

# BUSINESS REVIEW



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## BUSINESS REVIEW



# Investment in **POWER ASSETS**

Power Assets is a global investor with assets in power generation, transmission and distribution, gas transmission and distribution as well as oil storage and transmission in 10 markets across the globe – namely the UK, Australia, Mainland China, the Netherlands, Portugal, New Zealand, Thailand, Canada, the United States, and Hong Kong.

Power Assets delivered operating profits in line with expectations for the year ended 31st December, 2019. The profit attributable to shareholders amounted to HK\$7,131 million (2018: HK\$7,636 million). The decrease was primarily attributable to weak exchange rates for various currencies and lower contributions from its UK and Hong Kong portfolios.

Power Assets' stable underlying performance is an endorsement of the strength of its robust and diverse portfolio of assets that deliver predictable long term income streams. Among its UK portfolio, UK Power Networks, Wales & West Gas Networks and Northern Gas Networks all continued to lead in reliability and customer service. Seabank Power met expectations, with its income governed by an offtake contract based on availability.

In its home market Hong Kong, the operating company, HK Electric, has transitioned smoothly into the new regulatory period. A new gas-fired generation unit, L10, was synchronised in October 2019 and commissioned in February 2020. The company is progressing with other capital works under the 2019-2023 Development Plan which will not only increase its assets base but also increase gas-fired generation further to about 70% of total output by 2023.

In Australia, the electricity distribution networks, SA Power Networks, Victoria Power Networks and United Energy engaged with the regulator and stakeholders to determine acceptable outcomes in regulatory resets. In addition, the gas distribution networks, Australian Gas Networks and Multinet Gas, progressed the construction of a 1.25-MW hydrogen electrolyser plant at the Tonsley Innovation District in South Australia for the Hydrogen Park SA project. This will be used to analyse and develop business models for the use of "green" hydrogen.

Power Assets' gas transmission pipeline in Australia, Dampier Bunbury Pipeline completed and commenced operation of the Tanami Gas Pipeline ahead of schedule. Energy Developments Pty Ltd acquired two additional landfill sites capable of generating approximately 65 MW in the United States. Australian Energy Operations connected the Moorabool and Elaine Wind Farms to the grid in 2019 and started contribution to Power Assets.

While in Mainland China, the transfer of ownership of the Siping cogeneration plant to the mainland joint venture partner was completed in 2019. The operation rights of Zhuhai power plant expired in 2019 and the transfer of its ownership to mainland partners is in progress. This is aligned with Power Assets' global decarbonisation goals and will have reduced its total installed coal-fired generation capacity by 1,600 MW upon completion.

For Power Assets' portfolios in Canada and Continental Europe, Husky Midstream continued to expand its network footprint, delivering a reliable income stream. Within the fleet of the Canadian power plants, the only coal-fired power station in Alberta, the Sheerness power plant, is currently undergoing progressive coal-to-gas conversion and ultimately becoming a 100% gas-fired generating unit. Both AVR-Afvalverwerking B.V. and Iberwind in Europe met expectations and made stable profit contributions.

Wellington Electricity Lines Limited in New Zealand and Ratchaburi Power Plant in Thailand operated smoothly and met customer services targets and performance expectation.



# Infrastructure Investments in **UNITED KINGDOM**

In the United Kingdom, CKI has investments in electricity and gas distribution, water and wastewater services, electricity generation as well as railway rolling stock. These investments include UK Power Networks, the electricity distribution network operator which serves London, South East England and the east of England; Northern Gas Networks, a gas distribution business that serves the north of England; Wales & West Gas Networks, a gas distribution business that serves Wales and South West England; Seabank Power, an electricity generation plant located near Bristol; Northumbrian Water, a water supply, sewerage and wastewater company which serves the North East as well as provides water supply to certain areas in South East England; and UK Rails, one of the three major rolling stock companies in Great Britain.

## UK POWER NETWORKS HOLDINGS LIMITED

UK Power Networks owns three of the 14 regulated electricity distribution networks in Great Britain, and distributes electricity to over a quarter of the country's population. The company's network is approximately 190,000 kilometres in length and covers an area of about 30,000 square kilometres. It serves approximately 8.25 million customers in London, the south east and east of England. Its reliability rating is the highest in the country. The company also has a non-regulated business – UK Power Networks Services – which designs, builds, owns and operates private networks for both public and private sector clients.

The company was presented the 2019 Edison Electric Institute International Edison Award, an internationally acclaimed award billed as the power industry's most prestigious honour. UK Power Networks won the award for its innovative work which includes the development of a smart grid. Innovative projects have saved UK Power Networks' customers over £180 million since the beginning of the current regulatory price control period in 2015; this amount is the highest amongst UK electricity network operators.

During the year, investments have been made to upgrade active network management ("ANM"); this includes a new intelligent software platform that will enable over 500 MW of distributed energy resources to connect to the network cheaper and faster. By having a complete view of what is happening on the network at any given moment, the system autonomously makes complex decisions to optimise the flow of available power.

In addition, UK Power Networks also supports the development of Electric Vehicles ("EVs"). In the second half of 2019, UK Power Networks launched an EV smart charging trial which explores how smarter charging such as charging during off-peak hours could avoid the building of new infrastructure to meet the increasing electricity demand of EVs.



UK Power Networks owns three of the 14 regulated electricity distribution networks in Great Britain, its reliability rating is the highest in the country.

