

# BUSINESS REVIEW



Investment in

## POWER ASSETS



Infrastructure Investments in

## UNITED KINGDOM



Infrastructure Investments in

## AUSTRALIA



Infrastructure Investments in

## NEW ZEALAND



Infrastructure Investments in

## CONTINENTAL EUROPE



Infrastructure Investments in

## CANADA



Infrastructure Investments in

## HONG KONG AND MAINLAND CHINA





## BUSINESS REVIEW



## Investment in **POWER ASSETS**

CKI holds 35.96% of Power Assets, a global investor with assets in Hong Kong, the United Kingdom, Australia, New Zealand, Mainland China, the United States, Canada, Thailand, the Netherlands and Portugal. These investments include electricity and gas companies that serve millions of customers around the world.

Power Assets reported profit attributable to shareholders of HK\$7,636 million (2017: HK\$8,319 million) in 2018, representing a decrease of 8.2% as compared to 2017. This can primarily be attributed to the impact of a one-off gain on disposal of properties recorded in 2017. The profit contribution of the underlying business would have increased by 11% over 2017, if adjustment was made for the one-off gain, lower deposit interest income and exchange difference on deposits. Earnings per share amounted to HK\$3.58 (2017: HK\$3.90).

Power Assets' businesses around the world are diversified in ten major markets, across multiple parameters – such as generation, transmission and distribution sectors – and across multiple types of fuel – including coal, natural gas, renewables and waste. This robust business model has enabled Power Assets to achieve positive results over the year.

The regulated businesses in Power Assets' portfolio all performed in line with expectations. UK Power Networks and Northern Gas Networks maintained their dominant position in safety, reliability and customer service, while Seabank exceeded operational targets. Wales & West Gas Networks continued its initiatives to connect biomethane to networks, as well as offered smart hybrid heating solutions for domestic customers in selected regions enabling heating cost savings and carbon footprint reduction.

In Australia, the acquisitions of United Energy, Multinet Gas, Dampier Bunbury Pipeline and Energy Developments have driven strong full-year contribution. In addition, Australian Gas Networks and Victoria Power Networks secured and completed a number of major capital projects, while both SA Power Networks and Victoria Power Networks continued preparations for upcoming regulatory resets. The businesses in Mainland China, Thailand, Canada, the Netherlands, Portugal and New Zealand all performed in line with expectations.

In Hong Kong, HK Electric moved into the final year of the existing regulatory regime, the Scheme of Control Agreement (SCA). In preparation for the new SCA period, the company has launched a series of initiatives to cut carbon footprint in the city, improve energy efficiency of Hong Kong's buildings, and help underprivileged households to save money on their electricity bills. HK Electric also secured government approval to invest HK\$26.6 billion over the next five years to build infrastructure that will increase the company's proportion of gas-fired generation. Three new gas-fired units will be commissioned before 2023 to replace retiring coal-fired units, thus bringing gas-fired generation to about 70% of total generation.

In August 2018, Power Assets entered into an economic benefits agreement with CK Hutchison Holdings Limited under which Power Assets is entitled to the distributions from a group of mature infrastructure assets, including Australian Gas Networks, Wales & West Gas Networks and Dutch Enviro Energy, as well as other complementary companies. This long-term investment, consideration of which is about US\$611.46 million (approximately HK\$4,800 million), is poised to generate stable investment income for Power Assets in the coming years.





## Infrastructure Investments in **UNITED KINGDOM**

In the United Kingdom, CKI has a comprehensive portfolio of 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 serving 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 the south west of England; Seabank Power, an electricity generation plant located near Bristol; Northumbrian Water, a water supply, sewerage and wastewater company serving the north east as well as providing water supply to some areas in the south east of England; and UK Rails, one of the three major rolling stock companies in Great Britain.

## UK POWER NETWORKS HOLDINGS LIMITED

CKI and Power Assets each hold a 40% share in UK Power Networks; it 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, serving approximately 8.25 million customers in London, the south east and east of England. The company also has a non-regulated business which runs private networks for both public and private sector clients. Its reliability rating is the highest in the country.

