. 27.

57 Mr Philemon Mene, Mayor, Napranum Aboriginal Shire Council, *Committee Hansard*, Weipa, 3 July 2014, p. 4; Mr Vance Wallin, Western Cape Chamber of Commerce, *Committee Hansard*, Weipa, 3 July 2014, pp. 19, 22, 24.

58 Mr Peter McCulkin, Chair, Cape York Sustainable Futures, *Committee Hansard*, Cairns, 29 April 2014, pp. 32–3; and see North Queensland Bulk Ports, *Submission 57*, p. 7.

59 Mr Anthony Chafer, Chief Executive Officer, Cambridge Gulf Limited, *Committee Hansard*, Kununurra, 7 May 2014, pp. 11–12.

60 Mr Bill Price, Chief Executive Officer, Shire of Exmouth, *Committee Hansard*, Karratha, 9 April 2014, pp. 30–1; Mr Michael Hood, Deputy President, Shire of Exmouth, *Committee Hansard*, Karratha, 9 April 2014, pp. 35–6.

61 Broome Chamber of Commerce, *Submission 125*, p. 3, pp. 8–9.

62 Australia's NorthWest Tourism, *Submission 262*, pp. 5–6.

## Regional Ports—Northern Territory

- **Bing Bong Port** – servicing the McArthur River zinc lead and Roper iron ore mining industries, an upgrade of port facilities, with use of transshipment (bulk barge loading) and improved access to other industries, could open opportunities for direct regional export of livestock and produce to Indonesia.<sup>63</sup>
- **Nhulunbuy (Gove) Port** – on the Gulf of Carpentaria, Gove is a deep water port with bulk handling facilities servicing Rio Tinto Alcan’s bauxite mining. As part of its transition plan for alumina plant curtailment, the company will open its general cargo terminal and other assets to multi-user access. Government investment in upgrades to the port and road infrastructure will enable expansion for commercial fishing, aquaculture and off shore oil and gas exploration and extraction across the Arnhem and Barkly regions.<sup>64</sup>

## Airports

- 3.8 While there are 20 airports located in Northern Australia, flights within the region are limited without connecting from cities further south. Given the distances to be travelled, more fuel must be carried which reduces passenger and freight carriage and impacts on costs and efficiency.<sup>65</sup>
- 3.9 Regional councils called for Federal investment to enable upgrading of air landing strips and installation of refuelling facilities to support larger carriers, both domestic and international.

## Airport Upgrades—Queensland

- **Karumba Airport** – a centre for the seafood industry, Karumba’s airport has no commercial service with all flights leaving from Normanton. Installation of refuelling facilities at the airport would reduce costs for the industry and attract air freight and commercial flights.<sup>66</sup>
- **Mareeba Airstrip** – part of the plan for future development of the Mareeba–Dimbulah region, the upgrade of airport terminals, with

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63 Mr William Witham, Manager North West, Chamber of Minerals and Energy of Western Australia, *Committee Hansard*, Perth, 7 April 2014, p. 69; Association of Mining and Exploration Companies Inc., *Submission 182*, p. 6; Mr Julian Malnic, *Submission 207*, p. 1.

64 Mr Djawa Yunupingu, Gumatj Aboriginal Corporation and MEP, *Committee Hansard*, Nhulunbuy, 21 May 2014, p. 1; East Arnhem Regional Economic Development Committee, *Submission 283*, pp. 2-3, 4, 6.

65 Australian Government, *Green Paper on Developing Northern Australia*, Canberra 2014, p. 33.

66 NPF Industry Pty Ltd, *Submission 85*, pp. 9-10.

resurfacing and extension of the air strip, would accommodate light aircraft and freight.<sup>67</sup>

- ***Proserpine Airport*** – an upgrade to facilitate direct international carriers was an identified priority both for tourism development in the Queensland’s Whitsunday region and for local growers to export fresh produce direct to Asian markets.<sup>68</sup>
- ***Thangool Airport Expansion Project*** – expansion and upgrade of Thangool Airport to comply with Federal aviation regulations would alleviate existing capacity constraints. The upgrade was regarded as a regional economic priority for Central Queensland.<sup>69</sup>

### Airport Upgrades—Western Australia

- ***Broome International Airport*** – has the facilities to support international flights but services domestic flights within the same facility. An upgraded capacity would not only support direct international tourism but also reduce isolation and attract labour into the region.<sup>70</sup>
- ***Learmonth Airport*** – a joint civil and defence facility, the airport is the gateway to the Ningaloo Marine Park, Cape Carnarvon, Western Australia. Located near Exmouth and on the flight route between Perth and Broome, there is no direct flight to Learmonth from Broome. An upgrade of domestic airport facilities would increase capacity for regular passenger transport (RPT) services to the Gascoyne mining region, and enable direct flights to and from other tourism destinations in Northern Australia.<sup>71</sup>
- ***Onslow Airport*** – a smaller remote airport in the Pilbara region, Onslow has a new port purpose-built by Chevron to accommodate its interests in the regional hydrocarbon industry.<sup>72</sup> Funds from Chevron and a state government grant recently enabled an upgrade of the airport facilities to accommodate regional charter flights.<sup>73</sup> Formal negotiations for a return Perth/Gascoyne/ Pilbara air service route, to include Onslow, Karratha,

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67 Mr Joe Moro, President, Mareeba Chamber of Commerce, *Committee Hansard*, Cairns, 28 April 2014, p. 41.

68 Whitsunday Regional Council, *Submission 140*, pp. 2–3.

69 Regional Development Australia Fitzroy and Central West Inc., *Submission 46*, pp. 17, 18.

70 Broome Circle Inc. *Submission 82*, p. 8; Broome Chamber of Commerce and Industry, *Submission 125*, p. 5; Broome International Airport, Master Plan, <[www.broomeair.com.au/corporate/bia-master-plan/](http://www.broomeair.com.au/corporate/bia-master-plan/)> July 2014 .

71 Visitors to Ningaloo must fly from Broome return to Learmonth via Perth. Shire of Exmouth, *Submission 109*, pp. 2–3.

72 Mr Steve Lewis, Chief Executive Officer, Dampier Port Authority, *Committee Hansard*, Karratha, 9 April 2014, p. 23.

73 Mr Neil Hartley, CEO, Shire of Ashburton, *Committee Hansard*, Tom Price, 8 April 2014, p. 3.

and for Exmouth a work-site direct service would support further offshore oil, gas and mining sector development.<sup>74</sup>

- **Port Headland Airport** – is an international airport with direct weekly flights to Brisbane, Melbourne and Bali, and also servicing the Pilbara region.<sup>75</sup> A \$105 million master plan for re-development as an A-grade International Airport to support mining and tourism would require a Federal investment of \$34 million. The plan incorporates a 50 hectare site for establishment of a permanent defence base.<sup>76</sup>

### Airport Upgrades—Northern Territory

- **Katherine Civilian Airport Upgrade** – RPT services to Katherine community are at risk due to major investment in defence capacity at RAAF Base Tindal, with the airbase now being operated solely by the Federal Government. Funding is required to provide security and tarmac upgrades to support civil air services, with Council requiring \$4-5 million to resume operation.<sup>77</sup> Federal investment in the provision of emergency fire services to a Category 5 international service standard would also support proposals for Katherine to function as an alternative airport to Darwin for international flights.<sup>78</sup>

### Airport Business Precincts

3.10 Some airport upgrade proposals incorporated associated port and business precinct development, in anticipation of enhanced tourism intake and direct export capacity to markets in Asia.

### Queensland

- **Cairns Airport and Enterprise Precinct** – a major tourism gateway, the airport has capacity to freight beef, dairy and horticulture produce direct to Asia. Cairns Airport has approval for development of two precincts: an Aviation Enterprise Precinct and a Commercial Enterprise Precinct. Estimated construction costs are \$921 million, which would contribute \$829 million to Cairns' Gross Regional Product. Government investment

74 Shire of Exmouth, *Submission 109*, Attachment C: *Economic Development Opportunities for the Gascoyne Region associated with Resource Sector Investment and Expansion Gascoyne Pilbara Project*, November 2011, p. iii.

75 Port Headland International Airport <[www.porthedlandairport.com.au/](http://www.porthedlandairport.com.au/)> August 2014.

76 Town of Port Hedland, *Submission 217*, pp. 7-8.

77 Mrs Neroli Dickens, Katherine Town Council, *Committee Hansard*, Katherine, 22 May 2014, p. 8; Mr Steven Rose, Katherine Region, Chamber of Commerce Northern Territory, *Committee Hansard*, Katherine, 22 May 2014, pp. 36-7.