In 2019, UK Power Networks Services was appointed as the long-term energy infrastructure partner for London City Airport. Projects to be delivered include the design, build, operation and financing of a microgrid which features (i) solar Photo Voltaic (PV), (ii) combined heat and power (CHP) generation for electric vehicle charging infrastructure, as well as (iii) smart grid automation software. The initiatives will double the size of the airport's electrical distribution infrastructure and will upgrade the airport's electricity capacity from 3.6 MVA to 7 MVA. Upon completion, the resilience of the airport's energy system would be increased, energy costs reduced, and Net Zero sustainability objectives achieved.

UK Power Networks Services has also been commissioned to renew and upgrade Manchester Metrolink's electrical infrastructure as part of Transport for Greater Manchester's green transport strategy. The programme will significantly increase the extent of the electric tram system across the city. The first project that UK Power Networks Services will work on is a seven-month programme that will include the replacement of electrical equipment, as well as the assessment and improvement of the current fibre optic communications at electricity substations.

## BUSINESS REVIEW



Northumbrian Water achieved four stars in the Environment Performance Assessment report released by the Environment Agency, and is the only company to achieve the highest rating in its sector in national results.

### NORTHUMBRIAN WATER GROUP LIMITED

Northumbrian Water is one of the 10 regulated water and sewerage companies in England and Wales. It operates approximately 26,000 kilometres of water mains and 30,000 kilometres of sewers, providing water and wastewater services to 2.7 million people in North East England, and supplies drinking water to 1.8 million people in South East of England.

In addition to its regulated businesses, Northumbrian Water's operations include Kielder Reservoir, the largest man-made reservoir in northwestern Europe, as well as a portfolio of long-term water and wastewater contracts in Scotland, Ireland and Gibraltar.

Northumbrian Water was named as one of the "Leading Utilities of the World" – a prestigious network of leading companies from across the globe which represents the gold standard of innovation and performance in the utilities sector. The company was included in the World's Most Ethical Companies List 2019, and is the only water company in the world and one of the two UK-based companies on the list. It is the eighth time Northumbrian Water have received this global recognition from the Ethisphere Institute.

Northumbrian Water achieved four stars in the Environment Performance Assessment report published in July 2019, and is the only company to achieve the highest rating in its sector in national results released by the Environment Agency. The rating demonstrated Northumbrian Water's efforts in protecting rivers, lakes and groundwater from serious pollution and the effects of climate change.

Northumbrian Water, local authorities, other utility services and partners are collaborating to produce a comprehensive underground map of the North East. The aim of the project is to help save lives, reduce accidents and minimise the disruption caused to people when these buried utilities are struck by mistake. The underground mapping idea came from Northumbrian Water's Innovation Festival in 2018 and involves creating a single digital map of all of the pipes and cables that run underground. The Innovation Festival is an annual extravaganza that champions new thinking and innovative ideas to change the world.

During the year, Northumbrian Water completed a three-year flood reduction scheme to reduce the risk of flooding across Killingworth and Longbenton. The work has been carried out in three phases with the support of North Tyneside Council and the Environment Agency. The new storage basins will be utilised during heavy rainfalls to reduce the impact of surface water flooding and help to protect 3,500 homes.

## NORTHERN GAS NETWORKS LIMITED

Northern Gas Networks is a gas distribution company that serves the north of England. The network stretches from Northern Cumbria to the North East and includes much of Yorkshire, covering large cities as well as rural areas through 37,000 kilometres of gas distribution pipelines. It transports approximately 13% of the nation's gas to a population of 6.7 million.

Northern Gas Networks' dedication to establishing world-class standards for customer service and to transforming its culture to put customers at the centre was recognised both locally and globally in 2019. The company won three awards at the International Customer Experience Awards 2019, namely the Gold award for Business Change or Transformation, the Silver award for Customer-Centric Culture – Transformation, and the Bronze award for the Best Customer Experience Strategy. The company was also recognised in the UK Customer Experience Awards 2019, receiving the Gold award for Product or Service Development, the Silver for Employees at the Heart of Everything, and the Bronze for Use of Insight & Feedback – Customer Satisfaction. Northern Gas Networks was also named a CSR World Leader at the International CSR Excellence Awards organised by The Green Organisation in recognition of its work to support the communities that it serves.

During the year a robo-engineer was introduced network-wide to carry out repairs inside underground gas pipes. This reduces the number of holes that need to be dug when routine repair and maintenance on large diameter pipes is carried out, and thus, mitigates disruption to customers, and also saves time and money.

H21, the UK gas industry programme led by Northern Gas Networks which focuses on converting the network to carry 100% hydrogen, has launched the first testing facility for 100% hydrogen in collaboration with partners including Wales & West Gas Networks. The testing facility is established at the Health and Safety Executive ("HSE")'s Science and Research Centre in Buxton. The data will be used to provide the evidence to prove the safety of a 100% hydrogen network for homes across the United Kingdom. In November 2019, the H21 programme was awarded a further £6.8 million of Office of Gas and Electricity Markets ("Ofgem")'s innovation funding to support the second phase of research and development.

