

John Laing Environmental Assets Group

Diversification benefits shine through

The UK's record-breaking summer has been good news for solar power but funds focused exclusively on wind have been faced with fairly low wind speeds. Of course, this situation may well reverse over the winter. John Laing Environmental Assets Group (JLEN) offers renewable energy investors the most diverse portfolio in its sector and hence a smoother ride. Its increased focus on anaerobic digestion, which was highlighted in QuotedData's last note, adds another source of returns with different risk and reward drivers and backed by high levels of government subsidy.

Confident in the strength of JLEN's portfolio, its board has set a dividend target of 6.51p for the current financial year; JLEN remains the highest yielding fund in its sector; currently 6.0% prospective.

Progressive dividend from investment in environmental infrastructure assets

JLEN aims to provide its shareholders with a sustainable dividend, paid quarterly, that increases progressively in line with inflation. It also aims to preserve the capital value of its portfolio when adjusted for inflation over the long term. It invests in environmental infrastructure assets with predictable, wholly or partially index-linked cash flows, supported by long-term contracts or stable regulatory frameworks.

Year ended	Share price total return (%)	NAV total return (%)	Earnings per share (pence)	Dividend per share (pence)
31/03/15*	12.6	6.4	5.85	6.00
31/03/16	(2.5)	3.1	3.01	6.054
31/03/17	16.5	10.2	9.31	6.14
31/03/18	(1.8)	6.0	5.70	6.31

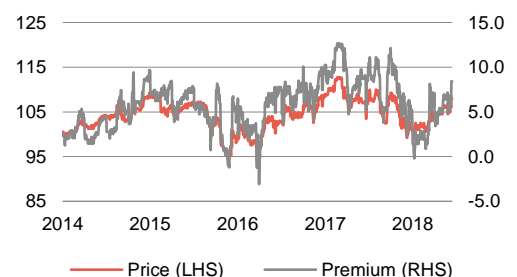
Source: Morningstar, Marten & Co. *period from launch 31 March 2014

Sector	Renewable infrastructure
Ticker	JLEN LN
Base currency	GBP
Price	108.0
NAV	99.6
Premium/(discount)	8.4%
Yield *	6.0%

* based on 6.51p forecast dividend

Share price and premium

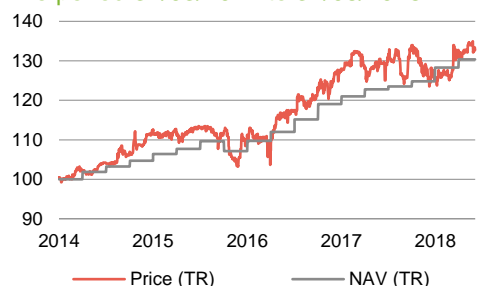
Time period 31/03/2014 to 10/09/2018



Source: Morningstar, Marten & Co

Performance over five years

Time period 31/03/2014 to 31/08/2018



Source: Morningstar, Marten & Co

Domicile	Guernsey
Inception date	31 March 2014
Manager	John Laing Capital Management
Market cap (GBPm)	425.6
Shares outstanding	394.1m
Daily vol. (1-yr. avg.)	526,476 shares
Net gearing	16.9%

[Click here for QuotedData's last note](#)

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Fund profile

The fund invests in renewable energy (including solar, wind, hydropower and biomass technologies), the supply and treatment of water, the treatment and processing of waste and projects that promote energy efficiency.

JLEN does not invest in new or experimental technology.

You can access the company's website at www.jlen.com

John Laing Environmental Assets Group (JLEN) invests, through a subsidiary, John Laing Environmental Assets Group (UK) Limited (UK Holdco), in infrastructure projects that use natural or waste resources or support more environmentally-friendly approaches to economic activity. This could involve the generation of renewable energy (including solar, wind, hydropower and biomass technologies), the supply and treatment of water, the treatment and processing of waste and projects that promote energy efficiency. It is aiming to build a portfolio that is diversified both geographically and by type of environmental asset. This emphasis on diversification helps differentiate JLEN from its peers which tend to specialise in solar or wind.

Reflecting its objective of delivering sustainable, inflation-linked dividends and preserving its capital, JLEN does not invest in new or experimental technology. A substantial proportion of its revenues is derived from long-term government subsidies.

Advisory team

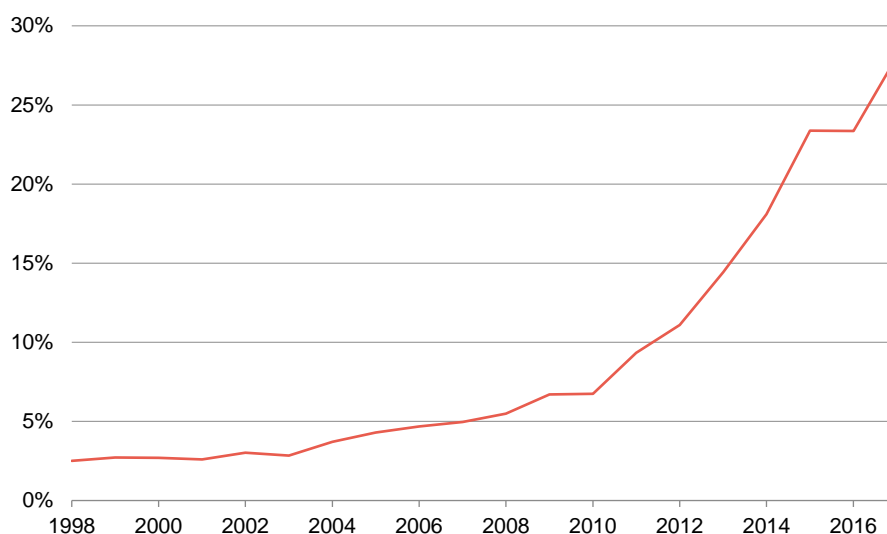
JLEN is advised by John Laing Capital Management (JLCM or the advisers), a subsidiary of John Laing Group (JLG). The team is headed up by Chris Tanner and Chris Holmes. More information on the advisory team is available on page 21.

The UK renewables market

By 2017, renewables accounted for 28.1% of the UK electricity market

The UK is working towards a renewable energy target of 15% of energy consumption by 2020 (in 2005 this was just 1.5% according to the Department of Energy and Climate Change). The Scottish government opted for a target of 20% (in-line with the EU). In 2015, the UK government admitted that it might not meet its 2020 target but the shortfall is in the transport and heat elements of the target, not power generation where great change has been achieved. Encouraged by a programme of government subsidy, renewables combined accounted for 28.1% of the UK electricity market by 2017.