78 Mr Tony Mayell, Chief Executive Officer, Tourism Northern Territory, *Committee Hansard*, Darwin, 20 May 2014, p. 86; Northern Territory Airports Pty Ltd, *Submission 171*, pp. 2-3.

in private partnerships would allow upgrade of cargo facilities, for example, by establishing an irradiation treatment facility for export of mangoes and lychees.<sup>79</sup>

- ***Mackay Airport and Multimodal Integrated Transport Hub*** – servicing the Whitsunday tourism region and the mining industry at Bowen and Galilee Basins, approval of the Mackay Airport Land Use Plan would facilitate development of the airport precinct as a Central Queensland multimodal integrated transport hub. The development would provide direct commercial opportunities for new passenger air services, freight and logistics, health care services as well as primary industries, the mining and resources industries, building and construction and retail.<sup>80</sup>
- ***Rockhampton Airport, Defence Precinct and Freight Hub*** – upgraded in 2007, the airport has facilities to support large passenger and freight aircraft, including the Boeing 747 passenger craft, the Antonov 124 freighter and the C5 Galaxy military aircraft. The airport has potential to expand domestic services by re-allocation of current defence usages to increased FIFO, charter services and passenger movements. Adjoining land could accommodate a new military defence precinct for expansion of Shoalwater Bay training exercises and provide storage facilities for air freight of Fitzroy Agricultural Corridor produce.<sup>81</sup> Re-classification as an international airport would establish the precinct as an international tourism, defence and air freight hub for the region.<sup>82</sup>
- ***Townsville Airport Hub Expansion*** – there is potential to support a direct international service out of Townsville to Denpasar, a regional airport hub with a capacity for 25 million passengers and connections to Asia.<sup>83</sup> Federal implementation of a regional aviation plan to manage competing industry and business uses of the Townville and the Cairns International Airport would support strategic development. Upgrades and initiatives to attract international airlines to Townsville Airport, such as through reduction of migration fees, may also support growth.<sup>84</sup>
- ***Whitsunday Coast Airport and Export/Enterprise Precinct*** – an upgrade and extension of the airport runway to enable mid-haul and large-haul

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79 North Queensland Airports, *Submission 105*, pp. 4–5, 10, 12–13, 15, 17.

80 North Queensland Airports, *Submission 105*, pp. 8–9, 12–14, and see Mr Stephen Schwer, General Manager, Mackay Tourism, *Committee Hansard*, Mackay, 31 March 2014, p. 31.

81 Councillor Tony Williams, Deputy Mayor, and Mr Rick Palmer, Manager Economic Development, Rockhampton Regional Council, *Committee Hansard*, Brisbane, 20 June 2014, pp. 19–20; Rockhampton Regional Council, *Submission 10.1*, pp. 3–4.

82 Capricorn Enterprise, *Submission 17*, p. 5.

83 Mr Kevin Gill, Chief Operating Officer, Townsville Airport, *Committee Hansard*, Townsville, 2 April 2014, p. 29.

84 CCIQ, *Submission 107*, p. 13.

aircraft would support international tourism while providing additional export capabilities. Plans for brownfield and greenfield development at the 430 hectares airport site, with potential expansion to 1000 hectares, could incorporate an international standard export facility and precinct.<sup>85</sup> Incorporating expansion of the Whitsunday Coast Airport into a wider regional aviation master plan would support this development.<sup>86</sup>

## Western Australia

- ***Derby Airport Logistics Hub*** – upgrading Derby airport as a logistics hub, with the Derby Wharf development, would secure long-term capacity for passenger transfer and material supply to the oil, gas and resources industry, and support agriculture and aquaculture development. The airport currently relies on the Curtin airbase for passenger and freight transferal. The upgrade of Defence capacity at Curtin airbase by the Federal Government makes investment in civilian services at Derby Airport a regional development priority.<sup>87</sup>

## Northern Territory

- ***Darwin Airport Upgrade, Second Airport and Export Hub*** – a major redevelopment plan is in place to transform Darwin city, harbour and airport facilities. This includes a second airport site at Middle Arm to supplement current Defence services based at Darwin Airport.<sup>88</sup> A private sector proposal envisions Darwin Airport as a major international class freight trans-shipping hub with associated development at Kimberley Airport, Kununurra, providing a regional trans-shipping hub for smaller commercial and freighter aircraft. Estimated cost of the Darwin proposal is \$30 million with the anticipated completion date being late 2015.<sup>89</sup>

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85 Mr Scott Waters, Whitsunday Regional Council, *Committee Hansard*, Mackay, 31 March 2014, pp. 8, 13.

86 RDA Mackay-Isaac-Whitsunday, *Submission 145*, p. 4.

87 See Shire of Derby, *Submission 196*, pp. 16–17; Mr Stephen Gash, Chief Executive Officer, Shire of Derby/West Kimberley, *Committee Hansard*, Broome, 5 May 2014, pp. 21–2.

88 City of Darwin, *Submission 42*, p. 3; Mr Gary Nairn, Chairman, Northern Territory Planning Commission, *Committee Hansard*, Darwin, 20 May 2014, p. 19.

89 The Darwin airport concept includes an 'International Standard' perishable and general freight/cargo handling facility, with executive offices, display and promotional facilities and in Flight Catering Centre integrated with an extended passenger terminal. Construction Technology Consulting Group (CTCG), *Submission 236*, pp. 1–10, 15.



## Water Infrastructure Proposals

- 3.11 Northern Australia has high levels of rainfall but with extremely variable volumes from season to season and year to year.<sup>90</sup> The Committee received several proposals for harnessing a more sustainable supply of the North's water resources.
- 3.12 Proposals for water infrastructure comprised:
- large and small scale in-stream dams or weirs, with associated off-stream storage;
  - large scale pipelines or channels to conduct captured water to areas of need; and
  - desalination plants to provide water independent of rainfall.
- 3.13 Proposals for management of ground water involved:
- systems for replenishment or storage of water in aquifers; and
  - the capture and utilisation of water extracted during mining (mine dewatering).
- 3.14 A number of water catchment proposals incorporated plans for large or smaller scale irrigation schemes with associated industry development. Some projects were extensions of established schemes, such as the Ord-East Kimberley Expansion project. Others were new greenfield developments.

## Water Capture and Storage Infrastructure

- 3.15 The construction of in-stream water storage is capital intensive, with investors usually recovering costs over the long term through water allocation fees.<sup>91</sup> The viability of a particular development depends on a range of factors, including whether the end cost of the water is acceptable to the user. This necessitates careful evaluation of projects and funding models by governments and industry partners.<sup>92</sup>
- 3.16 Construction of larger scale in-stream dams can be a lengthy process given the costs, associated land acquisition and necessary approvals to be acquired. Weirs are smaller structures and may require less capital. While

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90 Australian Government, *Green Paper on Developing Northern Australia*, Canberra 2014, 'Approach to the White Paper', p. x.

91 North West Queensland Strategic Development Working Group, *North West Queensland Strategic Development Study*, AEC Group, May 2014, p. 12.

92 The Government has established a ministerial working group, chaired by the Minister for Agriculture, to identify ways to accelerate investment in water infrastructure and identify priorities for Government investment. Australian Government, *Green Paper on Developing Northern Australia*, Canberra 2014, p. 28.

these provide less control over water flows, they can divert excess water into larger dams, into other off-stream storage or provide direct feeds for irrigation.<sup>93</sup>

## Major Dams and Upgrades

- ***Burdekin Falls Dam Upgrade, Burdekin River*** – the Burdekin Falls Dam supports the Burdekin–Haughton Water Supply irrigation area which has an agricultural production valued at \$500 million per annum. Constructed in 1987, the dam is one of the largest in Queensland having a 1.8 million ML capacity, and an unallocated yield of 100 000 ML. Implementation of Phase 2, raising the dam wall, would increase capacity to support mining and agriculture diversification on the mid coast region of north Queensland.<sup>94</sup> The dam also has potential for base load hydropower production to supply the region.<sup>95</sup>
- ***Charleston Dam, Delaney River*** – near Forsayth in Queensland’s Gulf Country, the proposed dam would improve water security for the town and nearby Georgetown. The project would include provision of a new reticulated water treatment plant at Forsayth. Federal funding for necessary research and due diligence is required to solicit state government approvals and funding. The proposal will support regional growth by improving town amenity and provide economic stimulus to the tourism and recreational sports industries.<sup>96</sup>
- ***Cloncurry Dam, Cave Hill*** – formulated in 1977, the proposal was recently evaluated in the Commonwealth Scientific and Industrial Research Organisation (CSIRO) study of the Flinders catchment area (February 2014). The project would establish a dam at Cave Hill, south of Cloncurry on the Cloncurry River, capable of storing 248 GL with a yield of 40 GL per year at an estimated storage cost of \$249 million.<sup>97</sup> The Cloncurry Weir, constructed in 2013, would divert water to the dam. Projected benefits would be an increased supply of town water, potential

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93 For a comparative case study of the suitability of dams and weirs see CSIRO, *An Overview Report to the Australian Government from the CSIRO Flinders and Gilbert Agricultural Resource Assessment, part of the North Queensland Irrigated Agriculture Strategy*, December 2013; and Dr Peter Stone, Deputy Director, CSIRO Sustainable Agricultural National Research Flagship, *Committee Hansard*, Brisbane, 30 May 2014, p. 18.