During the year, it achieved a high customer satisfaction score in the Broad Measure of Customer Satisfaction conducted by the Office of Gas and Electricity Markets ("Ofgem"). In recognition of its outstanding performance in customer care, UK Power Networks was presented with the "Customer Care Award" by Utility Week Awards 2018, and the "Constellation Award for Collaboration with Customers" by Utility Week Star Awards. In 2018, UK Power Networks provided over 300,000 customers with energy advice and practical measures to address fuel poverty. The company has also partnered with National Autistic Society and Dementia Friends to help prepare the customer service team with appropriate skills to better serve particular groups of customers.

To further improve customer experience, UK Power Networks launched a new digital mobile interactive web application which features more user-friendly functions for customers if they experience a power cut, require a new electricity connection or are contemplating a connection change.

UK Power Networks joined a taskforce convened by the London Mayor for the boosting of infrastructure to increase electric vehicles take-up across London. The company has committed to making 300 rapid chargers available by 2020 and has achieved 75 so far. Currently, almost a third of electric vehicles sold in the UK are connected to UK Power Networks' system; by 2030, the company estimates that about 4.1 million electric vehicles will be connected.

UK Power Networks ranked third globally amongst 45 utilities across 30 countries in a Smart Grid Index presented at the International Utility Working Group 2018.



The network of UK Power Networks is approximately 190,000 kilometres in length and covers an area of about 30,000 square kilometres.



# BUSINESS REVIEW

## NORTHUMBRIAN WATER GROUP LIMITED

CKI owns 40% of Northumbrian Water, 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 the north east of England, and supplies drinking water to 1.8 million people in the south east of England.

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

Northumbrian Water continued to provide a resilient water supply in 2018, maintaining industry leading performance. During the period of extreme cold weather in 2018, known as the "Beast from the East", Northumbrian Water was one of the few water companies whose customer supplies were not affected.

During the year, the company continued to focus on driving leakage down using new technology and data science. In the fourth quarter of 2018, Northumbrian Water unveiled a new interactive online portal which allows customers to report leaks and track repairs. In the south of England, satellite technology was adopted to detect leakage on its networks.

Northumbrian Water's performance has been recognised at the national level. The company was named "Water Company of the Year" at the Water Industry Achievement Awards. It also received the "Best Company Award" in the British Quality Foundation UK Excellence Award. In addition, the company was awarded the accolade of "IT Initiative of the Year" and was awarded the "Transformation and Innovation Award" at the Utility Week Awards 2018.

Northumbrian Water is the first and only wastewater company in the United Kingdom to use 100% of the sludge produced after sewage treatment to generate renewable energy. As part of Northumbrian Water's sustainability measures, the company has also signed a four-year contract with a leading renewables developer in 2018 to enable all Northumbrian Water sites to use renewable electricity.

The regulator of the water sector in England and Wales, Ofwat, will set final price limits for water and sewerage companies for the years 2020 to 2025 by December 2019. Consequently, Northumbrian Water has submitted a regulatory business plan that takes account of Ofwat's demands to focus on affordability as well as customer service, innovation and resilience in extreme weather. Northumbrian Water's plan was developed through extensive discussions with customers, independent water forums, partners, employees, suppliers and other stakeholders.



Northumbrian Water continued to provide a resilient water supply in 2018, maintaining industry leading performance.



Northern Gas Networks is developing a range of innovative projects aimed at exploring low carbon fuels, including hydrogen.

## NORTHERN GAS NETWORKS LIMITED

CKI and Power Assets jointly own 88% of Northern Gas Networks, the 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 continues to lead the way as the most efficient UK gas distribution network, while maintaining its reputation for excellent customer service. The company was awarded the Institute of Customer Service ServiceMark accreditation in 2013 and has retained this standard since then, scoring 90.4 out of 100 for customer satisfaction in 2018.

For the second year running, Northern Gas Networks received a "Gold Award" from The Royal Society for the Prevention of Accidents ("RoSPA") in recognition of its excellent safety performance record. The company also received the "Sustainability Award" from the Chartered Institution of Water and Environmental Management and won "Best in Situ Treatment Award" at the Brownfield Briefing Awards for its gas holder remediation work.