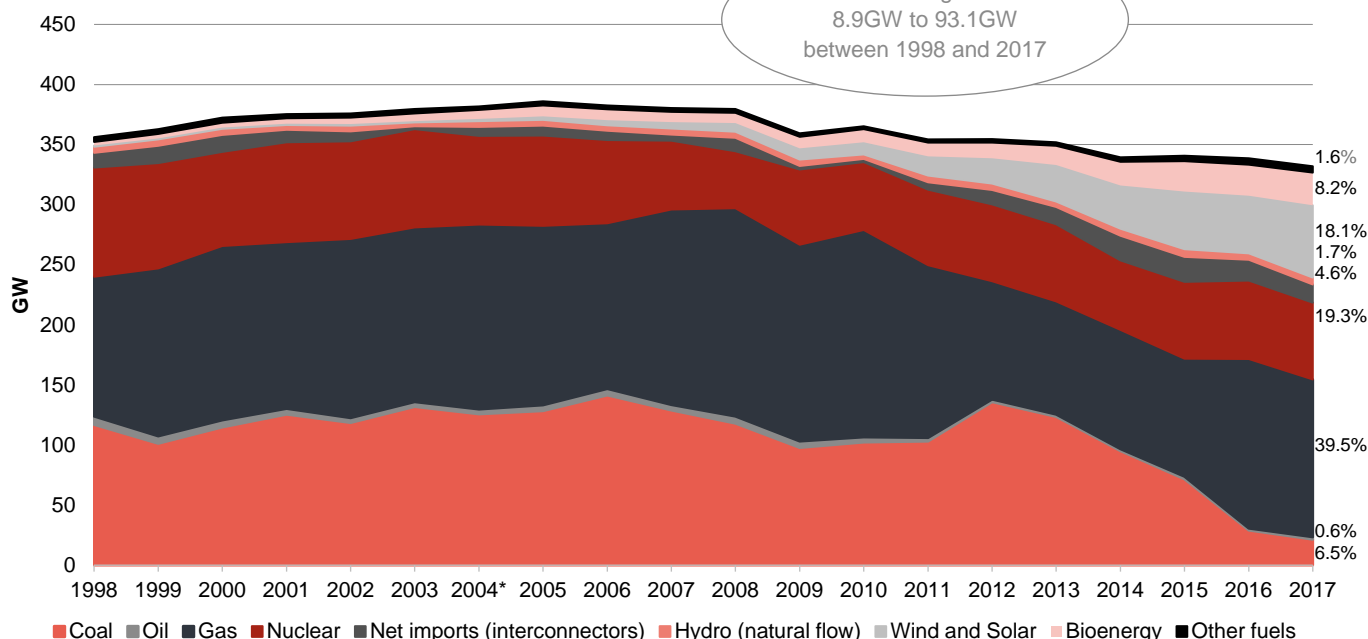
Figure 1: Percentage of UK power generated from renewables



Source: Department for Business, Energy & Industrial Strategy/Ofgem

Figure 2 shows how the makeup of the UK's power generation has evolved since 1998. The growth of renewables has been largely at the expense of coal.

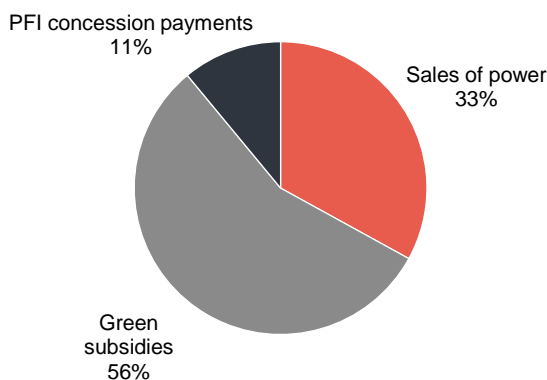
Figure 2: UK power generation by fuel type 1998-2017



Source: Department for Business, Energy & Industrial Strategy/Ofgem

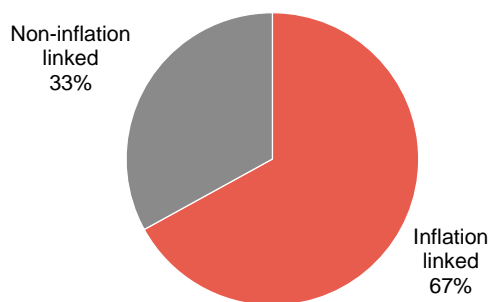
Components of revenue

Figure 3: JLEN's revenue sources as at 31 August 2018



Source: JLEN

Figure 4: JLEN's revenue by inflation linkage as at 31 July 2018



Source: JLEN

One of JLEN's strengths is the predictability of its revenue streams. Figure 3 shows its revenue breakdown as at 31 August 2018 (this is following the acquisition of the Hibaldstow anaerobic digestion plant). The majority of JLEN's revenue is derived from subsidy and, in addition, as Figure 4 shows, two thirds of revenues are index-linked. The PFI concession payments relate to JLEN's water and waste projects which were set up under the Private Finance Initiative (PFI).

Abbreviation guide

KW = Kilowatt, one thousand watts, a unit of power	MWh = Megawatt hour, a megawatt produced or consumed over an hour
MW = Megawatt, a thousand kilowatts	MWth = Megawatt thermal, a measure of heat
GW = Gigawatt, a thousand megawatts	MWe = Megawatt electric, a measure of electrical output

Subsidies

The complexity of the UK's subsidy regime reflects changing government priorities

ROCs were one of the main mechanisms for the provision of subsidies to new renewable energy projects between April 2002 and March 2017. The subsidies are paid for 20 years from the date of the commissioning of the project.

Feed-in-tariffs are available for sub 5MW projects

Contracts for difference (CFD)s provide ongoing subsidies for selected technologies

The subsidy regime in the UK has evolved over the years as new priorities have been emphasised by government; consequently, it is quite complex. The subsidies are index-linked, predominantly to the retail price index (RPI).

Renewables Obligation Certificates (ROCs) were one of the main mechanisms for the provision of subsidies to new renewable energy projects between April 2002 and March 2017. Electricity suppliers either bought ROCs from generators each year or paid a price per MWh set by the government who, in turn, passed the proceeds to the generators. All new projects got 1 ROC per MWh between 2002 and 2008 but, since then, the number of ROCs attached to a project has varied by type of generation. The intention was to encourage the development of certain forms of generation over others. For example, hydroelectric schemes attracted, routinely, lower subsidies than offshore wind. The subsidies are paid for 20 years from the date of the commissioning of the project. Solar projects capable of generating more than 5MW ceased to attract ROCs from April 2015 (although projects with planning permissions at that time kept the ROC subsidy). Similarly, the scheme was terminated early, in April 2016, for new on-shore wind projects.

Non Fossil Fuel Obligations were the precursor to ROCs. Renewable energy supplies attracted a technology specific premium to the market price. The subsidies were funded by the Non-Fossil Fuel Levy. None of JLEN's assets receive this type of subsidy.

The **Feed-in-tariff (FIT)** scheme is still in force, for now. The UK Government has confirmed that the scheme will cease to apply for new projects after April 2019. Today, it is only available for projects capable of producing less than 5MW. New projects attract a subsidy per KWh for electricity produced. The overall cost of new accreditations under the FIT scheme to the government has been capped however. FITs awarded before the end of July 2012 are paid for 25 years and, after 1 August 2012, for 20 years. These subsidies are index-linked.

Subsidies are still available for some renewable energy generation technologies that the government wants to encourage. These take the form of **contracts for difference (CFD)s** which top up electricity prices. Currently, these apply to offshore wind, wave and tidal stream power, advanced waste conversion technologies, anaerobic digestion, biomass with combined heat and power (CHP) and geothermal power. No CFD projects feature in JLEN's portfolio to date, although they may in the future.