94 Burdekin Shire Council, *Submission 15*, p. 1; Councillor Bill Lewis, Mayor, Burdekin Shire Council *Committee Hansard*, Bowen, 1 April 2014, p. 2.

95 Meridian Energy Australia Pty Ltd and Powershop Australia Pty Ltd, *Submission 184*, p. 3.

96 *Exhibit 86: Etheridge Shire Council, Charleston Dam Presentation*; Councillor Will Attwood, Mayor, Etheridge Shire Council, *Committee Hansard*, Georgetown, 2 July 2014, p. 4.

97 The CSIRO considered the business case for the dam was not strong. CSIRO, *Flinders Catchment Report: the Flinders and Gilbert Agricultural Resource Assessment Catchment Report for the Flinders Catchment*, North Queensland, 6 February 2014, pp. 277–8.

development of a feed lot and abattoir, and expansion of the mining industry.<sup>98</sup>

- **Green Hills Dam, Gilbert River**—one of two possible dams identified by the CSIRO review of the Gilbert agricultural precinct, the Green Hills Dam would be closer to irrigable land and the most water efficient. The dam could potentially store 227 GL and yield 172 GL at the dam wall, with 85 per cent reliability, for an estimated construction cost of \$335 million.<sup>99</sup> The dam would support growth in mixed agricultural projects in the Gilbert Farming Precinct (discussed below).<sup>100</sup> Both public and private sector investment is regarded as crucial to expand irrigation in the region.<sup>101</sup>
- **Lake Argyle Dam Upgrade, Ord River**—is required to support expansion of the Ord–East Kimberley River Expansion Project (discussed below). Lake Argyle currently has a total capacity of 11 700 GL, with annual gross inflows are over 4500 GL of which 300 GL is made available for irrigation under current allocations. A further 400 GL is allocated for the second stage of the Ord River irrigation scheme.<sup>102</sup> Preliminary designs propose construction of a new high spillway wall without upgrades to the main dam wall. Federal government funding of \$80 million is required to secure private investor confidence in future Ord development. In addition, an estimated \$150 million investment is needed for construction of new bridge over the Ord River. Federal funding of \$10 million has supported design, approvals and allocation of a highway reserve to date.<sup>103</sup>
- **Nullinga Dam, Walsh River**—first proposed in the early 1950s for development of the Mareeba–Dimbulah Irrigation Area, current planning for urban water and irrigation purposes comprises three case

98 Councillor Andrew Daniels, Mayor, Cloncurry Shire Council, *Committee Hansard*, Mount Isa, 3 April 2014, p. 18; Mr Glendon Graham, MITEZ Inc., *Committee Hansard*, Mount Isa, 3 April 2014, pp. 1–2.

99 The proposed dam site is 15 km from the land compared with 70 km to the proposed Dagworth Dam on the Etheridge River, with 15 per cent of water loss compared with half, and leveraging only 15 per cent of river water compared with 19 per cent. CSIRO, *Agricultural Resource Assessment for the Gilbert Catchment: An Overview Report to the Australian Government from the CSIRO Flinders and Gilbert Agricultural Resource Assessment, Part of the North Queensland Irrigated Agriculture Strategy*, December 2013, p. 8.

100 Mr Ken Fry, Forest Home Station, *Committee Hansard*, Georgetown, 2 July 2014, pp. 20, 24–5.

101 Australians for Northern Developing and Economic Vision (ANDEV), *Submission 147, Attachment C*, p. 8.

102 Various sources cited in Mr Ian Marshall, *Submission 11, Attachment A: 'The Water Project—the Development and Marketing of the North-West's Water into the State's Mining Sector'*, Presentation by Ian Marshall, 27 September 2013, p. 5.

103 Department of Regional Development, Western Australia, *Submission 121*, pp. 1–2.

studies at storage volumes of 168 000, 364 000 and 491 000 ML. The proposed dam site is on the Walsh River within Mareeba Shire, about 55 km south-west of Cairns and 24 km south-south-west of Mareeba. The dam would enable expansion of the agricultural industry in the Mareeba–Dimbulah Irrigation Area and further west across the Atherton Tableland, with potential for hydro–electric generation.<sup>104</sup>

- ***Urannah Dam, Broken River*** – in planning since the 1960s the dam is proposed for a high rainfall area on the Broken River off the Clarke Ranges, 100 km to the west-north-west of Mackay and 60 km south-south-west of Proserpine in Queensland.<sup>105</sup> With a catchment of 1.5 million ML the dam has potential to provide augmented water to the Collinsville Power Station, to supply 10 000 ML to the coal mining industry, and to irrigate around 20 000 hectares in the Mackay-Whitsunday region by gravity feed. A conservative cost estimate was upward of \$215 million.<sup>106</sup>

### Weir construction

- ***Flinders River Weir/ O’Connell Creek Water Storage Project*** – in planning since 1999, the project is part of the Flinders O’Connell Cropping Proposal for mixed agricultural development in Queensland’s Gulf Country. The weir would divert Flinders River high water flows into a 200 000 ML off-stream water storage facility on the O’Connell Creek, a tributary about 25 km from the town of Richmond. Designed as a gravity system, the storage facility would have a wall and spillway for overflow back into the Flinders.<sup>107</sup> Recent cost estimates from CSIRO for the total development (discussed below) are \$230 million, with ongoing operation costs for storage and water diversion at approximately \$2.3 million per year.<sup>108</sup>
- ***Lower Fitzroy River Infrastructure Project*** – subject to assessment in 2012, the project aims to support agricultural development on the proposed Fitzroy Agricultural Corridor (discussed below). The proposal

104 Councillor Bob Manning, Mayor, Cairns Regional Council and Mr Trent Twomey, Advance Cairns, *Committee Hansard*, Cairns, 28 April 2014, pp. 2–3; Mr Joe Moro, Mareeba Chamber of Commerce, *Committee Hansard*, Cairns, 28 April 2014, p. 39.

105 Mr Jason Costigan MP, Member for Whitsunday, Queensland Parliament, *Committee Hansard*, Mackay, 31 March 2014, p. 20.

106 Based on 2001 estimates of \$150 million. Mr David Nebauer, Chairman, Economic Development Strategic Advisory Group, Whitsundays Marketing and Development, *Committee Hansard*, Bowen, 1 April 2014, pp. 4–5.

107 Councillor John Wharton, Mayor, Richmond Shire Council, *Committee Hansard*, Georgetown, 2 July 2014, p. 12, and *Exhibit 8: Flinders River/O’Connell Creek Cropping Proposal*.

108 CSIRO, *An Overview Report to the Australian Government from the CSIRO Flinders and Gilbert Agricultural Resource Assessment*, December 2013, p. 8.

is to raise the dam wall at Eden Bann Weir and build a new weir at Rookwood near Riverslea, respectively located about 50 km north-west and south-west of Rockhampton.<sup>109</sup> The potential for large scale horticultural development of fruiting crops for export to Asia has stimulated interest in the project and associated infrastructure upgrades to support development.<sup>110</sup>

## Water Transfer Infrastructure

- ***Connors River Dam and Pipeline***— proposal to construct a 373 662 ML dam on Connors River near Mount Bridgett, 110 km east of Moranbah and 70 km south of Sarina, with a pipeline from the dam to Moranbah. The government owned corporate SunWater Ltd recommended construction of the project to commence in 2012, primarily to supply the Galilee Basin coal mines and local communities.<sup>111</sup> In July 2012, the project was put in abeyance due to changing client investment horizons.<sup>112</sup> The Urannah Dam, referred to above, was cited as the alternative option to alleviate pressures on ground water and provide water security to townships and the cattle industry in this region.<sup>113</sup>
- ***Diamantina River Tunnel/Canal and Tully/Herbert Rivers Hydro Generation***— a proposal to deliver water and power to outback areas of Queensland and Northern New South Wales, with potential for agricultural sales through development partners. The project would involve diversion of flood waters lost to the Gulf of Carpentaria by drilling a 10 km long tunnel or by combination of tunnel, elevated canal and pipeline into the Diamantina River. Power would be generated by construction of two to three 600–1000 MW hydro electricity generators and several pump stations on the Tully and Herbert Rivers. The project

109 The statutory government corporate SunWater Ltd and local water authority Gladstone Area Water Board prepared an Environmental Impact Statement (EIS) for the site. See Capricorn Enterprises, *Submission 17*, p. 6; Queensland Government, Department of State Development, Infrastructure and Planning, Lower Fitzroy River Infrastructure, Project Overview <[www.dsdp.qld.gov.au/assessments-and-approvals/lower-fitzroy-river-infrastructure-project.html](http://www.dsdp.qld.gov.au/assessments-and-approvals/lower-fitzroy-river-infrastructure-project.html)> July 2014.