Northern Gas Networks is developing a range of innovative projects aimed at exploring low carbon fuels, including replacing natural gas with hydrogen. One such initiative, known as "H21", is a project funded by the regulator Ofgem to investigate the feasibility of converting the existing gas network to carry 100% hydrogen.

Another project, known as "HyDeploy" is a joint venture set up with another gas network Cadent and Keele University. Funded by Ofgem, a trial scheduled to start in 2019 would see the blending of 20% of hydrogen into the normal gas supply in part of Keele University's gas network. The trial will serve 17 faculty buildings and 100 domestic properties.



# BUSINESS REVIEW



Wales & West Gas Networks serves an area of 42,000 square kilometres and a population of 7.5 million in Wales and the south west of England.

## WALES & WEST GAS NETWORKS (HOLDINGS) LIMITED

CKI and Power Assets each own a 30% interest in Wales & West Gas Networks, the holding company of Wales & West Utilities. It is one of the 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 the south west of England.

In 2018, Wales & West Gas Networks continued to deliver high quality service. At the Gas Industry Awards 2018 organised by the Institute of Gas Engineers & Managers, Wales & West Gas Networks was named “Company of the Year”. The Institute of Customer Service accredited the ServiceMark with Distinction to the company. It also won the “Gold Medal” for RoSPA Award, the first and only gas network in the country to achieve this. The company was reaccredited the BS 18477 standard for service inclusion targeting vulnerable customers. It is the only gas network to hold this accreditation for the whole operation. In addition, Wales & West Gas Networks was one of the first companies to fulfil the new international ISO 45001 standard for Occupational Health and Safety Management.

Wales & West Gas Networks has collaborated with an electricity network operator on a £5 million innovation initiative called the “Freedom Project”. Funded through the energy regulator Ofgem, the project is designed to develop smart controlled hybrid heating which allows flexible switching between renewable electricity and green gas based on cost and carbon intensity. The project has successfully demonstrated the benefits of such adoption – keeping bills affordable, while making sure home heating is reliable and green. The project has received various industry awards, such as the Institute of Gas Engineers & Managers’ “Energy Efficiency Award”; and the “Clean Energy Scheme Award” by the Green Energy Awards.

Wales & West Gas Networks is over half way through its current regulatory price control period (2013-2021). The company is now preparing for RIIO-GD2, the next price control for gas distribution companies. An extensive consultation campaign and brand awareness campaign is being rolled out to facilitate the drafting of the business plan.

## SEABANK POWER LIMITED

CKI and Power Assets each hold a 25% share in Seabank Power Limited, owner and operator of a combined cycle gas turbine power plant located near Bristol in the south west of England. The plant has a total generating capacity of approximately 1,150 MW from its two generation units. In 2018, the company's performance was in line with business targets.

## UK RAILS GROUP

CKI owns 50% of UK Rails, 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. UK Rails' rolling stock portfolio includes 22 different passenger fleets of trains comprising around 3,500 passenger vehicles. A further three new fleets are scheduled to be delivered for passenger service shortly. It has two depots.

In 2018, the new fleet of Hitachi Class 802 passenger trains for the Great Western Railway was launched for passenger service. The fleet consists of 36 trains.

UK Rails' new order for Arriva Rail North includes 43 x Class 331 electric trains and 58 x Class 195 diesel trains. The Class 331 trains started to arrive in the UK in 2018 and will go into passenger service in the first half of 2019.

The order of CAF Class 397 electric trains are being delivered for TransPennine Express. This 12 x 5 car fleet will start going into passenger service during 2019.

In 2018, four of UK Rails' fleets of trains won Golden Spanner Awards, an annual industry award programme. The company's Class 222 (East Midlands Trains) and Class 185 (TransPennine Express) won "Golden Spanners" in the Most Reliable Fleet Category; and Class 171 (Govia Thameslink Railway) and Class 334 (ScotRail) were presented with "Bronze Spanners" in the Category for Fastest Recovery.