Figure 5 shows CFD prices based on the outcome of the second CFD allocation round, published on 11 September 2017. There were 11 successful applicants including three large offshore wind projects. This round brought the total number of projects operating under the CFD scheme to 42. A new £557m auction is planned for spring 2019.

Figure 5: CFD strike prices (in £/MWh in 2012 prices)

Heading	Projects completing in 2021/22	Projects completing in 2022/23
Offshore wind	74.75	57.5
Advanced conversion technologies (with or without CHP)	74.75	40.0
Dedicated biomass with CHP	74.75	n/a

Source: Department for Business, Energy and Industrial Strategy

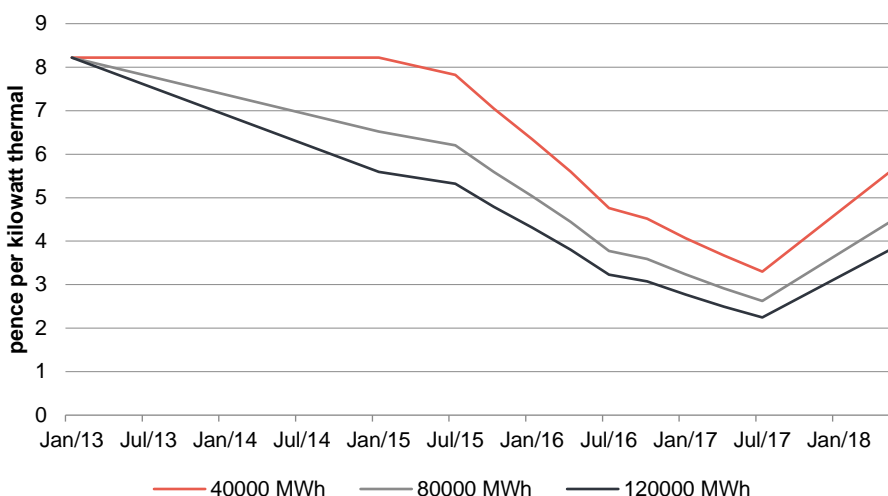
French subsidies are funded by a levy on consumers

The French system is based on Feed in tariffs. In France, wind production can be sold at fixed prices which include an element of subsidy derived from a levy on power purchases by consumers. For wind projects commissioned since 2006, for the first 10 years the power purchase agreement (PPA) is set at 82€/MWh (indexed to inflation). For the remaining five-year period, the subsidy varies by output.

Solar FITs vary by the date the PPA is signed, the type of installation and the project's production capacity.

Eligible installations, such as JLEN's anaerobic digestion plants, can receive subsidies under the **non-domestic renewable heat incentive (RHI)**. RHI payments are made quarterly over 20 years and vary according to the amount of heat generated, depending on the build date. Tier one subsidies apply to plants producing less than 40,000 MWh, tier two applies to production between 40,000 MWh and 80,000 MWh and tier three applies to production in excess of 80,000 MWh. Figure 6 demonstrates that the level of subsidy has changed considerably over the years and, as an illustration shows what the pence per kilowatt thermal subsidy would be for 40,000 MWh, 80,000 MWh and 120,000 MWh plants. Applications for RHI submitted before 1 April 2016 have their tariffs adjusted in line with the Retail Prices Index (RPI). Applications submitted on or after 1 April 2016 have their tariffs adjusted in line with the Consumer Prices Index (CPI). The scheme is scheduled to close to new plants in 2021. Figure 6 illustrates that RHI tariffs have increased recently. JLEN's managers say that this is to support further build out of capacity using these technologies.

Figure 6: RHI subsidies since 1 January 2013



Source: Ofgem

Electricity sales

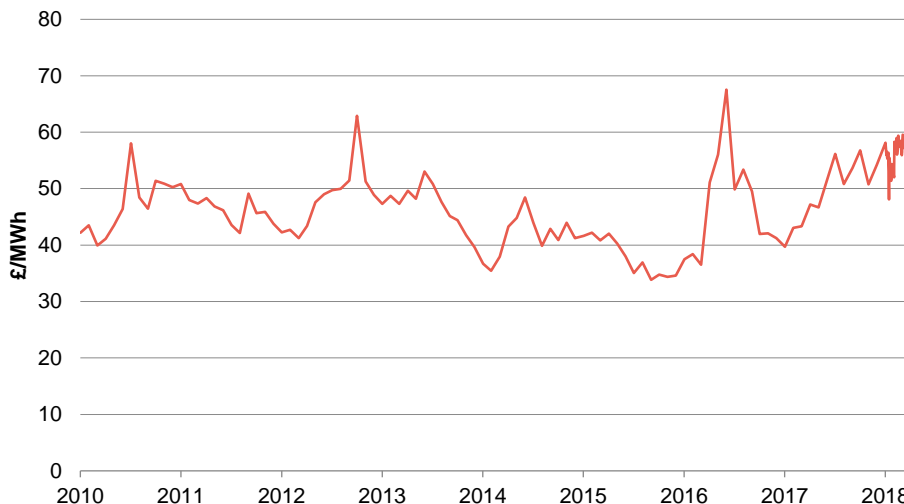
UK baseload power prices appear to be on an upward trend

Electricity produced by JLEN's projects is sold through PPAs either at fixed prices or based on prevailing electricity prices (prices are set every half hour). Power prices appear to have been on an upward trend since the summer of 2016.

The chart in Figure 7 shows figures for the electricity prices that apply to 'baseload' generation. Typically, these apply to stations that take a long time to fire up and shut down, such as nuclear and coal fired stations. The grid also needs stations that can adapt rapidly to fluctuations in demand, these are called 'peaking plant'. Their output can achieve higher prices. Some forms of renewable energy can operate like baseload

but the unpredictable nature of wind and solar power production means that, if these projects are operating in the spot market, they have to take whatever the prevailing price is.

Figure 7: UK day-ahead baseload power prices



Source: Ofgem (to May 2018), Marex Spectron (from 1 June 2018)

Additional 'embedded benefits'

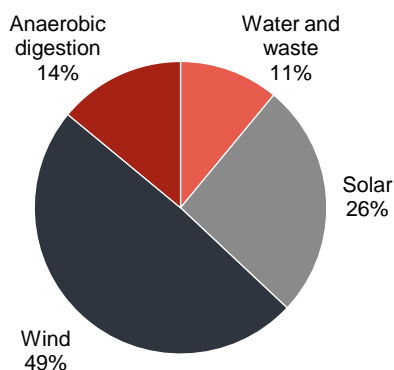
JLEN's wind, solar and anaerobic digestion renewable assets are all connected to regional electricity distribution networks rather than the national transmission network that larger power plants are typically connected to. This means that, in general, JLEN's assets are generating electricity closer to consumers of that electricity on the same distribution networks. This carries a range of small financial benefits for electricity suppliers who do not otherwise have to make use of the transmission network. The electricity suppliers pass a proportion of these back to the generator through the PPA. These 'embedded benefits' are location dependent and can typically range from £1-£5/MWh. They can be subject to change as Ofgem reviews the basis for receiving them periodically to ensure that they are consistent with the desired development of the electricity network as a whole.