110 Mr Rick Palmer, Manager Economic Development, Rockhampton Regional Council, *Committee Hansard*, Brisbane, 20 June 2014, pp. 19–20.

111 Queensland Government, Department of State Development, *Infrastructure and Planning Connors River Dam and Pipelines, Project Overview* <[www.dsdp.qld.gov.au/assessments-and-approvals/connors-river-dam-and-pipelines.html](http://www.dsdp.qld.gov.au/assessments-and-approvals/connors-river-dam-and-pipelines.html)> July 2014.

112 SunWater Making Water Work, 'SunWater Discontinues Work on Connors River Dam and Pipelines Project', *Media Release*, 27 July 2012 <[www.sunwater.com.au/about-sunwater/media-room/latest-news/latest-news/2012/sunwater-discontinues-work-on-connors-river-dam-and-pipelines-project](http://www.sunwater.com.au/about-sunwater/media-room/latest-news/latest-news/2012/sunwater-discontinues-work-on-connors-river-dam-and-pipelines-project)> July 2014; Councillor Anne Baker, Mayor, Isaac Regional Council, *Committee Hansard*, Mackay, 31 March 2014, p. 12.

113 LNP Northern Development Policy Committee, *Submission 70*, p. 10.

would be funded and constructed by the Beijing based company China Power with Australian partners. Government guarantees for repayment through water sales or a production levy, facilitation of land access/easements and a consultancy fee are required.<sup>114</sup>

- ***Elliot Main Channel Extension*** – proposal to extend the existing Elliot Channel 117 km through 12.7 km of the Burdekin River irrigation area to supply growers on the coastal plain south of Bowen in the vicinity of Mt Inkerman, Home Hill, and Gumlu (Molongle Creek). The project would involve construction of a channel and pipeline from the northern mouth of the Burdekin River, providing 30 000 hectares of new agricultural land and securing water for Abbot Point mining. Presently distributing water from the Burdekin Falls Dam, the channel would facilitate supply of water allocations from a future Urannah Dam. Federal funding or facilitation for private sector development would be required.<sup>115</sup>
- ***Gulf of Carpentaria Dam and Pipeline*** – would involve construction of a catchment dam in the monsoon belt near the southern coast of the Gulf of Carpentaria, with a pipeline to the south through outback Queensland to Lake Maraboon near Emerald, and then to the Warrego River headwaters. The river flows into the Murray–Darling system south-west of Bourke in New South Wales where a holding dam would be built. Small discharge dams may need to be constructed at ingress points into the Murray–Darling system as terminals for the pipeline(s). The transfer of water over 1700 km through arid areas of Australia would provide regional greening and open opportunities for growth at an estimated total cost of less than \$20 billion, or \$2.3 billion per year for the first four years of a ten year project.<sup>116</sup>
- ***Might and Power Project*** – involves the construction of a 2100 km gravity feed pipeline from the Southern Highlands of Papua New Guinea (PNG) to the headwaters of the Murray–Darling near Augathella, Central Queensland. The proposal would enable transfer of 6–8GL of water per day, with pump stations to enhance flows at specific points. Initial funding of \$20 million would be provided by the joint partners Might and Power Australia and the PNG government (PNG Water).<sup>117</sup> When operational the Australian Government would purchase water from the PNG government for on-selling to farmers. Suggested benefits

114 Mr Bob and Mrs Ute Elliot, *Submission 265*, pp. 1–4.

115 Burdekin Shire Council, *Submission 15*, pp. 1–2; Mr David Nebauer, Whitsundays Marketing and Development, *Committee Hansard*, Bowen, 1 April 2014, pp. 4, 5–6.

116 Mr Lou Madjeric, *Submission 285*, pp. 2, 10–13.

117 Might and Power Australia, *Submission 220*, p. 1.

of the project would be in provision of an inexhaustible supply of cost efficient water, without the impact of dams.<sup>118</sup>

- ***North to South Water Transfer Plan*** – this proposal involves construction of a tunnel and canal for transfer of water stored in the Hells Gate Dam and Burdekin Falls Dam in North Queensland to Tocumwal in Southern NSW. The tunnel from the Herbert to the Burdekin River would deliver 11 800 GL for irrigation per annum. The canal would run from the Burdekin Falls Dam to Charleville then east to St George. A minor route variation would provide water by gravity feed to Charleville. Federal funding of \$9 billion for the main canal, with an extra \$2–3 billion for a subsidiary canal, would initially be required, with water allocations for agricultural development paying for construction long term. The project would allow for industry and associated service delivery/infrastructure development along the canal corridor. Private and government partnerships for construction were recommended.<sup>119</sup>
- ***'The Water Project', Pilbara*** – would involve construction of an open pipeline/water channel to more effectively utilise Ord water resources and reduce pressure on artesian water for mining and agricultural development. The project would encompass power generation (solar or wind turbines) and mine dewater recycling to establish a forestry project for production of biofuel.<sup>120</sup> Estimated costs for the total project of \$24.75 billion would be recovered by sale of tradeable water rights at a cost of \$24 750 per one million, 1 ML units over 55 years. Federal investment of \$6.5 million would progress Stage 1 of the project comprising a literature review, due diligence and the business case, including sourcing of private investment partners. The sale of the water rights would fund the construction.<sup>121</sup>

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118 Mr Fred Ariel, Chairman, Might and Power Australia and Mr Philip Moya, First Secretary to the Hon. Francis Awesa, Minister for Works and Implementation, Papua New Guinea, *Committee Hansard*, Cairns, 28 April 2014, pp. 66–71.

119 The average delivered water cost from the main canal to Tocumwal would be approximately \$135 per ML; entering the Murray river at Wentworth, average water costs along the Warrego would be \$61 per ML. Water cost estimates are based on United States Federally funded models with capital costs paid back at 2.5 per cent per annum over 50 years and canal operators paying for all operational costs. See T Bowring and Associates Pty Ltd, *Submission 19*, pp. 1-2, 3 and *Attachment A: Map*.

120 Mr Ian Marshall, *Submission 11, Attachment A*, pp. 1, 21–5, 34–8, and *Attachment B: Economic Rationale as to the Reasons for the Water Project*, pp. 2, 11–12.

121 Mr Ian Marshall, Private Capacity, *Committee Hansard*, Perth 7 April 2014, p. 33, Mr Ian Marshall, *Submission 11, Attachment A*, pp. 1, 29.

## Desalination plants

- 3.17 Desalination can be an expensive way to increase water supply. In arid regions, however, the potential to generate a source of fresh water independent of rainfall may provide opportunities for development and growth.<sup>122</sup>
- 3.18 Desalination was seen as a viable option in the Pilbara, for example, which is entirely reliant on rainfall for its water supply.<sup>123</sup> Proposals for plants in the region included:
- **Burrup Peninsula** – a desalination plant with the potential to supply up to 15 GL of water per annum has been in planning since 2010, when the Western Australian Government dedicated funding of \$370 million for its development. The project was postponed following rainfall in the area and the establishment of the Bungaroo bore field. Construction of the plant would provide a sustainable water source. It was considered that the energy intensive nature of the process may, however, have implications for power supply in the region.<sup>124</sup> This may be resolved by use of renewable energy on an ‘interconnected transmission network and moving away from non-renewable energy, which will become more expensive and scarce within a matter of decades.’<sup>125</sup>
  - **City of Karratha** – a desalination plant to service Karratha and Dampier was identified as one of the Pilbara Shire Council’s ‘Infrastructure Priorities to 2015’. Construction of the plant would support of population growth and regional development.<sup>126</sup>
  - **Shire of Roebourne** – an integrated development combining desalination plants, solar energy and evaporative hedges, seawater based green-houses (adapted to cater for cyclones) is proposed to enable year round growth of commercial quantities of cheap, high-quality, pesticide-free vegetables, making agriculture a prime industry sector in the region.<sup>127</sup>

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122 Mr Alastair Watson, *Submission 4, Attachment A: ‘Food Security in Australia: Fallacies, Fantasies, Fancies, Foibles and Furphies’*, p. 6; East West Line Parks Ltd, *Submission 6, ‘Case Study: Making Fresh Water More Readily Available’*, p. 35.

123 Curtin University Sustainability Policy (CUSP) Institute, *Submission 253, Attachment A: J Green, P Newman and J Mitchell, Pilbara 2050, Ensuring the Long Term Viability of the Pilbara*, CUSP Institute, April 2014, p. 53.