Another project funded by Ofgem, known as "HyDeploy", is a collaboration led by Cadent alongside its lead partner, Northern Gas Networks, in partnership with HSE and a consortium of industry experts. The first phase of the trial has now started at Keele University's private gas network. Another trial will take place in Winlaton, Gateshead, on Northern Gas Networks' network, where 670 homes and businesses in Winlaton will receive gas blended with 20% hydrogen. This will be the first public UK gas network to use blended hydrogen for heating and cooking. The demonstration is expected to last 10 months starting December 2020.



H21 is a UK gas industry programme led by Northern Gas Networks which focuses on converting the network to carry 100% hydrogen.



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Wales & West Utilities is one of eight gas distribution networks in the UK.

### WALES & WEST GAS NETWORKS (HOLDINGS) LIMITED

Wales & West Gas Networks is the holding company of Wales & West Utilities, which is one of eight gas distribution networks in the UK. The company has 2.5 million supply points, and a pipeline network of 35,000 kilometres serving an area of 42,000 square kilometres and a population of 7.5 million in Wales and South West England.

Wales & West Gas Networks' commitment in maintaining industry-leading health and safety performance was recognised in the renowned RoSPA (The Royal Society for the Prevention of Accidents) Health and Safety Awards. The company received a Gold Award for the sixth consecutive year, and was also named the overall Oil and Gas Industry Sector Winner.

In addition, Wales & West Gas Networks was awarded ISO 45001 accreditation for the second time. This standard represents commendation for the company's occupational health and safety management systems. For its considerable efforts in investing in best practices in asset management, Wales & West Gas Networks was awarded the International Certificate of Asset Management System – ISO 55001. It provides a framework for the company to manage its assets and ensure the gas network's safety and reliability.

The "Freedom Project", designed to develop smart, controlled hybrid heating that allows flexible switching between renewable electricity and green gas based on cost and carbon intensity, is a collaboration between Wales & West Gas Networks and an electricity network operator. In the UK Energy Innovation Awards, the project was named the Best Collaborative Project and Best Emerging Cross-Vector Technology. The same project also won the Gamechanger Award in the Network Awards.

Wales & West Gas Networks pledged to deliver a Net Zero ready gas network by 2035 to support decarbonisation of heat, power and transport. It is also the first company in Wales to sign up to the climate change pledge. The company is helping to establish the case for a full transition to and hydrogen, which will help to deliver a Net Zero carbon future in Wales and beyond.

## SEABANK POWER LIMITED

Seabank Power Limited is an owner and operator of a combined cycle gas turbine power plant located near Bristol in the South West of England. The power plant has a total generating capacity of approximately 1,150 MW from its two generation units. In 2019, the company's performance was in line with business targets.

## UK RAILS GROUP

UK Rails is one of the three major rolling stock owning companies in the United Kingdom. The company leases regional, commuter and high speed passenger trains on long-term contracts to train operating companies and freight locomotives to freight operating companies. UK Rails' rolling stock portfolio includes 22 different fleets of passenger trains comprising over 3,500 passenger vehicles and 83 freight locomotives. It also has two depots.

UK Rails completed the delivery of Hitachi AT300 bi-mode trains last year. These trains serve the West of England from London Paddington to Plymouth and Penzance.

In July, UK Rails Class 195 DMUs and Class 331 EMUs started to go into passenger service operating between Cumbria and Manchester Airport, Liverpool and Manchester Airport, and between Doncaster and Leeds. The new trains feature Wi-Fi, air-conditioning, at-seat power sockets and customer information screens with real-time information.

The new Nova 2 fleet of 60 CAF Class 397 EMU trains have started to enter passenger service in November. These Nova 2 trains run intercity services from Manchester to Scotland and Liverpool to Scotland. The new trains have more luggage space and charging points; they are also equipped with free Wi-Fi.



In 2019, UK Rails' Class 331 EMUs started to go into passenger service.

In 2019, UK Rails' train fleets won a number of accolades in the Golden Spanner Awards, an annual industry award programme. The company's Class 455, Class 222 and Class 185 fleets were recognised with Golden Spanners in the Most Reliable Train Fleet Category. Class 321 Renatus and Class 802 fleets were presented with Silver Spanners in the category of Most Improved Train Fleet; while Class 802, Class 170 and Class 376 fleets received Bronze Spanners in the Fastest Incident Recovery Category.



## Infrastructure Investments in **AUSTRALIA**

In Australia, CKI has investments in electricity and gas transmission and distribution as well as renewable and remote energy solutions. It owns SA Power Networks, the primary electricity distributor in the state of South Australia; Victoria Power Networks, whose Powercor and CitiPower distribute electricity to approximately 65% of the population in the state of Victoria; United Energy, an electricity distribution business in Victoria serving approximately 688,000 customers across east and southeast Melbourne and the Mornington Peninsula; Australian Gas Networks and Multinet Gas, natural gas distribution and transmission businesses in the country; as well as Dampier Bunbury Pipeline, Western Australia's principal gas transmission pipeline. The Group's portfolio also includes Australian Energy Operations, a renewable energy power transmission business in Victoria, and Energy Developments, a renewable and remote energy solution producer.



According to the Annual Benchmarking Report released by the Australia Energy Regulator, SA Power Networks has consistently been one of the most productive distribution service providers in the National Electricity Market over the last 11 years.

## SA POWER NETWORKS

SA Power Networks is an electricity distributor which serves approximately 887,000 customers in South Australia. Its network spans about 178,000 square kilometres.