Wind speeds and solar irradiation levels may vary but, usually, not excessively

Revenue from sales of electricity from JLEN's wind farms varies according to wind conditions and, likewise, revenue from solar plants varies according to the amount and strength of sunshine (solar irradiation). JLEN says that, based on historical analysis, the variance in wind speeds is expected to be less than 11% from the mean 90% of the time. JLEN cites the example of 2010, when wind speeds were 10% less on average than long-term averages, as an illustration of the potential impact. The equivalent figure for solar is 7%.

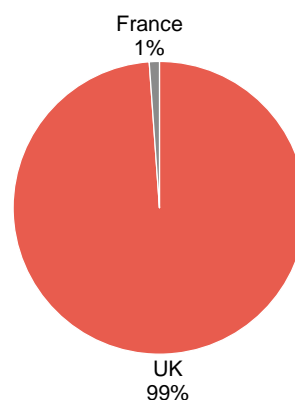
An increasingly diverse portfolio

Figure 8: JLEN portfolio by type as at 31 July 2018



Source: JLEN, Marten & Co

Figure 9: JLEN portfolio by location as at 31 July 2018



Source: JLEN, Marten & Co

Anaerobic digestion did not feature in the portfolio breakdown provided when QuotedData’s initiation note was published in September 2017 but the advisers say that is an increasingly important area of focus for the company. There has been no meaningful change to JLEN’s geographic asset allocation over the past year.

Wind

There are over 7,000 onshore wind turbines in the UK and this is the leading technology for the generation of electricity from renewable sources

The leading technology for the generation of electricity from renewable sources in the UK is on-shore wind. The renewable energy trade association, RenewableUK, reckons that there are now in excess of 7,000 onshore wind turbines distributed over more than 1,500 projects. The proliferation of onshore wind turbines has met with some resistance, however. The UK Government has removed all forms of subsidy for new onshore wind farms from 2016 and has tightened the planning process governing the approval of new onshore wind farms.

Figure 10: JLEN’s wind portfolio

Project	Location	Ownership	Capacity (MW)	Commenced	End of project life	Subsidy type
Bilsthorpe	Nottinghamshire	100%	10.2	March 2013	2038	1 ROC
Burton Wold extension	Burton Latimer, Northamptonshire	100%	14.4	September 2014	2039	0.9 ROC
Carscreugh	Dumfries and Galloway	100%	15.3	June 2014	2038	0.9 ROC
Castle Pill	Milford Haven	100%	3.2	October 2009	2034	1 ROC
Dungavel	South Lanarkshire	100%	26.0	October 2015	2039	0.9 ROC
Ferndale	Rhondda Valley	100%	6.4	September 2011	2037	1 ROC
Hall Farm	Routh, East Yorkshire	100%	24.6	April 2013	2037	1 ROC
Le Placis Vert	Saint Gouéno, Brittany	100%	4.0	January 2016	2040	FIT
Llynfi Afan	Abergwynfi, West Glamorgan	100%	24.0	March 2017	2042	0.9 ROC
Moel Moelogan	Llanrwst, Conwy	100%	14.3	2003/2008	2032/2038	1 ROC
New Albion	Kettering, Northamptonshire	100%	14.4	January 2016	2040	0.9 ROC
Plouguernevel	Brittany	100%	4.0	May 2016	2041	FIT
Wear Point	Pembrokeshire	100%	8.2	June 2014	2039	0.9 ROC

Source: JLEN, Marten & Co

JLEN’s wind portfolio is located predominantly in the UK, with two small wind farms in Brittany, France. As at 31 August 2018, gearing (borrowing) on the wind portfolio was 40% of the gross project value of that portfolio.

Solar

A subsidy increase in 2009 drove a sharp growth in new solar power projects

In 2009, subsidies for solar power production were increased in the UK and this market took off quickly; so quickly in fact that the subsidies for new projects were cut repeatedly over successive years and then eliminated altogether.

There is a healthy market in existing projects although competition in this area has driven up prices. The prices of Silicon photovoltaic cells used to make solar panels have been falling steeply. This has reduced the set-up cost for new projects and, in recent months, we have seen the emergence of projects that are not reliant on subsidies in the UK, often operating in tandem with on-site battery storage (by storing the electricity and releasing it later in the day, it is sometimes possible to achieve a higher price for it). These may provide opportunities for JLEN in the future.

Within JLEN's solar portfolio, Amber operates across two locations, Branden operates across three locations and CSGH operates across four locations. Panther is a portfolio of smaller rooftop and ground mounted schemes scattered across the UK mainland. 1,033 of these are domestic installations, 52 are at farms and 14 are school rooftops. All are 100% owned by JLEN.

Figure 11: JLEN's solar portfolio

Project	Location	Ownership	Capacity (MW)	Commenced	End of project life	Subsidy type
Amber (Five Oaks)	West Sussex	100%	4.8	July 2012	2036	FIT
Amber (Fryingdown)	Hampshire	100%	5.0	July 2012	2036	FIT
Branden (Luxulyan)	St Austell, Cornwall	100%	3.0	March 2013	2037	2 ROCs
Branden (Treddinick)	St Austell, Cornwall	100%	5.8	March 2013	2037	2 ROCs
Branden (Victoria)	St Austell, Cornwall	100%	5.9	March 2013	2037	2 ROCs
CSGH (Crug Mawr)	South Wales	100%	7.5	March 2015	2042	1.4 ROCs
CSGH (Golden Hill)	South Wales	100%	6.3	March 2015	2041	1.4 ROCs
CSGH (Higher Tregarne)	Cornwall	100%	4.9	March 2014	2040	1.6 ROCs
CSGH (Shoals Hook)	South Wales	100%	14.8	March 2015	2041	1.4 ROCs
Monksham	Frome, Somerset	100%	10.7	March 2014	2039	1.6 ROCs
Panther	Various UK	100%	6.5	Various	2036/2039	FIT
Pylle Southern	Shepton Mallet, Somerset	100%	5.0	December 2015	2040	FIT

Source: JLEN, Marten & Co.

As at 31 August 2018, gearing on the solar portfolio was 19% of the gross project value of that portfolio.

Anaerobic digestion

Anaerobic digestion is a bacterial process that takes place in the absence of oxygen. It converts biomass (animal waste, food waste and crops) into biogas, carbon dioxide and biofertiliser. Once the biogas has been upgraded, the resultant biomethane can be fed straight into the UK's natural gas pipeline network or burned in a power station to produce electricity and heat. QuotedData's last update note explained in some detail how this process works in practice (see pages 3-5 of that note).

Biomethane is sold at prevailing market prices for natural gas but subsidies account for a higher proportion of revenue. Plants attract a subsidy under the Non-Domestic Renewable Heat Incentive (RHI) for biomethane and the electricity generated attracts a subsidy under the FIT regime.