124 CUSP Institute, *Submission 253, Attachment A*, p. 53.

125 CUSP Institute, *Submission 253, Attachment A*, p. 67.

126 Pilbara Regional Council, *Submission 25, Table 4*, p. 15.

127 Shire of Roebourne, *Submission 72*, p. 9.



## Ground Water Management

- 3.19 The Government's Green Paper refers to the potential for storing water in underground aquifers or for water reuse to stimulate development in the North.<sup>128</sup>
- 3.20 The Northern Australian Land and Water Taskforce supports the view that ground water will be an important resource for potential development in the region, estimating that there is 600 GL of ground water available for this purpose.<sup>129</sup>
- 3.21 The majority of resource projects in the North currently meet water demands through ground water from the vast aquifers of the region. Reliance on this ground water however may not be sustainable.<sup>130</sup> Consequently, careful planning and management is required to support future development.<sup>131</sup>

## Aquifer Management

- 3.22 In addition to proposals for major water infrastructure, the Committee received suggestions for infrastructure upgrades and other proposals to better manage and sustain ground water sources. Specific suggestions included:
- ***Great Artesian Basin, Capping and Rehabilitation*** – the Great Artesian Basin (GAB) spans 1.7 million km<sup>2</sup> of largely arid and semi-arid land west of the Great Dividing Range, providing water across the region.<sup>132</sup> The GAB Sustainability Initiative has managed and maintained bore infrastructure since July 1999, with work jointly funded by the Commonwealth, State and pastoral owners. Due to expansion in numbers and degeneration, around 22 per cent of the bores now urgently require capping and rehabilitation. The current estimate for this repair is over \$84 million, including \$32 million of State and Federal Government funding under the cost-share arrangement.<sup>133</sup>

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128 Australian Government, *Green Paper on Developing Northern Australia*, Canberra 2014, pp. 9, 28.

129 Australian Academy of Science, *Submission 113*, p. 2.

130 In the Pilbara iron ore mining region in Western Australia, 85 per cent of mines rely on ground water. Mr Ian Marshall, *Submission 11, Attachment A*, pp. 13, 16; Chamber of Minerals and Energy, *Submission 93*, p. 21.

131 Australian Academy of Science, *Submission 113*, p. 2; National Water Commission (NWC) *Submission 123*, pp. 2, 7; Dr Peter Stone, CSIRO Sustainable Agricultural National Research Flagship, *Committee Hansard*, Brisbane, 30 May 2014, pp. 17–18.

132 RDA Townville and North West Queensland, *Submission 54, Attachment A*, p. 38.

133 A total of 185 to 215 uncontrolled bores, including 20 per cent possible new bores flowing again plus 10 additional bores in the corrosive zone, and 5.5 thousand km of bore drains

- ***Storage of Water, Gilbert River Formation Aquifer*** – studies by hydrologists indicate the potential to replenish this aquifer near Hughenden and store up to 20 000 GL without the evaporation losses of above ground dams, estimated at 21 to 25 per cent per annum in Northern Queensland. Given the degree of permeability to support flows, this aquifer water storage has potential to drought proof regional farms and towns in the region as well as those further south.<sup>134</sup>

## Mine Dewatering

- 3.23 Mine dewatering is the process of extracting water from a mine to allow for mineral extraction. Regulations require that extracted ground water first be used to mitigate any environmental impacts, and then applied in the mining camp. Any surplus water is to be returned to aquifers or watercourses, although this practice has become less acceptable.<sup>135</sup>
- 3.24 Policy review of the requirements for the use of surplus dewatering in Western Australia will allow for usage in horticulture developments or potentially as town water.<sup>136</sup> Obstacles are the varying quality of the surplus water, which may have high levels of toxins, and economical disincentives to miners who may choose to evaporate off surplus water rather than treat it or dispose of it appropriately.<sup>137</sup>
- 3.25 Projects using surplus mine dewatering for agricultural developments included:
- ***Pilbara Hinterland Agricultural Development Initiative*** – a joint project between the Department of Agriculture and Food, the Pilbara Development Commission and Department of Regional Development, Western Australia. Three projects are proposed under the initiative. The Pathways to the Pilbara Irrigation Development project aims to change mining management and treatment of some 160 GL of surplus mine dewater for use in large scale irrigated agriculture in the Pilbara. Associated projects focus on cropping for fodder and biofuel. The initiative is currently funded for \$12.5 million under the Western Australia Government's Royalties for Regions program.<sup>138</sup>

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require attention. Councillor Bill Bode, Flinders Shire Council, *Committee Hansard*, Townsville, 2 April 2014, p. 18.

134 T Bowring and Associates Pty Ltd, *Submission 19*, p. 2.

135 Government of Western Australia Department of Water, *Strategic Policy 2.09: Use of Mine Dewatering Surplus*, May 2013, p. 1; CUSP Institute, *Submission 253, Attachment A*, p. 54.

136 Government of Western Australia Department of Water, *Strategic Policy 2.09: Use of Mine Dewatering Surplus*, May 2013, p. 2.

137 Mr Ian Marshall, *Committee Hansard*, Perth 7 April 2014, p. 34.

138 Hon. Terry Redmond MLA, Minister for Regional Development; Lands; Minister Assisting the Minister for State Development, Government of Western Australia, *Submission 161*,

- ***Pilbara Carbon Sequential Tree Farm*** – is part of the ‘Water Project’ described in the water transfer section above. This aspect of the proposal involves using diluted mine dewater to establish tree crops suitable for carbon sequestration and eventual harvesting for biofuel. The process would involve transfer of an estimated 400 GL of mine dewater south from the Fortescue River using the open pipeline/water channel planned for construction by sale of water rights. The transfer would provide for passive reduction in total dissolved solids, with further dilution by fresh water allowing for broad acre irrigation of the trees using a subterranean dripper system.<sup>139</sup>

## Agricultural Development Schemes

- 3.26 A total of 183 million hectares of land in Northern Australia is currently used for agricultural purposes, including cropping and pastoral activities.<sup>140</sup>
- 3.27 Water availability is key to realising the potential to expand and diversify agricultural activity. The Committee was informed of a range of intensive agricultural developments in planning or proposed for Northern Australia.

## Queensland

- ***Billy’s Lagoon*** – an area of 130 000 hectares around Billy’s Lagoon, near Weipa, has been identified as suitable for agriculture, with potential crops including cassava, berries, soybean, sorghum and other grain crops. Expansion of the cattle industry in the region, combined with fodder cropping and guar, has investment interest secured from India and markets in China. Earlier projects in the area had not proceeded because of prohibitions under the *Wild Rivers Act 2005* and the *Vegetation Management Act 1999*.<sup>141</sup>
- ***Etheridge Integrated Agricultural Project (EIAP)*** – Stage 1 of a proposal for a broad acre mixed agribusiness development on the Gilbert River, in the Gulf Country. The project would use off-stream river storage and

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‘Attachment 1: Case Studies – Major Northern Australian projects undertaken by the Western Australian Government’, p. 3; CUSP Institute, *Submission 253, Attachment A*, p. 30.

139 Mr Ian Marshall, *Committee Hansard*, Perth, 7 April 2014, pp. 34–5.

140 Department of Agriculture, *Submission 238*, p. 3.

141 Councillor Philemon Mene, *Committee Hansard*, Weipa, 3 July 2014, pp. 2–3; Councillor Philemon Mene and Mr Amos Njaramba, Chief Executive Officer, Napranum Aboriginal Shire Council, *Committee Hansard*, Weipa, 3 July 2014, pp. 7–8.

water diversion, as against sourcing water from the proposed Green Hills Dam.<sup>142</sup> The EIAP would include 65 000 hectares of dry tape irrigated cropping land, large scale water capture and storage infrastructure and primary processing facilities on site. The initial production will be in raw sugar, guar gum and aquaculture, with potential for cattle and associated by-products.<sup>143</sup> The proponent (Integrated Food and Energy Developments Pty Ltd – IFED) will invest \$15 million over three years for the project design and development, with the total \$2 billion cost funded by private sector investment. It is suggested that Government facilitation through taxation and other incentives, and negotiation of land and water allocations, would be required for the project to proceed. Federal funding could also enable local Aboriginal people to invest in the project.<sup>144</sup>

- ***Fitzroy Agricultural Corridor (FAC)*** – is an area of about 10 km between the junction of the Dawson and McKenzie Rivers and forming the Fitzroy River and the Fitzroy River Barrage. The FAC comprises five precincts and is projected to focus on intensive livestock industries, particularly beef cattle feedlots. The proposed Eden Bann and Rookwood weir developments would support intensive agriculture and large-scale horticultural orchards for macadamias and mandarins in this area and in the Fitzroy Basin region. Products of the FAC would be processed in the adjoining Gracemere-Stanwell Industrial Corridor. Federal funding and access to unused town water allocations would facilitate initial development.<sup>145</sup>
- ***Flinders O’Connell Creek Cropping Proposal*** – would utilise the water directed into off-stream storage by the Flinders Weir Project in the Gulf Country’s Shire of Richmond, as discussed above. The project has potential to support 15 to 20 000 hectares of arable cropping land through irrigation using flood, centre pivots and trickle systems, with substantial areas also suitable for dry-land cropping. Potential crops include cotton, rice, chickpeas, mung beans, sorghum, maize, wheat, soybeans, guar, adzuki beans and fodder crops, and will also support the cattle industry, the core industry in the region. State government investment of \$136 million, including \$10 million for a cotton gin, or rice and pulse factory, has been discussed. Private funding is actively being

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142 Mr David Hassum, Director, IFED, *Committee Hansard*, Brisbane, 20 June 2014, p. 13.