The Annual Benchmarking Report released by the Australia Energy Regulator (“AER”) in November 2019 assessed the productivity growth and efficiency of distribution network service providers in the National Electricity Market (“NEM”). SA Power Networks has consistently been one of the most productive distribution service providers in the NEM over the last 11 years, and is on the productivity frontier.

Enerven, a wholly owned subsidiary of SA Power Networks, was awarded a contract by SA Water to install 242 GWh of solar generation and 33 MWh of storage across a number of SA Water’s sites around both metropolitan and regional South Australia. The installations will be carried out across an 18-month period.

For the five-yearly regulatory reset process, the company submitted its 2020-2025 Regulatory Proposal in early 2019. A Draft Decision on the Proposal was released by the AER, and the company submitted its Revised Regulatory Proposal response in late 2019. The AER’s final determination will be available in the first half of 2020.

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In the Australian Energy Regulator's Annual Benchmarking Report released in November 2019, CitiPower was ranked first in terms of productivity performance among electricity distribution service providers in the country.

## VICTORIA POWER NETWORKS PTY LTD

Victoria Power Networks comprises CitiPower and Powercor. CitiPower owns and operates an electricity distribution network that serves 330,000 customers in the central business district and inner suburbs of Melbourne. Powercor covers a service area that includes regional and rural areas in central and Western Victoria, as well as Melbourne's outer western suburbs, supplying electricity to around 830,000 customers.

In the AER's Annual Benchmarking Report released in November 2019, CitiPower was ranked first in terms of productivity performance among electricity distribution service providers in the country.

During the year, CitiPower completed substantial works associated with the Melbourne Central Business District Security of Supply Programme. The Programme aims to ensure that the city can resume electricity supply within 30 minutes in the event of the loss of two 66 kV cables and any resulting power outage.

For Powercor, the company completed an extensive work programme to sustain high reliability of supplies across the network and further mitigate bushfire risk. This included significant upgrades to network infrastructure in high growth areas in the south west, Bellarine Peninsula and Melbourne's western corridor.

The term of the regulatory period was changed as a result of Victorian Government regulation which shifted the commencement date by six months from 1 January to 1 July 2021. The five-year regulatory proposal, which features a plan to deliver more for customers at a lower cost, was submitted to the AER in January 2020.

## UNITED ENERGY LIMITED

United Energy distributes electricity to approximately 685,000 customers across east and southeast Melbourne and the Mornington Peninsula. The electricity distribution network covers an area of approximately 1,500 square kilometres, and achieved 99.99% supply reliability in 2019.

The AER Annual Benchmarking Report (November 2019) ranked United Energy second only to CitiPower for its productivity and efficiency based on operating expenditure per customer.

The company's performance benefits from its research and development of industry leading innovations. Last year, advanced network analytics supported programmes to improve low and high voltage asset management as well as network and customer safety. A grant from the Australian Renewable Energy Agency ("ARENA") funded the development of a Dynamic Voltage Management System which aims to stabilise the electricity grid during major frequency changes,

and minimise the risk of significant blackouts. Under a trial, the company installed frequency monitors and used data from its smart meter network to promptly stabilise frequency across its 47 zone substations, i.e. controlling points across the electricity network. The system trial will continue into 2020.

Another innovative technology known as Fault Location, Isolation and Service Restoration ("FLISR"), developed by United Energy in 2017, proved that it could automatically restore power within one minute of a fault. Improvement works are now underway to increase the number and complexity of network faults that FLISR can manage. The aim of the improvement programme is to ensure the reliability of the network, and the speedy and safe restoration of power to customers when faults occur.

United Energy submitted its proposal for the 2021-2026 regulatory period. According to the proposal, it offers to raise affordability for customers, while increasing investment in the safety and flexibility of the power network.



United Energy's electricity distribution network achieved 99.99% supply reliability in 2019.

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Australian Gas Networks completed the construction of a new 1.84 kilometre cross-river Brisbane gas pipeline, improving the reliability of natural gas supply to more than 80,000 North Brisbane customers.

### AUSTRALIAN GAS INFRASTRUCTURE GROUP

The Australian Gas Infrastructure Group consists of Australian Gas Networks, Multinet Gas and Dampier Bunbury Pipeline.

#### Australian Gas Networks Limited

Australian Gas Networks owns approximately 25,000 kilometres of natural gas distribution networks and 1,100 kilometres of transmission pipelines, serving approximately 1.3 million customers in South Australia, Victoria, Queensland, New South Wales and the Northern Territory.

Australian Gas Networks completed the construction of a new 1.84 kilometre cross-river Brisbane gas pipeline last year, improving the reliability of natural gas supply to more than 80,000 North Brisbane customers.

2019 also saw the approval granted by the South Australian Government for the construction and operation of the company's A\$11.4 million hydrogen production facility, Hydrogen Park SA ("HyP SA") at Tonsley Innovation District. A 1.25 MW electrolyser will be built, and small quantities of renewable hydrogen will be produced and blended into the local gas distribution network in southern areas of Mitchell Park by mid-2020. This is the first such Australian demonstration project of its scale and size. Australian Gas Networks received a A\$4.9 million grant from the South Australian Government's Renewable Technology Fund to build and operate the project.

## Multinet Gas Limited

Multinet Gas operates a regulated network which covers 1,860 square kilometres of the eastern and south-eastern suburbs of Melbourne, the Yarra Ranges and South Gippsland, serving approximately 700,000 customers.