Falling RHI rates were a problem for the industry with new build projects effectively ceasing but, in a recent speech, the head of the Anaerobic Digestion and Bioresources Association (ADBA) said that she thought the improvement in RHI subsidy rates (referred to on page 6) would encourage the development of more than 50 new anaerobic digestion plants.

Against this, ADBA is warning that the closure of the FIT scheme (see page 5) may have an impact on the future growth of the industry. Historically, RHI rates have had a greater influence on the viability of plants than the FIT scheme has.

Figure 12: JLEN’s anaerobic digestion portfolio

Project	Location	Ownership	Capacity (MWth/MWe)	Commenced	End of project life	Subsidy type
Vulcan	Hatfield Woodhouse, Derbyshire	100%	5.0/0.5	Oct 2013	2033	FIT and RHI
Vulcan extension	Hatfield Woodhouse, Derbyshire	100%	5.0/-	Q3 2018	2033	
Icknield Farm	Ipsden, South Oxfordshire	40%	5.0/0.4	Dec 2014	2034	FIT and RHI
Egmere Energy	Egmere, North Norfolk	100%	5.0/0.5	Nov 2014	2034	FIT and RHI
Grange Farm	Spridlington, Lincolnshire	100%	5.0/0.5	Dec 2014	2034	FIT and RHI
Merlin	Hibaldstow, North Lincolnshire	100%	5.0/0.5	Sep 2014	2034	FIT and RHI

Source: JLEN, Marten & Co

JLEN’s anaerobic digestion portfolio has been built up over the past year. The advisers like the attractive returns available from these projects and the high degree of predictability of the revenue that they generate. The partner responsible for the day-to-day management, operation and maintenance of the plants is Future Biogas Limited.

Possible opportunities for plant upgrades

In June 2018, JLEN announced that it planned to extend its Vulcan Renewables plant. The company will supply around £8.5m of funding to “significantly increase” the biomethane generation capacity of the plant by converting a storage tank into a digester and installing new storage capacity. There may be opportunities for similar improvements to other projects in the portfolio as well as a number of smaller, return enhancing process improvements.

There was no leverage (borrowing) associated with the anaerobic digestion portfolio as at 31 August 2018.

Water and waste

In 2007, in response to EU directives on waste to landfill, the government set out an aggressive programme of tax increases designed to raise the cost of landfill while prioritising PFI and PPP (public private partnership) projects designed to encourage recycling and incineration (for both power and heat). However, the government is no longer creating new PFI/PPP projects for waste treatment (on the basis that it has exceeded its targets for reduction in landfill volumes).

Waste and wastewater revenue vary by throughput

With waste and wastewater treatment projects, revenues tend to vary by throughput, although contracts may be structured in such a way that handling a ‘base load’ of waste/wastewater provides the bulk of revenues.

The East London Waste Authority waste project in JLEN’s portfolio has guaranteed minimum tonnage levels, set in the contract, that cover the bulk of the Projects’ costs and a profit margin. Cost and margin would be covered, in the case of the East London project, at 400,000 tonnes while the contract guarantees a level of 350,000 tonnes.

Revenues from JLEN’s Tay Wastewater project are banded so that over 90% of revenues are earned on the first band. JLEN thinks that the volume of wastewater

treated will exceed the first band under likely scenarios anyway. As an example, in 2003, one of the driest years on record in the UK, volumes were only 12% below long-term averages.

The **East London Waste Authority** project processes waste from the East London Waste Authority (ELWA), which is responsible for the disposal of the waste from the four London boroughs of Redbridge; Barking and Dagenham; Havering; and Newham. The PFI concession agreement runs until 2027. Waste management company, Renewi (formerly Shanks), has a 20% equity stake in the project holding special purpose vehicle (the ELWA SPV).

The sites became operational in 2006 and 2007. Waste processing is performed through a combination of facilities constructed and developed as part of the project, the largest of which are two mechanical biological treatment facilities which treat approximately 360,000 tonnes of residual waste per annum and produce solid recovered fuel and other recyclable material.

The project also involves the operation of four refurbished re-use and recycling centre sites and two materials recycling facilities, one for material rejected from the re-use and recycling centres and the other processing recyclable material that has been separated from household waste. In total, the facilities are capable of processing 700,000 tonnes of waste per annum.

Revenue is based on the weight of waste processed, with the ELWA SPV's costs and margin covered from revenues relating to tonnage up to 400,000 and a guaranteed minimum tonnage of 350,000 tonnes. Renewi is required to source third party waste to process if waste is forecast to be below 420,000 tonnes, JLEN says that waste flows have not fallen below 400,000 tonnes per annum since the project has been operational.

The **Tay Wastewater project** services a 700-hectare area between Dundee and Arbroath, at the mouth of the Tay Estuary, in the east of Scotland, under a PFI concession agreement which runs until 2029. JLEN has a one third stake in the project's holding company (the Tay SPV).

The Tay SPV's physical assets comprise 35km of pipeline, seven pumping stations and a wastewater treatment plant at Hatton. The project receives an index-linked tariff from Scottish Water based on the volume of wastewater treated and the quality of sludge and effluent produced by the treatment process. Since January 2009, a revised banded tariff structure has been applied which ensures that the majority of the Tay SPV's revenues are earned at relatively low volume levels, thus reducing the impact to project revenues from variability in wastewater flow volumes.

As at 31 August 2018, gearing on the water and waste portfolio accounted for 55.8% of the gross project value.

Investment process

Projects are selected for the portfolio based on the advisers' assessment of each project's risk and reward profile. They operate within a limited set of investment restrictions, first identified in JLEN's prospectus (see page 12). The fund benefits from a first offer agreement with JLG (see below) but also participates in the secondary market for purchases from third parties. Potential acquisitions are also assessed for their ESG (environmental, social and corporate governance) impact.

The advisers aim to maintain the balanced and diverse nature of the portfolio. Their approach is a cautious one. Although JLEN can invest across all OECD countries, to date, investments have focused on the UK and, to a limited extent, France. The advisers say that they prefer to concentrate on countries and regulatory/subsidy regimes that they know well or where they have relationships with established partners.

Investment restrictions

- No more than 15% of the portfolio to be invested in assets under construction or that are not yet operational.
- At least 50% invested in the UK and the balance invested in other OECD countries.
- No new investment to exceed 30% of NAV (or 25% of NAV based on the acquisition price, taking the value of existing assets into consideration).

First offer agreement with JLG

JLG and JLEN have a first offer agreement between them

JLEN has a first offer agreement (subject to a rolling one-year contract) with JLG whereby it may acquire assets that JLG wishes to sell. The agreement is a right of first offer for relevant investment interest in environmental infrastructure projects within the EU and EFTA that are consistent with JLEN's investment policy. JLEN will only proceed with an offer that passes its due diligence and where the price is commensurate with the risks involved. To deal with potential conflicts of interest when buying from JLG, distinct committees, separated by 'Chinese walls', are established to deal with purchases and sales of assets. Independent valuers report on fair market values. The independent directors have to approve each transaction.

The estimated value of the pipeline of potential purchases available under the first offer agreement was £260m as at 31 March 2018. There is no guarantee that any of these will be taken up.