Designs of the first hydrogen trains for the UK market have been unveiled by UK Rails. Existing Class 321 trains could be converted to run on hydrogen, emitting only water and no harmful emissions. Such trains could potentially be in service in the UK as early as 2022. This concept is the first substantive industry response to the UK Government's mission to remove diesel rolling stock by 2040.



UK Rails' new fleet of Hitachi Class 802 passenger trains for the Great Western Railway was launched for passenger service in 2018.





## 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.



The replacement of the undersea cable connecting Kangaroo Island to the South Australia electricity distribution network was successfully installed.

## SA POWER NETWORKS

Together with Power Assets, CKI owns a 51% stake in SA Power Networks, an electricity distributor which serves approximately 870,000 customers in South Australia. Its network spans about 178,000 square kilometres.

Recognised as a safety and efficiency leader in Australia's National Electricity Market ("NEM"), SA Power Networks is ranked as the most efficient distributor on a state-wide basis.

The replacement of the undersea cable connecting Kangaroo Island to the South Australia distribution network was successfully placed on standby in 2018. The 20,000 kVA/ 33,000 volt cable is 15 kilometres long and has been manufactured as one continuous length without joints. It is the longest continuous undersea cable installed in Australia.

The installation of new transmission poles and automated switching equipment for this project are scheduled to be completed in the first half of 2019. SA Power Networks will then switch ongoing daily supply to the new cable.

SA Power Networks has been in active preparation for the five-yearly regulatory reset process. The company plans to submit the 2020-2025 regulatory proposal in early 2019. A comprehensive engagement programme and a variety of consultation activities were conducted throughout 2018. SA Power Networks is aiming to balance the investment needed to maintain a safe and reliable network with the clear desire of stakeholders to set a limit on distribution charges.

SA Power Networks' wholly owned subsidiary, Enerven, which designs, develops, delivers, and manages safe and sustainable power systems and multi-utility networks for owners of major infrastructure, was awarded a number of new projects in 2018.





## BUSINESS REVIEW

In November 2018, the Australian Energy Regulator (“AER”) released its Annual Benchmarking Report ranking CitiPower as the most efficient electricity distribution network in the country.

### VICTORIA POWER NETWORKS PTY LTD

CKI and Power Assets together own 51% of Victoria Power Networks, comprising CitiPower and Powercor. CitiPower owns and operates an electricity distribution network which serves 330,000 customers in the central business district and the 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 790,000 customers.

In November 2018, the Australian Energy Regulator (“AER”) released its Annual Benchmarking Report ranking CitiPower as the most efficient electricity distribution network in the country.

During the year, the company completed a seven-year programme to rebuild the Richmond Terminal Station and the construction of the Waratah Place Zone Substation, both of which are essential for the reliability of electricity in the Melbourne CBD.

New technology has been deployed in the Macedon Ranges to prevent power line failures, a possible cause of bushfires. The device, called Rapid Earth Fault Current Limiter (“REFCL”) is part of the Victorian Government funded bushfire safety programme set up to reduce the likelihood of powerline related bushfires. It aims to reduce the risk of fire being started by a powerline. When it detects a powerline touching the ground or coming into contact with a tree branch, it reduces the voltage to the line almost instantly.

To prepare for the regulatory reset for the 2021-2025 period, an extensive customer consultation programme was launched in 2018 to collect data and opinions to facilitate the drafting of Victoria Power Networks’ regulatory proposal.

Beon Energy Solutions, the unregulated business arm of Victoria Power Networks, completed the construction contract for the solar farms in Hughenden, Queensland as well as the Karadoc Solar Farm in Victoria. The former is a 20 MW solar park project installed with 68,000 solar panels, featuring the ability to produce electricity to power 10,000 homes. The Karadoc Solar Farm, one of the largest solar farms built in Australia consists of 348,000 solar panels and generates over 112 MW of electricity, enough to power 110,000 Australian homes.