During the year, Multinet Gas commissioned a new gas supply to Sofitel's new 12-storey 5-Star hotel situated at Chadstone Shopping Centre, approximately 13 kilometres outside of the Melbourne CBD. Gas load for the new hotel is expected to be over 4,200 MJ/h.

The company joined forces with Melbourne's RMIT University and Clifton Hill-based Dant Industries Limited to re-build the Eternal Flame burner and replace other components to keep the flame burning. The Eternal Flame at Melbourne's Shrine of Remembrance is an enduring symbol of eternal life, a perpetual remembrance of the heroism of those who gave their lives during the Second World War. Multinet Gas will continue to take up the maintenance role of the infrastructure that supplies the Eternal Flame for decades to come.



Multinet Gas joined forces with other concerned institutes to re-build the Eternal Flame burner. The Eternal Flame at Melbourne's Shrine of Remembrance is a perpetual remembrance of the heroism of those who gave their lives during the Second World War.



# BUSINESS REVIEW

## Dampier Bunbury Pipeline

Dampier Bunbury Pipeline is the principal gas transmission pipeline in Western Australia. The Dampier Bunbury Pipeline stretches approximately 1,600 kilometres, linking the gas fields in the Carnarvon Basin off the Pilbara coast to mining, industrial, and commercial customers, as well as via other distribution networks to residential customers. The total length of the pipeline including looping and lateral pipelines is 3,080 kilometres.

Dampier Bunbury Pipeline completed the construction of Australia's newest major natural gas pipeline, the 440-kilometre Tanami Pipeline, ahead of schedule last year. This significant project has been commissioned to deliver gas to fuel the power stations at a gold mine in the Northern Territory.

Following the company's completion in early 2019 of the Pluto Inlet Station, a project contracted by Woodside Energy, the company was awarded another major new Western Australian project in November by Woodside Energy for building the pipeline component of its Pluto-North West Shelf ("NWS") Interconnector. The new 30-inch diameter pipeline will run 3.2 kilometres, connecting the Woodside-operated Pluto LNG Plant to the NWS Project's Karratha Gas Plant, transporting gas between the two facilities.

In recognition of the benefits of the synergies brought about by Australian Gas Networks and Multinet Gas since the CKI acquisition, the credit rating of Dampier Bunbury Pipeline was upgraded by Moody's from Baa3 to Baa2 with a stable outlook.

## AUSTRALIAN ENERGY OPERATIONS PTY LTD

Australian Energy Operations constructs, owns and operates electricity transmission assets and terminal stations, specialising in the connection of renewable energy generators to the national power grid.

Construction of new connections for the 321 MW Moorabool and 85 MW Elaine wind farms were completed and commissioned last year. With the energisation of these new connections, Australian Energy Operations now provides connection for 777 MW of renewable energy generation.



Dampier Bunbury Pipeline completed the construction of the 440-kilometre Tanami Pipeline in 2019.



In October 2019, EDL acquired Broadrock Renewables, which owns two landfill gas plants in California and Rhode Island in the United States.

## ENERGY DEVELOPMENTS PTY LIMITED

Energy Developments Pty Limited (“EDL”) specialises in (i) producing electricity from safe, clean, low greenhouse gas emissions sources such as landfill gas (“LFG”), waste coal mine gas, wind, and solar; as well as (ii) providing energy solutions in remote regions. EDL owns and operates a portfolio of over 1,000 MW of power generation facilities in Australia, North America and Europe.

EDL won the 2019 Asian Power Awards’ Environmental Upgrade of the Year for its Coober Pedy Hybrid Renewable Project. The company was recognised for its success in combining the original diesel power station in the remote off-grid town of Coober Pedy with 4 MW wind and 1 MW solar generation, a 1 MW/500 kWh battery and other integration technologies. This initiative has transitioned the energy used in the town from 100% diesel to up to 100% renewables.

EDL completed the first stage of the Agnew Hybrid Renewable Project with the commissioning of a 23 MW power station that integrates photovoltaic solar with gas and diesel generation to power Gold Fields’ Agnew Gold Mine. This is one of Australia’s largest hybrid renewable microgrid projects.

The second stage includes 18 MW wind generation, a 13 MW battery and an advanced micro-grid control system. Upon completion in mid-2020, this will be the first energy project in the Australian mining sector to utilise wind generation as part of a large hybrid microgrid. The project will have a total installed generation capacity of 54 MW, with renewables providing over 50% of the mine’s power requirements.

The EDL joint venture with Australia’s largest natural gas producer, Woodside, reached a major milestone with the opening of Woodside’s liquefied natural gas (“LNG”) truck loading facility near Karratha, Western Australia. The joint venture undertakes end-to-end projects including the supply, transport, storage and vaporisation of LNG, as well as remote power generation.

In October 2019, EDL acquired Broadrock Renewables, which owns two LFG plants in California and Rhode Island. The plants are two of the largest and most advanced LFG facilities in the United States with a combined installed generation capacity of 65 MW. With the addition of the Broadrock plants, EDL now owns and operates 30 power stations with a total generation capacity of approximately 270 MW in North America.



## Infrastructure Investments in **NEW ZEALAND**

In New Zealand, CKI has investments in electricity distribution and waste management. The Group's Wellington Electricity is the electricity distributor which serves the capital city and its surrounding area, while EnviroNZ provides waste collection, management and disposal services nationwide.