Purchases from third parties in secondary market

The advisers have also built up good working relationships with other developers and there is no restriction on purchasing assets from outside JLG. Some opportunities are brought to them for appraisal by specialist consultancy firms operating in the area.

Prices are negotiated at arm's-length and reflect the advisers' assessment of the potential risks and rewards from each project. This includes a review of the project's capital structure.

ESG assessment

Potential acquisitions are assessed on a range of metrics. These vary according to the sector and include aims to:

- avoid greenhouse gas emissions, where possible;
- substitute fossil fuel consumption with renewable energy and biofuels;
- minimise the disposal of waste to landfill; and
- maintain good relations with local stakeholders.

As part of this process the advisers:

- review each project's permits and compliance with operating license requirements;

- review each project’s environmental management systems and the capabilities of the site’s managers; and
- commission an independent study to verify the positive environmental impact.

Ongoing management

The day-to-day facilities management, operations and maintenance of the projects is contracted to third parties

The day-to-day facilities management, operations and maintenance of the projects is contracted to third parties and part of the adviser’s role is overseeing these arrangements, including approving payments.

The advisers seek to identify opportunities for efficiency enhancements and capacity increases (such as the one identified at Vulcan Renewables – see page 10).

The advisers also aim to optimise the company’s financial structure (getting the right balance between equity and debt).

Disposals

JLEN will usually hold its assets for the long-term and no disposals have been made to date. It may however sell assets when the advisers feel the sale price justifies it or when there are other valid reasons for doing so. The directors may choose to return the proceeds of disposals to investors but may reinvest them.

Hedging

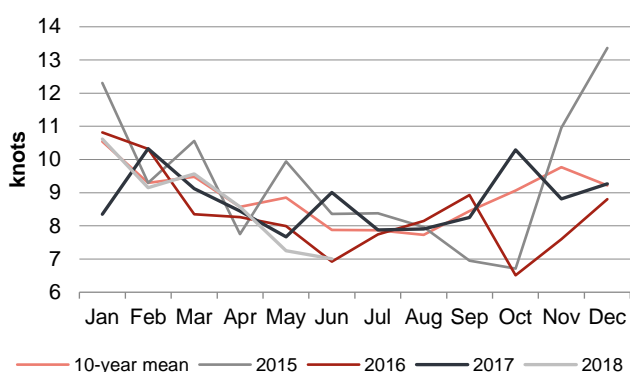
When they invest in assets in currencies other than sterling, the advisers may choose to hedge the currency exposure back to sterling. The advisers may also hedge interest rate risk and inflation risk. All hedging is at the board’s discretion.

Performance

Recent operational performance

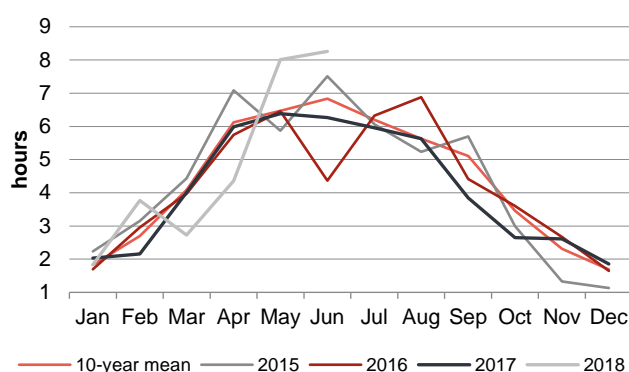
For the year ended 31 March 2018, JLEN generated 399GWh from its wind portfolio (in-line with budget); 64GWh from its solar portfolio (9% below budget); and 51GWh from its anaerobic digestion portfolio (8% above budget).

Figure 13: Average wind speeds in the UK



Source: The Met Office

Figure 14: Average sun hours in the UK



Source: The Met Office

Wind and solar performance vary according to climatic conditions and they also have an impact on wastewater volumes. The UK's experience over this summer has been that wind speeds are well below normal while sunshine hours are well above average.

Within its portfolio, JLEN experienced project-specific problems with two solar assets over the year to 31 March 2018 – Branden and Crug Mawr – which have now been resolved.

Over the year to the end of March 2018, electricity prices were higher than forecast but the long-term forecast price for electricity that JLEN uses was reduced, impacting on the NAV (see below). UK inflation was a little higher than expected.

NAV assumptions

NAVs are based on discounted cash flows

JLEN publishes NAVs on a quarterly basis based on valuations prepared by the investment adviser. These are approved by the board prior to publication. There is no publicly quoted price for the projects that JLEN invests in and so the projects are valued on the basis of discounting the cash flows over the life of the project at a rate that reflects what market evidence is available for project pricing. At the year end, an independent specialist advises the board on the suitability of the discount rate, amongst other things. Discount rates used to calculate the NAV at the end of March 2018 varied from 6.5% to 9.2% with a weighted average discount rate of 8.1%.

The asset lives for the wind and solar assets are estimated to be 25 years. The assumed life of the anaerobic digestion plants is 20 years. One wind asset has an estimated life of 30 years (due to favourable planning and land arrangements). The advisers are exploring opportunities to extend the economic lives of other assets in the portfolio. If successful, this could have a positive impact on JLEN'S NAV.

Forecasts of electricity output are based on long-term models and use a central base case of the amount of electricity that is expected to be generated by each project. They build possible outages into the model – they assume that wind projects are available for production 97.7% of the time and solar projects are available 98.9% of the time.

Electricity price forecasts were reduced in the year to end March 2018 but actual prices have been rising since

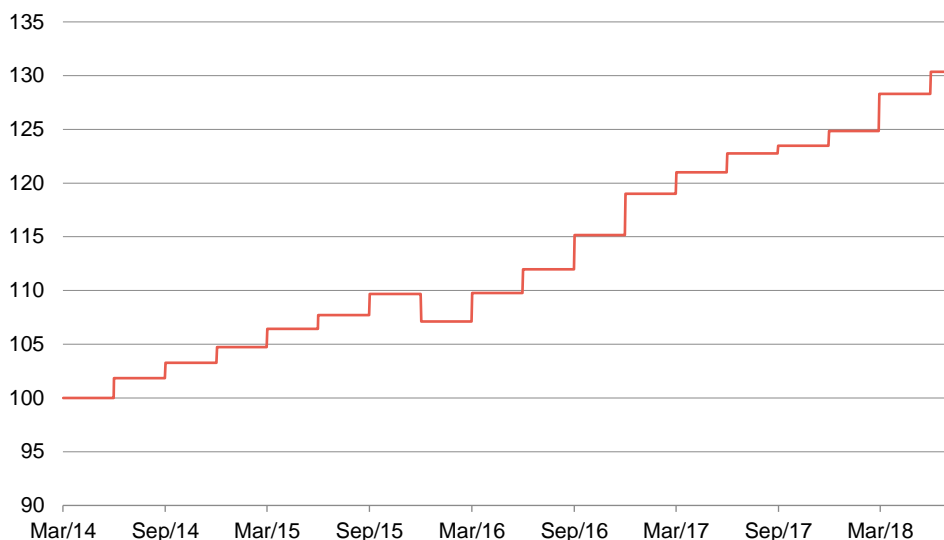
Electricity prices are modelled based on fixed price agreements or, where these do not exist, forecast prices. Within the model, for the first two years JLCM uses market rates to forecast prices, where fixed price arrangements are not in place. For periods beyond two years, it uses long-term forecasts supplied by an external consultant as adjusted for project-specific arrangements. Price assumptions were reduced at the end of March 2018 (by 7.6% on average over a 25-year period). JLEN is unusual within its peer group in using forecasts from a single energy consultant. It has said that, if a blended forecast was used, this could add 1.4p to the end March NAV. UK power prices appear to be on an upward trend as was evident in Figure 7 on page 7.