## UNITED ENERGY LIMITED

CKI and Power Assets together own 39.6% of United Energy. United Energy distributes electricity to approximately 688,000 customers across east and southeast Melbourne and the Mornington Peninsula. The electricity distribution network covers an area of approximately 1,500 square kilometres, and is one of the most efficient and reliable electricity distribution networks in Australia.

From December 2018 to March 2019, United Energy participated in the Australian Energy Market Operator's Reliability and Emergency Reserve Trader Panel, providing access to up to 30 MW of demand response using voltage control through the network's smart meters. This Dynamic Voltage Management System

was implemented with the support of Australian Renewable Energy Agency funding and with the intent of rolling out across the entire United Energy network.

Dynamic Voltage Management System works by gathering voltage data provided from customer smart meters on a zone substation and sending it to a Network Analytics Platform ("NAP"). The NAP uses preprogrammed algorithms to make decisions on optimising the voltages according to the dynamic load pattern and reducing the amount of electricity required.



United Energy distributes electricity to approximately 688,000 customers across east and southeast Melbourne and the Mornington Peninsula.



# BUSINESS REVIEW

## AUSTRALIAN GAS INFRASTRUCTURE GROUP

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

### Australian Gas Networks Limited

CKI and Power Assets jointly own 72.5% of Australian Gas Networks. Australia Gas Networks owns approximately 24,000 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' new "Voice of the Customer" initiative commenced in April 2018. The programme enables ongoing and regular collection of data from various stakeholders including customers. This helps the company track customer/stakeholder sentiment and facilitates it to respond effectively.

In 2018, the company completed significant network upgrades to support growth in the Adelaide CBD, Bowden and Murray Bridge. Australian Gas Networks also received approval from AER for a new 40-kilometre, A\$33 million natural gas pipeline extension to Mount Barker, a region identified as a key part of Adelaide's urban land supply. The project will make natural gas available to over 20,000 homes and businesses. Construction of the gas pipeline will start in late 2019, with works continuing over the following years.



Australia Gas Networks owns approximately 24,000 kilometres of natural gas distribution networks and 1,100 kilometres of transmission pipelines, serving approximately 1.3 million customers across Australia.



The Dampier Bunbury Pipeline stretches approximately 1,600 kilometres, transmitting the gas to mining, industrial, and commercial customers, as well as via other distribution networks to residential customers.

### Dampier Bunbury Pipeline

CKI and Power Assets jointly own 60% of Dampier Bunbury Pipeline, 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 was awarded a A\$170 million contract to build, own and operate a new natural gas pipeline to deliver gas to Newmont Mining's Tanami gold fields in the Northern Territory. The 440-kilometre 8-inch underground pipeline is one of the most significant projects and investments the company has undertaken and will supply gas to Newmont gold mines for the next ten years. The project is scheduled to be commissioned in 2019.



## BUSINESS REVIEW



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.

### Multinet Gas Limited

CKI and Power Assets jointly own 60% of Multinet Gas. The company 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.

An innovative initiative being carried out by Multinet Gas together with Australian Gas Networks is Hydrogen Park South Australia ("HyP SA"). This power-to-gas demonstration plant is to produce hydrogen from renewable electricity. The hydrogen will then be injected into the local gas distribution network near the Tonsley Innovation District in the south of Adelaide to provide low-carbon gas to homes and businesses. This project will expedite research and development which paves the way for the commercial deployment of a hydrogen economy. Preparation works for the construction is in progress.

## AUSTRALIAN ENERGY OPERATIONS PTY LTD

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Australian Energy Operations is jointly owned by CKI and Power Assets on a 50/50 basis. The company constructs, owns, and operates electricity transmission lines as well as terminal stations. Currently, it has projects that connect the Mt Mercer and Ararat wind farms to the national grid. During the year, Australian Energy Operations continued to deliver a stable income stream for the Group.

## ENERGY DEVELOPMENTS PTY LIMITED

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CKI owns 40% of Energy Developments, and Power Assets a further 20%. The company specialises in producing electricity from safe, clean, low greenhouse gas emissions sources such as landfill gas, waste coal mine gas, wind, and solar; and providing energy solutions in remote regions. Energy Developments owns and operates a portfolio of over 990 MW of power generation facilities in Australia, North America and Europe.