## WELLINGTON ELECTRICITY LINES LIMITED

Wellington Electricity owns and operates the electricity distribution network in the cities of Wellington, Upper Hutt, Lower Hutt and Porirua in New Zealand. Its network extends about 4,700 kilometres, supplying electricity to approximately 168,000 connections across domestic, commercial and industrial sectors.

The three-year Earthquake Readiness Programme approved by the Commerce Commission of New Zealand is proceeding smoothly with half of the upgrading work being completed. The Programme aims to strengthen the network's readiness in response to major earthquake.

During the year, Wellington Electricity carried out a major upgrade of its Gracefield zone substation, which provides power to 9,000 commercial and residential customers in the area of Lower Hutt. The project brought the substation equipment and systems up to the latest technology standards.

In August 2019, Wellington Electricity and its project partner, Greensync, were awarded co-funding support from the New Zealand Government's Low Emission Vehicles Contestable Fund. The project studies smart solutions for electric vehicle charging to help manage peak electricity demand on the network in a cost-effective way.

## ENVIRO (NZ) LIMITED

EnviroNZ is one of New Zealand's leading, national waste management and recycling companies, which provides waste collection, resource recovery and disposal services, to more than half a million commercial and residential customers. The Company also owns and manages Hampton PARRC (Power and Resource Recovery Centre), the largest landfill site in New Zealand. Covering an area of 360 hectares, Hampton PARRC accounts for approximately 40% of the annual landfill volumes in Greater Auckland; the operation utilises state-of-the-art technology to capture and convert methane gas to electricity, processes landfill leachate to clean water, and turns garden and kitchen waste to compost.

Subsequent to EnviroNZ winning a 10-year contract to provide Hamilton City's waste and recycling services, the company commenced the building of a new 2,155 square metre material recovery facility ("MRF"). The specialised plant will use mechanical and manual sorting processes to sort recyclables into bales of paper, cardboard, plastic, aluminum and metals. The first facility of its kind in Hamilton, the MRF will process approximately 8,000 tonnes of recyclable material from kerbside and commercial collections each year.

EnviroNZ was also awarded an extension of its collections contract with New Plymouth District Council for a further two years, to 2024. EnviroNZ's kerbside collection service is part of New Plymouth District Council's plan to achieve Zero Waste by 2040. EnviroNZ will be cutting down its CO<sub>2</sub> emissions by introducing six electric trucks to its fleet.

Last year, EnviroNZ also completed the acquisition of a new disposal site south of Auckland. The site, now known as EnviroFill South, is being developed as a resource recovery and disposal facility for infrastructure waste.



EnviroNZ was awarded an extension of its collections contract with New Plymouth District Council for a further two years, to 2024.



### Infrastructure Investments in

# CONTINENTAL EUROPE

In Continental Europe, CKI has investments in Dutch Enviro Energy which owns AVR, Netherlands' largest energy-from-waste company; Portugal Renewable Energy, the holding company of Portugal's third-largest wind energy company; and ista, a leading sub-metering player whose key markets are Germany, France, the Netherlands and Denmark.



Dutch Enviro Energy's CO<sub>2</sub> capture facility, the first waste facility of its kind in Europe that is capable of capturing carbon dioxide on a significant scale, commenced operation last year.

## DUTCH ENVIRO ENERGY HOLDINGS B.V.

Dutch Enviro Energy owns AVR which operates five waste treatment plants in Duiven, near the German border, as well as Rozenburg in the Port of Rotterdam area. Together, they have an energy-from-waste capacity of 2,300 kilotonnes per year. Long-term contracts are in place for both gate fees for processing waste as well as offtake for energy produced. Highly stable revenue streams are generated. In addition to serving the domestic market, all AVR's waste treatment plants are accredited with "R1" status enabling the import of waste from European Union countries. Waste products include biomass, industrial waste water, municipal solid waste, commercial waste, and hazardous waste, all of which are treated and converted into energy, including electricity, steam and heat. AVR is also one of the largest sustainable district heating producers in the Netherlands.

Dutch Enviro Energy started using the second line of the plastic separation plant in May 2019. This new automation line removes plastic packaging and beverage cartons from the residual waste of all Rotterdam households.

Dutch Enviro Energy's CO<sub>2</sub> capture facility, the first waste facility of its kind in Europe that is capable of capturing carbon dioxide on a significant scale, also commenced operation last year. The CO<sub>2</sub> released after the incineration of residual waste is captured, cleaned and liquefied for use in greenhouse horticulture. In Duiven, the waste-to-energy plant processes waste from 1.5 million homes and releases about 400,000 tonnes of CO<sub>2</sub>. The CO<sub>2</sub> capture facility is able to reuse 60,000 tonnes of this CO<sub>2</sub>.

Dutch Enviro Energy won a new contract to continue to transfer, transport and process residual waste for The Hague. The commencement date of the contract is March 1, 2020.

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### PORTUGAL RENEWABLE ENERGY

Portugal Renewable Energy is the holding company of Iberwind, the third largest wind energy developer in Portugal with approximately 15% market share. Iberwind has 31 wind farms located across the country with an installed capacity of approximately 730 MW, producing 1.75 TWh annually. The wind farms of Candeeiros and Pampilhosa are among the largest in Europe in terms of on-shore installed capacity, each having greater than 100 MW capacity.