143 IFED, *Submission 81*, pp. 1, 12; *Exhibit 75: Block Diagram Business Model, Red Claw and Guar briefings*.

144 IFED, *Submission 81*: 3, p. 1; IFED, *Submission 81*, pp. 5-9, 11.

145 Mr Rick Palmer, Rockhampton Regional Council, *Committee Hansard*, Brisbane, 20 June 2014, pp. 19-20, and Rockhampton Regional Council, *Submission 10*, pp. 1-3, 5.

sought with overseas investors interested.<sup>146</sup> Access to State water allocations will determine the project's feasibility.<sup>147</sup>

- ***Gilbert River Farming Precinct*** – in planning for 15 years, the proposal envisions mixed agricultural development with grazing along the Gilbert River. Potential crops such as bananas, citrus, mangoes, rice, peanuts, fodder crops and sandalwood would be grown using water from the proposed Green Hills Dam.<sup>148</sup> Successful cultivation of crops over 50 years also supports the potential expansion of present day market gardening through river irrigation.<sup>149</sup> Federal funding is needed to develop infrastructure to expand agriculture in the region.<sup>150</sup> Resolution of water license issues and State government controlled power and water storage matters is required to facilitate this development.<sup>151</sup>
- ***Southern Atherton Tablelands/Mareeba-Dimbulah Development Areas*** – development of the Atherton Tablelands as a 'clean green' food bowl is part of a regional plan for the expansion of the mining, tourism and the knowledge development industries.<sup>152</sup> There is also potential to develop around 10 000 hectares of the 40 000 in the Mareeba-Dimbulah irrigation area for intensive agriculture, potentially pineapples, sugar cane or citrus. Agriculture is expected to provide the mainstay of development in the region. Both areas will require land clearing, improved access to water and infrastructure upgrades of key regional roads to enable development.<sup>153</sup>
- ***Wet and Dry Agricultural Projects Cape York*** – the Hopevale Banana Enterprise indicates the potential for horticultural developments to deliver local Aboriginal communities benefits that support wider economic development. At a total cost of is \$6.3 million, the project has 44.74 hectares under cultivation and employs 32 Aboriginal people fulltime.<sup>154</sup> It was suggested that the Cape York region requires a

146 Councillor John Wharton, Mayor, Richmond Shire Council, *Committee Hansard*, Georgetown, 2 July 2014, pp. 13-14; and *Exhibit 8: Flinders River/O'Connell Creek Cropping Proposal*.

147 Mr Brendan Mcnamara, Chairman, Flinders River Agricultural Precinct, *Committee Hansard*, Mount Isa, 3 April 2014, pp. 8-10

148 Etheridge Shire Council, *Submission 232*, p. 3.

149 Mr Ken Fry, Forest Home Station, *Committee Hansard*, Georgetown, 2 July 2014, pp. 20, 24-5.

150 ANDEV, *Submission 147, Attachment C*, p. 8.

151 Etheridge Shire Council, *Submission 232*, p. 3.

152 Tablelands Futures Corporation, *Submission 162*, pp. 2-3.

153 Mr Joe Moro, Mareeba Chamber of Commerce, *Committee Hansard*, Cairns, 28 April 2014, pp. 39-41.

154 Funding was provided State and Federal Government, the Shire Councils and the Indigenous Land Corporation and Indigenous Business Australia. See Indigenous Land Corporation, *Submission 157*, p. 5, and 'Attachment B', p. 17.

catchment by catchment assessment equivalent to that conducted for the Flinders and Gilbert Rivers to facilitate further development of wet and dry agriculture. Reform of Native Title, Queensland's land tenure arrangements and of Strategic Environmental Area (SEA) restrictions would enable Aboriginal land holders to pursue identified development opportunities.<sup>155</sup>

## Western Australia/Northern Territory

- **Ord–East Kimberley Expansion Project, Stages 2 and 3**—in planning since 2009, the project will double the size of the Ord Irrigation Scheme, extending it into the Northern Territory. A Memorandum of Understanding (MoU) between Government partners for the project was signed in 2012. Stage 2 involved release of 13 400 hectares for expansion into the Goomig Lands and Knox Plains, near Kununurra.<sup>156</sup> The project included a National Partnership Agreement which saw the Australian Government contribute \$195 million toward social and community infrastructure and partner with the Western Australian Government through its Royalties for Regions program which has invested \$322 million in the irrigation expansion. The Western Australian Government has invested \$301 million to create common user infrastructure (irrigation channels, drains, roads etc.) over the period 2010–13. Stage 3 infrastructure will enable the further expansion of 15 000 hectares into the Northern Territory. An additional 30 000 hectares on the Cockatoo Sands, near Kununurra in Western Australia, is also subject to due diligence with a five-year development horizon.<sup>157</sup> The selected developer, Kimberley Agriculture Investment Pty Ltd has entered into an agreement to invest \$700 million to establish large scale sugarcane production, with potential ancillary industries in power, biofuel and stock feed under lease tenure. Delayed approvals for the Knox Plains and other designated lands were cited as risks to this investment.<sup>158</sup> The

155 Cape York Institute for Policy and Leadership, *Submission 87*, pp. 4–5; Cape York Natural Resource Management and Terrain Regional Natural Resource Management, *Submission 189*, pp. 11–12.

156 Agreement between the Federal, Western Australian and Northern Territory Governments at the Northern Australia Ministerial Forum on 23 November 2012. See Australian Government, Department of Infrastructure and Development, 'The Ord' <[www.regional.gov.au/regional/ona/ord.aspx](http://www.regional.gov.au/regional/ona/ord.aspx)> July 2014; Government of Western Australian, Department of Agriculture and Food, 'Ord River Irrigation Expansion Stage 2— Goomig farmlands— Outcome' <[www.agric.wa.gov.au/resource-assessment/ord-river-irrigation-expansion-stage-2-%E2%80%93-goomig-farmlands?page=0%2C1](http://www.agric.wa.gov.au/resource-assessment/ord-river-irrigation-expansion-stage-2-%E2%80%93-goomig-farmlands?page=0%2C1)> July 2014.

157 Hon. Terry Redmond MLA, Minister for Regional Development; Lands; Minister Assisting the Minister for State Development, Government of Western Australia, *Submission 161*, 'Attachment 1: Case studies', p. 1.

158 Kimberley Agriculture Investment Pty Ltd, *Submission 278*, pp. 1–3.

Northern Territory Government is financing settlement of Native Title and Sacred Site matters for Stage 3.<sup>159</sup> Federal Government assistance for this, and further crop/usage research and exclusion of future Federal funding from the GST process would aid the development.<sup>160</sup>

## Western Australia

- ***Fitzroy Valley Agricultural Precinct*** – an intensive irrigation project proposed for the Fitzroy River Valley around Fitzroy Crossing, Western Australia, approximately 260 km south east of Derby and 400 km east of Broome. The State Government has committed \$130 million to assist in the development of intensive agriculture throughout the West Kimberley including the Fitzroy Valley, and to the Knowsley Agricultural Area near Derby. It was suggested that development of this area should be included by the Federal Government in the implementation of the National Indigenous Economic Development Strategy.<sup>161</sup> Transport infrastructure upgrades and equipment would be required to progress this project.<sup>162</sup>
- ***La Grange Aquifer Irrigation Development*** – the La Grange Aquifer is located south of Broome, near Bidgyadanga, within the Kimberley region. Bidgyadanga is the largest Aboriginal community in Western Australia. The Karajarii people hold Native Title on the land which currently produces \$10 million annually in watermelons, pumpkins, sweet corn and beans. The West Australian Government has allocated \$5.1 million for assessment of the potential to expand horticulture in La Grange using water from the aquifer.<sup>163</sup> This development would require machinery, resources and supplies, as well as the upgrade of the freight corridor to south eastern markets.<sup>164</sup>

## Northern Territory

- ***Douglas-Daly-Mataranka Catchment Proposal*** – approximately 200 km from Katherine, the Douglas and Daly River region requires a road

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159 Hon. Adam Giles MLA, Northern Territory Government, *Committee Hansard*, Darwin 20 May 2014, p. 12.