Energy Developments was recognised at the South Australian Premier's 2018 Awards in Energy and Mining for its Coober Pedy Renewable Hybrid Project.

The project came online in July 2017, and powers the remote town of Coober Pedy with a hybrid of 4 MW wind generation, a 1 MW solar generation, a 1 MW/ 500 kWhr battery and other integration technologies, with a diesel power station as backup. The project received A\$18 million funding support from the Australian Renewable Energy Agency. As a result of the project, the town now largely relies on renewables rather than diesel for its electricity.

The company has also commenced supplying renewable energy to South32's Cannington silver, lead and zinc mine in Cannington, situated in north-west Queensland. The solar farm comprises 7,200 panels and covers an area of almost six hectares. It will operate alongside Energy Developments' existing 40 MW power station and will provide electricity for the mine's accommodation village and airport, with additional power for mining and processing operations. The solar farm is the first in the country to be integrated with a gas-fired power station.

In addition, a partnership was formed with the Queensland University of Technology for the "Hydrogen Process Research and Development Project". Funded through the Australian Renewable Energy Agency's "Advancing Renewables Programme", the three-year research project focuses on the cost-effective production, storage and transportation of hydrogen.



Energy Developments' Coober Pedy Renewable Hybrid Project powers the remote town of Coober Pedy with a hybrid of wind generation, solar generation, battery and other integration technologies.





## Infrastructure Investments in **NEW ZEALAND**

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

## WELLINGTON ELECTRICITY LINES LIMITED

CKI owns Wellington Electricity together with Power Assets on a 50/50 basis. 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 167,000 connections across domestic, commercial and industrial sectors.

During the year, the Commerce Commission of New Zealand approved Wellington Electricity's earthquake readiness expenditure proposal. According to the programme, an additional NZ\$31 million will be invested into Wellington Electricity's network to strengthen its readiness in case of a major earthquake. Under the earthquake readiness programme, a total of 91 substations will be strengthened. In 2018, Wellington Electricity completed reinforcements to the first five substation buildings, and work on another 15 buildings is underway. Wellington Electricity will also purchase mobile substations and back-up equipment, as well as enhance its communication and information systems.

## ENVIRO (NZ) LIMITED

CKI's wholly owned subsidiary, EnviroNZ, is one of New Zealand's leading waste management companies with national coverage. EnviroNZ provides waste collection, resource recovery, and disposal services for 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, which covers an area of 360 hectares. Having the consent to receive waste until 2030, Hampton PARRC accounts for approximately 40% of the annual landfill volumes in Greater Auckland. EnviroNZ utilises state-of-the-art technology to convert landfill gas to electricity, process landfill leachate to clean water as well as garden and kitchen waste to compost.

During the year, EnviroNZ was awarded a 10-year contract to provide collection and disposal services for Hamilton City. The new services will commence on 1 July 2020 and will be carried out using electric waste collection trucks.

In 2018, the New Zealand Government's Waste Minimisation Fund granted NZ\$1.1 million to support the expansion of EnviroNZ's Organics Processing Facility at Hampton PARRC to enable the processing of 12,000 tonnes per annum of organic waste into compost for use in agriculture and farming. In addition, EnviroNZ launched an on-demand green waste collection service enabling residential households to manage the timing of the collection of their garden waste using a smartphone app. The waste would be processed at the organics facility.



**EnviroNZ was awarded a 10-year contract to provide collection and disposal services for Hamilton City. The new services will be carried out using electric waste collection trucks.**





## Infrastructure Investments in **CONTINENTAL EUROPE**

In Continental Europe, CKI has a 35% stake in Dutch Enviro Energy which owns AVR, Netherlands' largest energy-from-waste company; as well as 50% shareholding in Portugal Renewable Energy, the holding company of Portugal's third largest wind energy company. The Group also owns a 35% interest in ista, a leading sub-metering player whose key markets are Germany, France, the Netherlands and Denmark.