### ISTA

ista is a leading international provider of sub-metering and related services with over 100 years of experience. Headquartered in Essen, Germany, ista's operations range from hardware development, manufacturing, installation and maintenance to meter reading, data collection and processing, individual billing,

as well as energy data management. In addition, ista offers other services for buildings such as smoke alarms, leakage detection, humidity sensors, drinking water analysis, as well as energy audit certificates. With a presence in over 20 countries, ista services more than 13 million households with over 59 million installed measuring devices. The company's major markets are Germany, France, the Netherlands and Denmark.

ista partners with various technology providers to digitalise and advance its device infrastructure and process solutions. One of the initiatives was a large-scale field trial of narrowband IoT ("NB-IoT") in buildings. In 99.75% of the trial cases, the viability to establish a stable connection that enabled rapid, energy-optimised data transmission was demonstrated. More field trials will be conducted to prove that NB-IoT could facilitate energy consumption measurement in the future.



ista's operations range from hardware development, manufacturing, installation and maintenance to meter reading, data collection and processing, individual billing, as well as energy data management.



## Infrastructure Investments in **CANADA**

In Canada, CKI has investments in Canadian Power, which holds a portfolio comprising stakes in five electricity generating plants in the country; Park’N Fly, the largest off-airport car park provider in Canada; Canadian Midstream Assets, which holds oil pipeline and storage assets in Canada; and Reliance Home Comfort, a company in the Household Infrastructure portfolio of the Group.



## BUSINESS REVIEW



Canadian Power holds a portfolio comprising stakes in five electricity generating plants in Canada.

### CANADIAN POWER HOLDINGS INC.

Canadian Power owns (i) 100% of the Meridian cogeneration plant, a 220 MW natural gas-fired plant in the province of Saskatchewan; and (ii) 49.99% of TransAlta Cogeneration, L.P. (“TransAlta”), a company that operates three natural gas-fired cogeneration plants in Alberta and Ontario, as well as a coal-fired plant in Alberta.

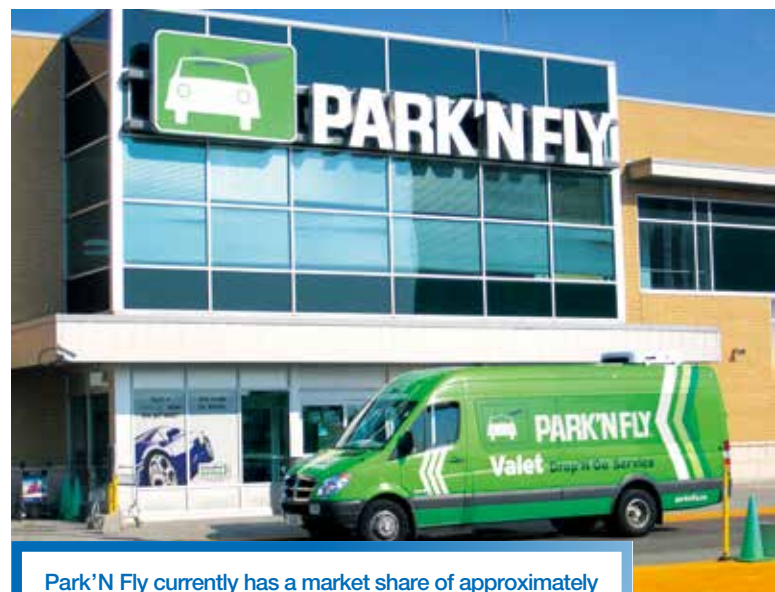
In 2020, Canadian Power will commence to convert the Sheerness power station in Alberta from coal-firing to gas-firing. This initiative is expected to extend the plant’s life to 2037.

### PARK’N FLY

Park’N Fly, Canada’s leading off-airport car park company, provides parking solutions to both business and leisure travellers coast-to-coast. Headquartered in Mississauga, Ontario, the company has operations in seven Canadian cities – Vancouver, Edmonton, Winnipeg, Ottawa, Toronto, Montreal and Halifax. It currently has a market share of approximately 80% of the off-airport parking business in the country. The company offers self-park, valet as well as a host of other vehicle related services such as detailing and oil changes in selected cities.

Park’N Fly built a new 6,650-square feet valet facility in Toronto. The additional facility offers separate pick-up and drop-off centres, providing an enhanced experience and smoother process for customers.

Park’N Fly also adopted a registration and payment solution for valet locations in 2019. The deployment of the new hardware and software solution provided consumers with an efficient and user-friendly check-in and check-out process. Customer experience was further enhanced.



Park’N Fly currently has a market share of approximately 80% of the off-airport parking business in Canada.

## CANADIAN MIDSTREAM ASSETS

Canadian Midstream Assets comprises approximately 2,200 kilometres of crude oil pipelines and approximately 4.4 million barrels of oil storage capacity in Alberta and Saskatchewan, Canada. Characterised by long-term contracts, Canadian Midstream Assets generates secure and predictable returns for CKI. The company is in the process of diversifying its operations beyond crude oil transportation and storage, expanding into the natural gas transportation and processing sector.

During the year, Canadian Midstream Assets continued to advance its multi-year expansion of the Saskatchewan Gathering System completing new pipeline segments, connecting them to a new thermal production facility. The company also completed construction and placed into service the 120-mmcfd Ansell Corser Gas Plant and the Wembley Gas Gathering Pipeline.