Forecasts of waste and wastewater volumes are based on the client's own projections where available and independent studies where appropriate.

Prevailing tax rates are used. The model also has to take into account inflation projections. In March 2018, the inflation assumptions used were set at 3.5% for 2018, 3.1% for 2019 and 2.75% per annum thereafter for the UK and 1.5% per annum for France.

Figure 15 shows how JLEN's NAV has developed since launch in total return terms.

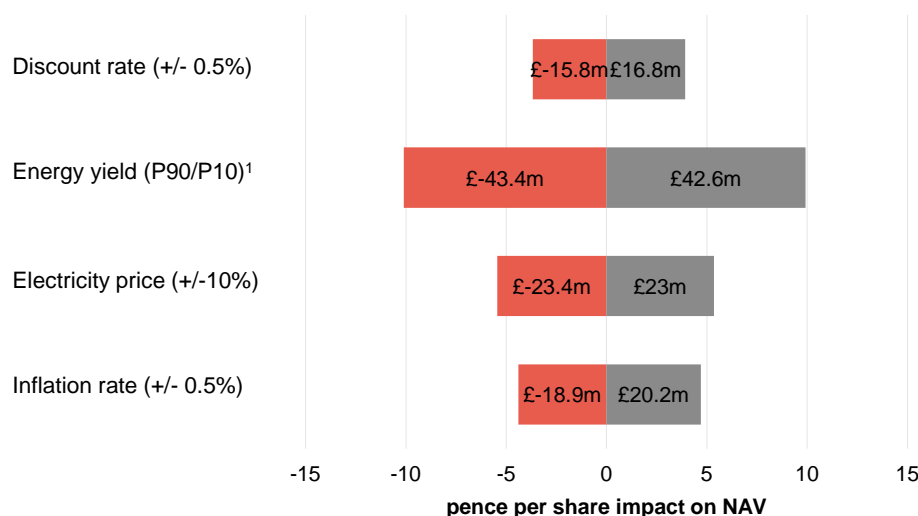
Figure 15: JLEN NAV total return performance since launch rebased to 100



Source: Morningstar, Marten & Co

Figure 16 shows JLEN's NAV sensitivity analysis updated as at 31 March 2018 to reflect the changes to the portfolio and changing assumptions.

Figure 16: NAV sensitivity to various factors

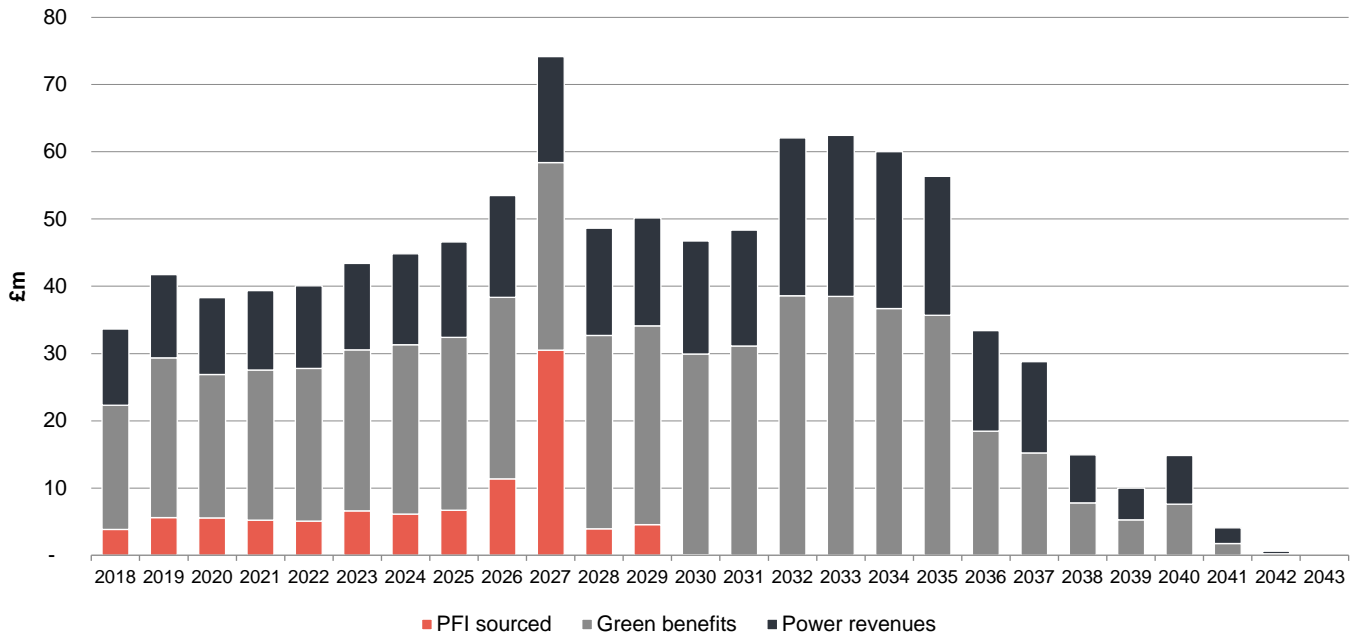


Source: JLEN, as at end March 2018. Note 1) P90 is the 90th best and P10 the 10th best scenarios (of 100) for the amount of energy generated by the portfolio.

Cash flow forecasts

Figure 17 shows the annual cash flow contribution per revenue type that JLEN has projected based on the current portfolio. The contribution from PFI concessions peaks in 2027 but rolls off quite swiftly thereafter. The contribution from green benefits is fairly predictable, the main variable being inflation, whereas the contribution from power purchase agreements is more likely to fluctuate.