Dutch Enviro Energy commenced construction of Netherland's first large scale energy-from-waste CO<sub>2</sub> capture facility for greenhouse horticulture.

## DUTCH ENVIRO ENERGY HOLDINGS B.V.

Dutch Enviro Energy owns AVR which operates five waste treatment plants in Duiven, near the German border, and 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.

AVR started construction of a plant that separates plastics and drinks cartons from residual waste in 2017, and completion took place in 2018. The separated plastics are to be used as raw materials for consumer goods, car components, building materials and toys.

During the year, Dutch Enviro Energy commenced construction of Netherland's first large scale energy-from-waste CO<sub>2</sub> capture facility for greenhouse horticulture. The CO<sub>2</sub>, released at AVR after the incineration of residual waste, will be captured, cleaned and liquefied for use in greenhouse for the growth of crops. Expected to become operational in Duiven within a year, the plant will capture and recycle 15% of the total CO<sub>2</sub> emissions in Duiven, that is 60 kilotonnes of CO<sub>2</sub>. Dutch Enviro Energy is studying the possibility of building a similar CO<sub>2</sub> capture facility in Rozenburg for the capture and processing of 800,000 tonnes of CO<sub>2</sub> annually.



# BUSINESS REVIEW

## PORTUGAL RENEWABLE ENERGY

CKI and Power Assets each own 50% of Portugal Renewable Energy, 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

CKI holds a 35% shareholding in ista, a leading global 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 based on actual consumption, as well as energy data management. In addition, ista offers other services for buildings such as smoke alarms, leakage detection, energy audit certificates, humidity sensors as well as drinking water analysis. With a presence in 24 countries, ista services more than 12 million households with over 53 million installed measuring devices. The company's major markets are Germany, France, the Netherlands and Denmark.

ista received the "Top Employers Europe Certificate 2018" for its branches in Germany, France, Austria and Switzerland as well as for its service centres in Poland and Romania. The certificate is awarded by the Amsterdam Top Employers Institute. Criteria of the award cover topics such as corporate culture, human resources planning and staff development.



ista is a leading global provider of sub-metering and related services with over 100 years of experience.



## Infrastructure Investments in **CANADA**

In Canada, CKI owns a 50% shareholding in Canadian Power which holds a portfolio comprising stakes in six electricity generating plants in the country; Park'N Fly, the largest off-airport car park provider in Canada; interests in Canadian Midstream Assets, which holds oil pipeline and storage assets in Canada; and interests in Reliance Home Comfort, a company in the Household Infrastructure portfolio of the Group.



## BUSINESS REVIEW



In 2018, Canadian Power's Meridian cogeneration plant in Saskatchewan maintained high reliability with 98.7% availability.

### CANADIAN POWER HOLDINGS INC.

CKI jointly owns Canadian Power with Power Assets on a 50/50 basis. 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 which operates four natural gas-fired cogeneration plants in Alberta and Ontario, and a coal-fired plant in Alberta.

During the year, the Meridian cogeneration plant maintained high reliability with 98.7% availability. Its sales of electricity and steam exceeded budget targets.

### PARK'N FLY

CKI has a 50% shareholding in Park'N Fly, Canada's leading off-airport car park company, which provides parking solutions to both business and leisure travellers coast-to-coast.

Headquartered in Mississauga, Ontario, the company has operations in seven Canadian cities including 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 select cities.

Park'N Fly strengthened its national sales efforts by rolling out aggressive marketing and partnership programmes in 2018. Its continuous focus on enriching customer experience through the use of technology saw the company's customer service satisfaction score improved year-over-year.

During the year, Park'N Fly secured a 55-year lease for a property in Toronto to increase its self-park capacity in 2018. This 10-acre parcel of land provided the additional capacity needed to capture the growing self-park demand, reinforcing Park'N Fly's dominant position in the Toronto market.

## CANADIAN MIDSTREAM ASSETS

CKI and Power Assets together own 65% of Canadian Midstream Assets. This business comprises approximately 2,200 kilometres of crude oil pipelines and approximately 4.4 million barrels of oil storage capacity in east-central Alberta and west-central Saskatchewan, Canada. Characterised by long-term contracts, Canadian Midstream Assets generates secure and predictable returns for CKI.