During 2019, the company commenced the construction of two projects to be completed by year-end 2020: (i) three 500-kilobarrel tanks and related infrastructure in Hardisty; and (ii) a new 31-kilometre pipeline connecting oil producing facilities in the Onion Lake area to Canadian Midstream Assets' trunk pipeline. All projects under construction or placed in service in 2019 are supported by long-term contracts with creditworthy customers.

## RELIANCE HOME COMFORT

Reliance Home Comfort is principally engaged in the home and commercial services sector providing the sale and rental of water heaters, HVAC (heating, ventilation and air conditioning) equipment, water purification, plumbing, electrical, comfort protection plans and other related services primarily in Ontario, Canada. Reliance Home Comfort serves over 1.9 million customers and has one of the largest networks of licensed technicians in Canada.

Reliance Home Comfort was named by Waterstone Human Capital as one of Canada's Most Admired™ Corporate Cultures of 2019 in the Enterprise category.

In 2019, Reliance Home Comfort completed six acquisitions facilitating expansion in Ontario, Saskatchewan and British Columbia.



Reliance Home Comfort serves over 1.9 million customers and has one of the largest networks of licensed technicians in Canada.



Infrastructure Investments in  
**HONG KONG AND  
MAINLAND CHINA**

CKI's Hong Kong and Mainland China portfolio consists of materials business and Mainland China infrastructure investments.



**Green Island Cement is a leading infrastructure materials supplier for Hong Kong and the Mainland.**

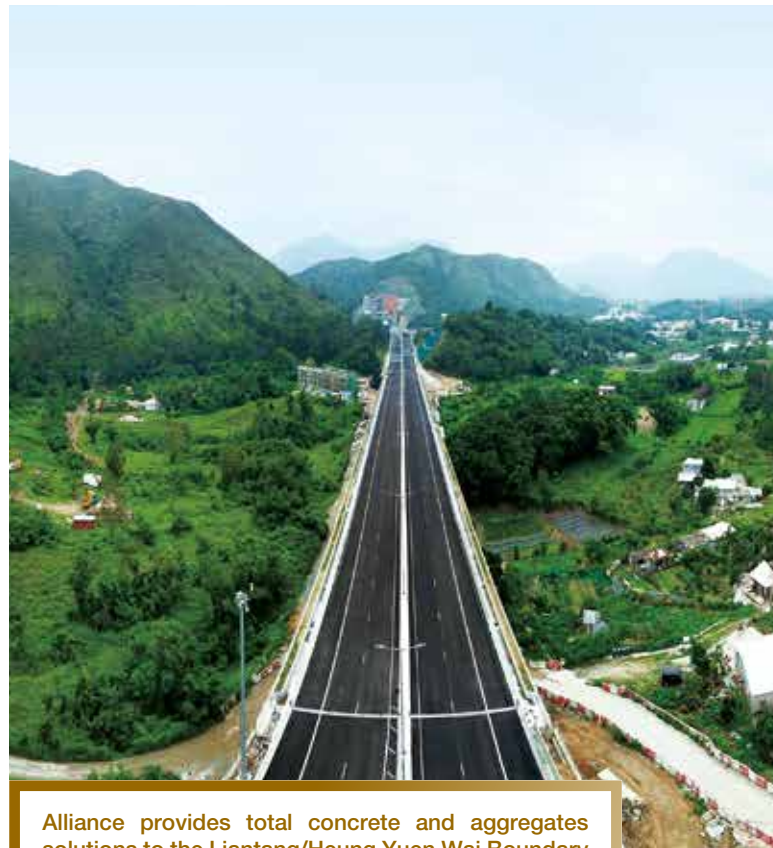
In Mainland China, investments include toll roads and bridges in Guangdong province, namely Shen-Shan Highway (Eastern Section), Shantou Bay Bridge, Panyu Beidou Bridge and Jiangmen Chaolian Bridge. As for infrastructure materials business, CKI has a leading position in the industry in Hong Kong encompassing the production of cement, concrete and aggregates.

Green Island Cement’s production plant licence in Hong Kong was renewed, and the new licence covers cement, slag products and wood derived fuel processing. A new slag plant to produce slag and slag cement products is in the construction stage. It is expected to start commissioning in mid-2020.

In order to reuse the waste glass and reduce the amount of glass in landfills, the company began using glass cullet in cement production in Hong Kong. Glass is an ideal replacement of silica, one of the raw materials to produce cement. Currently, the company is able to process 20 to 25 tonnes of glass cullet a year, and this figure is expected to rise in the future.

CKI’s concrete and aggregates businesses, which are operated by Alliance Construction Materials Limited (“Alliance”), is a joint venture between CKI and HeidelbergCement AG. The company provides total solutions pertaining to concrete and aggregates to major building and civil projects in Hong Kong. The latest project is the Liantang/Heung Yuen Wai Boundary Control Point, the seventh land crossing between Shenzhen and Hong Kong. The project came into service in 2019.

During the year, Alliance developed the new high performance tremie concrete for foundation projects and launched an environmentally green product which transformed waste concrete to aggregates. The company will continue to conduct research and develop innovative and green solutions on concrete and aggregates for the construction industry.



**Alliance provides total concrete and aggregates solutions to the Liantang/Heung Yuen Wai Boundary Control Point project.**