160 Northern Territory Government, *Submission 92*, p. 9; *Submission 92.2*, p. 4.

161 Shire of Derby West Kimberley, *Submission 196*, pp. 3, 9, 20.

162 Shire of Derby West Kimberley, *Submission 196*, pp. 21, 25; Shire of Halls Creek, Central Kimberley Chamber of Commerce, Kimberley Cattlemen's Association and the Tanami Action Group, *Submission 103*, p. 3; Mr Phillip Hamms, Chair, Tanami Action Group, *Committee Hansard*, Kununurra, 7 May 2014, p. 35.

163 Broome Chamber of Commerce and Industry, *Submission 125*, p. 6.

164 Shire of Halls Creek, Central Kimberley Chamber of Commerce, and Kimberley Cattlemen's Association and the Tanami Action Group, *Submission 103*, p. 3.

upgrade to open up land on the Daly Aquifer for prime agriculture development, potentially as the Territory's 'mini Ord'. This development would provide economies of scale for the Katherine and Douglas-Daly agricultural regions, as well as opening opportunities for the forestry, tourism and mining industries. Federal and Territory Government support is requested to achieve sustainable economic growth across the Katherine Douglas-Daly region.<sup>165</sup>

## Power Generation

3.28 Regional development requires an adequate production of base load power and reliable access to it. Unfortunately energy supply in Northern Australia is unreliable with regular 'brown outs' (periods of power reduction). Stronger grid connections are required.<sup>166</sup>

### Base Load Power

- 3.29 Several major infrastructure projects were proposed to meet current and anticipated base load power demand in the developing North.
- **Coal-Fired Power Station, North Queensland** – Northern Queensland does not currently have a base load capacity electricity supplier following decommission of the 180 MW coal-fired Collinsville Power Station site near Townsville.<sup>167</sup> A base load power station was proposed for Pentland, on the Galilee Basin. Pentland would combine base-load coal with bagasse (green mass) power generation, supplied by increased sugar production in the Burdekin region.<sup>168</sup> Redevelopment of the Collinsville site using clean technology was also proposed, advantages being the existing connecting infrastructure and the location: near local coal sources and industry developments, with access to the gas pipeline and augmented water supply from the proposed Urannah Dam.<sup>169</sup> An approved 50 MW solar farm adjacent to the site provided opportunities

165 Mr Steven Rose, Katherine Region, Chamber of Commerce Northern Territory, *Committee Hansard*, Katherine, 22 May 2014, pp. 8, 12.

166 The Far North Queensland Regional Organisation of Councils, *Submission 53*, p. 2; Etheridge Shire Council, *Submission 232*, p. 3.

167 Liberal National Party Northern Development Policy Committee, *Submission 70*, pp. 12–13.

168 Councillor Wharton, Richmond Shire Council, *Committee Hansard*, Georgetown, 2 July 2014, pp. 10, 13; Far North Queensland Regional Organisation of Councils, *Submission 53*, p. 2; MITEZ Inc. *Submission 32*, pp. 7, 8.

169 Mr Danial Rochford, Chief Executive Officer, and Mr David Nebauer, Whitsundays Marketing and Development, *Committee Hansard*, Bowen, 1 April 2014, pp. 2–4.



to diversify production.<sup>170</sup> It was suggested that a development of this type in the Townsville region would deliver an immediate net benefit of \$2.7 billion to Northern Australia, primarily due to the reduction in electricity prices.<sup>171</sup>

- **Hydro Plant Burdekin Falls Dam** – the proposed 52 MW power station would generate approximately 150 GW hours of renewable base load electricity annually, sufficient to power 30 000 plus homes. With \$1 billion invested, the private developer of this scheme sought stable policy on renewable energy to safeguard the project and support its duplication across the North.<sup>172</sup>
- **Hydro Project Tully–Millstream (Kareeya B)** – proposed in the 1990s, this project would generate approximately 600 MW, with relatively minimal clearing and flooding of 150 hectares given power generation capacity. The project would address the growing massive power deficit in the region and reduce reliance on supplies external to the State.<sup>173</sup>
- **National Electricity Grid Connectivity** – there was strong advocacy for the Federal Government to support expansion of the national electricity grid into key regional developments areas, such as the north-west Gulf Region in Queensland.<sup>174</sup>
- **Pilbara Interconnected Grid** – The Pilbara currently gets its power from a range of public and private sources, some of which are connected on a local grid – the North West Interconnected System – and others as isolated generators. There is concern that the diverse and competing ownership of power generators is hampering development in the region. The Pilbara Interconnected Grid would bring all privately and publicly owned power stations into a single grid. This would facilitate diversification of economic activity, provide for population growth and allow for industrial development. It would also extend mine longevity and enable a range of costs efficiencies in maintenance and transportation.<sup>175</sup> It was estimated that the lack of grid connection in the

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170 For comparison, Rockhampton’s Stanwell Power Station, Queensland’s largest power station, utilises land, water, geothermal and wind resources for supply to the national grid. Capricorn Enterprise *Submission 17*, p. 11; Whitsunday Regional Council, *Submission 140*, p. 4.

171 City of Townsville, *Submission 170*, p. 4.

172 Meridian Energy Australia Pty Ltd and Powershop Australia Pty Ltd, *Submission 184*, pp. 3–5.

173 Liberal National Party Northern Development Policy Committee, *Submission 70*, p. 13.

174 Councillor Will Attwood, Etheridge Shire Council, *Committee Hansard*, Georgetown, 2 July 2014, p. 5

175 CUSP Institute, *Submission 253, Attachment A*, pp. 56–64; Ms Jemma Green, Research Fellow, Sustainability Policy Institute, Curtin University, *Committee Hansard*, Perth, 7 April 2014, p. 12.

Pilbara presently costs the Shire of Roebourne approximately \$700 million a year.<sup>176</sup>

## Electricity Co-generation and Biofuels

3.30 A range of proposals would support localised power production through co-energy generation of electricity by the sugar industry or use of biofuels.

- **Electricity co-generation** – modern sugar mills are designed to co-generate electricity. Mackay canegrowers have a 30-year regional development plan to expand cane production from eight million tonnes to 20 million tonnes within 20 years. The plan includes construction of two new ‘super mills’ designed for high grade sugar, ethanol and electricity generation, with 50 per cent of the annual income in sugar.<sup>177</sup> A proposal for construction of a sugar mill in the Herbert region is currently being funded by local farmers. The proposed mill would have a generating capacity of approximately 110 MW from green waste, with between 65-80 MW available for export to the grid. Federal funding was sought for duplication of the project to achieve critical mass.<sup>178</sup> A strong renewable energy market with consistent policy was cited as essential for the viability of these and other regional developments.<sup>179</sup> As already noted, Stages 2 and 3 of the Ord River irrigation expansion will predominately be put into sugar production, with co-generation a potential outcome.<sup>180</sup>
- **Biofuels** – innovative proposals for the production of biofuels included thermal processing of municipal solid wastes and the clearance of the Prickly Acacia (*Acacia nilotica*), a declared weed, to generate a new biofuel. The thermal processing technology involves the gasification of waste (industrial, commercial or wet and hazardous wastes) at high temperatures for conversion into a gas for clean generation of electricity. Government facilitation of waste and by-product markets and incentives to drive small energy generation projects would benefit the industry.<sup>181</sup> The prickly acacia project involves clearance of some 7.5 million hectares of the introduced woody weed and processing to produce energy for

176 Mr Peter Long, President, Shire of Roebourne, *Committee Hansard*, Karratha, 9 April 2014, p. 2.

177 Mr Andrew Capello, Chairman, Board of Directors, Mackay Sugar Limited, *Committee Hansard*, Mackay, 31 March 2014, pp. 62-5.

178 Mr Anthony Castorina, Director, North Queensland Bio-Energy Corporation Ltd, *Committee Hansard*, Cairns, 28 May 2014, p. 61.

179 Mr Andrew Capello, Mackay Sugar Limited, *Committee Hansard*, Mackay, 31 March 2014, pp. 62-65; Mr Anthony Castorina, North Queensland Bio-Energy Corporation Ltd, *Committee Hansard*, Cairns, 28 May 2014, p. 61.