The LLB Direct pipeline project was successfully completed on budget and on schedule in December 2018. This pipeline has an initial capacity of 100 mbbbls/d and will transport Alberta heavy oil production to the company's Hardisty, Alberta terminal for blending and distribution to third-party export pipelines.

Construction of the Ansell Corser gas processing plant commenced in the second quarter of 2018. This project is progressing well and is expected to be commissioned in late 2019. This project represents the company's first natural gas processing plant and will have an initial processing capacity of 120 mmcf/d with potential for future expansion.

## RELIANCE HOME COMFORT

CKI holds a 25% stake in Reliance Home Comfort. The company 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, comfort protection plans and other related services primarily in Ontario, Canada. Reliance Home Comfort has over 1.7 million customers as well as one of the largest networks of licensed technicians in Canada.

In 2018, Reliance Home Comfort introduced geothermal heat pump installation and servicing in south western Ontario, Grand River and eastern Ontario. Geothermal is an efficient, clean and renewable type of energy generated by the heat of the earth transmitted through underground heat exchanger pipes. It can save homeowners up to 70% on heating and cooling costs, and it also significantly reduces the use of fossil fuels to ensure a greener environment.

In an annual conference held by KUBRA, the leading provider of customer experience management solutions, Reliance Home Comfort won the "Inspiring Energy Award" for its comprehensive iMail updates and bill redesign project.



Reliance Home Comfort has over 1.7 million customers as well as 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 includes materials business and China infrastructure investments. In Mainland China, CKI has a portfolio of toll road and bridge investments in the provinces of Guangdong, Hunan and Hebei that span approximately 260 kilometres. The portfolio includes the Shen-Shan Highway (Eastern Section), Shantou Bay Bridge, Changsha Wujialing and Wuyilu Bridges, Jiangmen Chaolian Bridge, Panyu Beidou Bridge and Tangshan Tangle Road. In addition, CKI has a leading position in Hong Kong's infrastructure materials market, encompassing operations in cement, concrete and aggregates.

## MAINLAND CHINA PORTFOLIO

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In November 2018, CKI entered into Share Transfer Agreements to transfer all of its 44.22% interest in Changsha Xiangjiang Bridge projects to the Chinese partner (長沙市城市建設投資開發集團有限公司). The transaction is expected to be completed by 2019.

During the year, the compensation agreement for the Panyu Beidou Bridge project from the cancellation of toll collection has also been concluded.

Overall performance of the toll roads was under pressure due to traffic diversions from alternative routes and a drop in logistics vehicle traffic resulting from a slower economic growth in the region.

## CEMENT, CONCRETE AND AGGREGATES

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In April 2018, a cement grinding plant and three pier berths in Yunfu city, Guangdong Province was acquired by CKI at a consideration of RMB180 million (approximately HK\$224 million). This investment facilitated the vertical integration of the cement production business of Green Island Cement Holdings Limited, a wholly owned subsidiary of CKI, and further expanded the Group's infrastructure portfolio on the Mainland.

During the year, Green Island Cement (Yunfu) Company Limited obtained an approval from the Guangdong Environmental Protection Bureau to treat industrial waste. The target is to treat a maximum of 83,000 metric tons of waste per year within the 5-year contract period.

CKI's concrete and aggregates businesses, which are operated by Alliance Construction Materials Limited ("Alliance"), a 50/50 joint venture between CKI and HeidelbergCement AG, provided concrete and aggregates total solutions for the Guangzhou-Shenzhen-Hong Kong Express Rail Link and Hong Kong-Zhuhai-Macau Bridge. These two mega-scale cross border infrastructure projects were completed in 2018.

Alliance developed the first fully automated aggregates supply chain in Hong Kong in 2018. The system automates the logistics between the aggregates depots and concrete plants by leveraging the latest digital technologies. The operational efficiency and service quality are significantly improved. The target is to extend the system to cover all aggregates customers.



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