180 Kimberley Agriculture Investment Pty Ltd, *Submission 278*, pp. 1-3.

181 Eco Energy Ventures, *Submission 105*, pp. 3-4, 8.

small scale remote power stations. The proponent has contracts with the Queensland Government for weed clearance and sale of the by-products, but legal frameworks are required for negotiation with private landholders. Private investment in the project was being sought.<sup>182</sup>

## Gas Supply

- 3.31 Australia's North has enormous gas reserves which could provide a cost effective domestic energy supply.<sup>183</sup>
- ***Unconventional Gas Resources*** – Australia has significant potential to exploit coal seam and shale gas resources north of the Tropic of Capricorn for low cost unconventional gas production (for conversion to liquefied natural gas – LNG), with potential to reduce greenhouse gas emissions.<sup>184</sup> Queensland has pioneered the coal seam gas LNG export industry, with the first shipments on track for 2014. Government partnerships with industry would facilitate further exploration and establishment of LNG plants in Northern Queensland and in the Northern Territory.<sup>185</sup> The LNG industry advocated for provision of cost maintenance mechanisms, and regulatory reforms and market incentives to realise export and domestic energy development potential.<sup>186</sup>
  - ***Gas Pipelines*** – a number of proposals were made to extend, tap or construct new gas pipelines to remote regions. In the Pilbara an underground pipeline was proposed to address domestic needs by linking the Canning Basin gas fields to existing domestic gas pipelines in the Pilbara. A more ambitious project would develop a natural gas pipeline network for the West Kimberley, with links to the East Kimberley.<sup>187</sup> Another pipeline under consideration would link Alice Springs to Moomba in the Northern Territory to connect production with south-east markets by extending the existing gas line.<sup>188</sup> In Katherine,

182 Pioneer Corporation Pty Ltd, *Submission 21, Attachment A: Government Brief Converting Prickly Acacia from Pest to Sustainable fuel; and Attachment C: The Opportunity to Convert a 'Declared Weed of National Significance' into a Viable Feedstock for New Value Added Industries.*

183 CSIRO, *Submission 108*, p. 7.

184 CSIRO, *Submission 108*, p. 7; Clean Energy Finance Corporation, *Submission 204*, p. 18.

185 Premier of Queensland, *Submission 219*, p. 22; Northern Territory Government, *Submission 92.2*, p. 3; MMG Ltd, *Submission 22, Attachment A, MMG's Submission to the Coalition's 2030 Vision for Developing Northern Australia*, p. 2.

186 APPEA, *Submission 242*, p. 4.

187 Broome Chamber of Commerce and Industry Inc., *Submission 125*, p. 10; Mr Anthony (Tony) Proctor, President, Broome Chamber of Commerce and Industry, *Committee Hansard*, Broome, 5 May 2014, pp. 35–6.

188 Hon. Adam Giles MLA, Northern Territory Government, *Committee Hansard*, Darwin, 20 May 2014, p. 9; Northern Territory Government, *Submission 92.2*, p. 3.

access to gas allocations from the existing pipeline would support local businesses.<sup>189</sup>

- **National Gas Grid Development** – infrastructure linking the Northern Territory gas pipeline to the Eastern gas grid was identified as a priority to capitalise on the Territory’s unconventional gas resources. The pipeline link from Alice Springs to Moomba would be part of the project. Additional proposals for development of west–east links in a national gas grid includes a pipeline from Tennant Creek to Mount Isa and the consideration of a gas line from Darwin to LNG developments near the Aboriginal centre of Wadeye in Western Australia, and on through to New South Wales.<sup>190</sup> The APA Group (a major natural gas infrastructure business) has invested \$2 million in a feasibility study into the gas grid development. Additional support from the Federal Government was sought.<sup>191</sup>
- **Smaller Scale LNG Hubs** – a proposal to establish four LNG hubs (small liquefaction plants that produce LNG from gas pipelines) in Darwin, Port Hedland, Adelaide and Kalgoorlie would directly supply the mining sector, as well as remote communities and the marine transport sector. Off-grid power could be generated by small scale power stations using the LNG delivered in canisters by road, achieving cost reductions between 20 and 40 per cent.<sup>192</sup>

## Wind, Solar and Wave Power

3.32 Wind, solar and wave power could provide affordable domestic power, with benefits for remote communities in particular, and some potential to supplement national grid supplies. Proposals for these technologies included:

- **Forsyth Wind Farm** – a major wind energy project planned for the south-east of Georgetown, in the Gulf Region of Queensland. The Council has approved construction of up to 30 wind turbines, with an installed capacity of 75MW, on two pastoral stations. There is an Indigenous Land Use Agreement (ILUA) with the Ewamian Native Title holders for the development. The project will supply electricity direct to the Ergon Energy’s Townsville to Georgetown 132 KW transmission line.

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189 Mr Ewan Crook, Member, Katherine Region, Chamber of Commerce Northern Territory, *Committee Hansard*, Katherine, 22 May, p. 38.

190 Mr John Williams, External Relations and Communications Manager, ENI Australia, *Committee Hansard*, Darwin, 19 August 2014, pp. 16–18.

191 Northern Territory Government, *Submission 92.2*, p. 3.

192 Mr Andrew White, Managing Director, Mobile LNG, *Committee Hansard*, Karratha, 9 April 2014, pp. 13, 16.

Retention of the Renewable Energy Target (RET) would provide regulatory certainty for the project.<sup>193</sup> Other proposals for wind technology included the Mount Emerald Wind Farm, on Springmount Station near the Herberton Range in Queensland, and on Horne Island (Nguruapai) in the Torres Strait.<sup>194</sup>

- ***Solar Innovation for Aboriginal and Torres Strait Islander Communities*** – solar power provides particular utility in remote communities which are often reliant on expensive non-renewable supplies of diesel to provide light and power.<sup>195</sup> Alice Springs has developed as a ‘solar city’ and business centre for remote renewable innovation.<sup>196</sup> The solar powered Bushlight program is one local initiative, providing affordable 24 hour reliable power for 130 remote Aboriginal communities. Government support for research and innovation in the sector would stimulate micro-business diversification, and secure Aboriginal and Torres Strait Islander engagement.<sup>197</sup>
- ***Solar Photo Voltaic (PV) Technology and Solar Grid*** – Cook Shire, Cape York, plans to install a 24 MW grid connected to Solar PV technology by Lyon Infrastructure to feed directly into the power supply. Along with solar, the Shire Council is promoting wind and hydro generation projects to reduce imports on State supplies. It was suggested that tax offsets and/or financial incentives would encourage investment in economic development and innovation in the region.<sup>198</sup>
- ***Solar Power Tower with Thermal Energy Storage*** – the Pilbara region prioritises development of renewable energy.<sup>199</sup> A priority for Port Headland is the construction of a ‘Concentrated Solar Power Tower with Thermal Energy Storage’ to supply 75 000 homes with renewable energy over a 50 year period. Federal support for a funding model similar to the

193 Mr Frank Boland, Senior Development Manager, Infigen Energy Development Pty Ltd, *Committee Hansard*, Georgetown, 2 July 2014, pp. 15, 17–18.

194 Tablelands Wind Turbine Action, *Submission 83*, p. 2; Mr Joe Moro, Mareeba Chamber of Commerce, *Committee Hansard*, Cairns, 28 April 2014, p. 42; Councillor Napau Pedro, Mayor, Torres Shire Council, *Committee Hansard*, Thursday Island (Waiben), 30 April 2014, p. 8.

195 Centre for Appropriate Technology, *Submission 133*, p. 4.

196 One of seven solar cities selected under the Federal Government’s Solar Cities Program in 2008. Alice Solar City Energy Champions, ‘Alice Springs shines as a Solar Test Tube for Australia and the World’, 2013, <[www.alicesolarcity.com.au/alice-springs-shines-a-solar-test-tube-australia-and-world](http://www.alicesolarcity.com.au/alice-springs-shines-a-solar-test-tube-australia-and-world)> August 2014.

197 Dr Bruce Walker, Chief Executive, Centre for Appropriate Technology, *Committee Hansard*, Alice Springs, 19 May 2014, pp. 35, 37–9; Ninti One Ltd, *Submission 88*, pp. 4–5.

198 Cook Shire Council, *Submission 86*, pp. 2–3.

199 See Pilbara Regional Council, *Submission 25*, ‘Table 4: Pilbara Infrastructure Priorities to 2015’, p. 15.

State Government's Royalties for Regions program or Northern Towns Development Fund would help facilitate this project.<sup>200</sup>

- *Wave Technologies* – Australia's extensive coastlines hold potential to utilise the ocean's energy for power generation.<sup>201</sup> Some coastal communities reported interest in developing wave technologies to supplement local energy supplies. Derby is reviewing proposals for a Tidal Power Station, using new vertical wave power technology suited to power generation in the West Kimberley's high tidal zones. The supply would be adequate to support light industrial developments.<sup>202</sup> In the Torres Strait Islands, which are surrounded by fast flowing currents, the delivery of power by buoyant actuators (using Carnegie wave energy) in combination with hybrid devices for wind and solar energy was being investigated.<sup>203</sup>

## Conclusion

- 3.33 Many of the proposals discussed in this chapter face serious impediments and would require significant government investment to proceed. The impediments to developing Northern Australia are discussed in detail in Chapter 4.

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200 Town of Port Hedland, *Submission 217*, pp. 3–4.

201 The Australian Network of Environmental Defender's Offices (ANEDO), *Submission 205*, p. 28.

202 Broome Chamber of Commerce and Industry, *Submission 125*, p. 5; Burke Shire Council, *Submission 16*, p. 3.

203 Kaurareg Aboriginal Land Trust (KALT), *Submission 127*, p. 4.