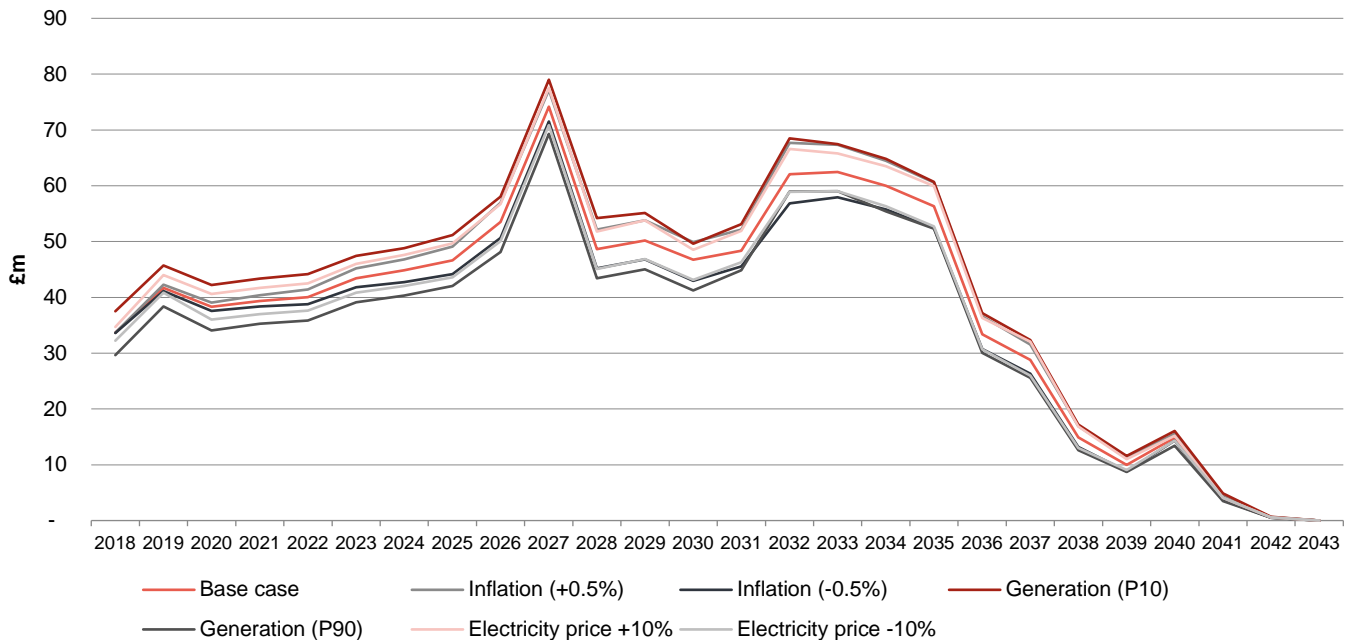
Figure 17: Cash flow contribution by revenue type over 25 years



Source: JLEN

Figure 18 shows how the total cash flow projections in Figure 17 might vary from JLEN's base case under the circumstances highlighted in Figure 16.

Figure 18: Sensitivities to cash flow projections by year



Source: JLEN. Note P90 is the 90th best and P10 the 10th best scenarios (of 100) for the amount of energy generated by the portfolio.

As JLEN has expanded its anaerobic digestion portfolio, the sensitivity of its future cash flows to electricity generation and prices has decreased. By contrast, the contribution to returns from green benefits (subsidies) has increased.

Peer group

JLEN's asset mix makes it stand out from its peers.

You can access up-to-date information on the peer group at www.quoteddata.com

JLEN sits within the AIC's renewable energy sector alongside seven other funds. JLEN is the only fund in this peer group to incorporate environmental infrastructure assets such as anaerobic digestion and water and waste projects within its portfolio. Bluefield, Foresight and NextEnergy are all pure solar plays while Greencoat UK Wind and Greencoat Renewables are focused exclusively on wind at present. The Renewables Infrastructure Group (TRIG) holds both solar and wind projects and Gore Street Energy Storage Fund is seeking to derive revenue from battery storage facilities. JLEN's more diverse portfolio aims to smooth returns to investors.

Figure 19 compares the performance of the funds (excluding Gore Street, which is a recent entrant to the sector) while Figure 20 highlights some of the key differences between them. To a large extent, variations in performance between the funds reflect differences in the asset mix. The sector is relatively young (the first fund to launch, Greencoat UK Wind, pre-dates JLEN by a year). It may be too early in the life of these funds to make any valid conclusions from this analysis.

Figure 19: NAV total return peer group performance over periods ending 31 July 2018

	3 months (%)	6 months (%)	1 year (%)	3 years (%)	Since 31/03/14 (%)
JLEN	1.6	4.4	6.2	21.0	30.4
Bluefield Solar	0.0	0.0	4.6	28.4	48.2
Foresight Solar	0.9	1.4	7.0	26.0	35.6
Greencoat UK Wind	1.3	5.6	10.2	31.0	43.1
Greencoat Renewables	5.3	8.5	4.8	n/a	n/a
NextEnergy Solar	1.0	2.9	7.4	24.0	n/a
TRIG	5.1	5.1	11.8	26.7	39.3
Peer group average	1.9	3.5	7.2	26.2	38.6

Source: Morningstar, Marten & Co

Highest yield in sector comes with decent cash flow cover

Figure 20 shows that JLEN ranks sixth of eight funds by market cap. As it expands, its fixed costs are spread over a larger base and this will help reduce its ongoing charges ratio. Each of the funds in the peer group trades at a decent premium to NAV. This might reflect investors' desire for yield from assets that do not perform in-line with equity markets and, in this respect, JLEN offers one of the highest yields. Just as importantly, JLEN's entire dividend has historically been well covered by cash flow.

Figure 20: Peer group comparative data as at 10 September 2018

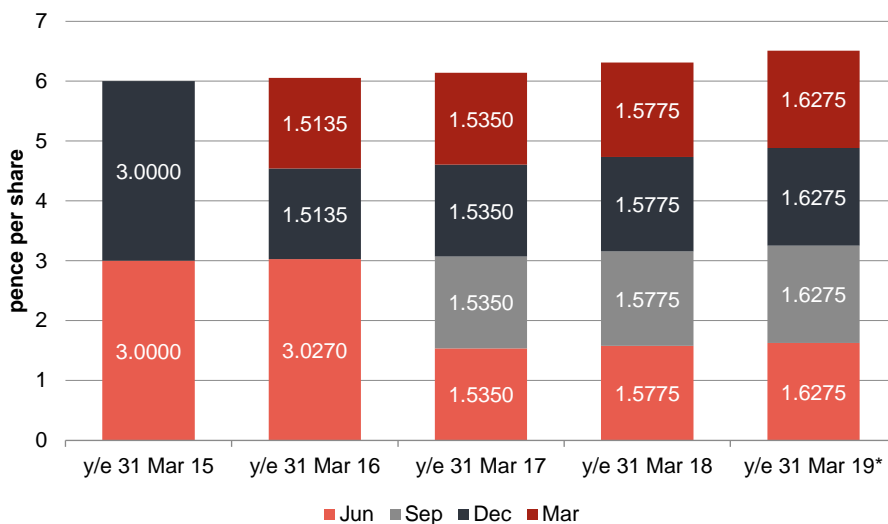
	Market cap (GBPm)	Premium (%)	Forecast yield (%)	Historic cash flow dividend cover		Ongoing charge (%)
				to cash dividend	to total dividend	
JLEN	426	8.4	6.03	1.16x	1.16x	1.31
Bluefield Solar	443	11.9	6.10	1.15x	1.15x	1.12
Foresight Solar	559	8.0	5.86	1.12x ¹	1.12x ¹	1.17
Gore Street Energy Storage	31	2.7	- ²	n/a		n/a
Greencoat Renewables	395	8.1	5.71	n/a ³		n/a
Greencoat UK Wind	1,452	14.5	5.26	1.53x	1.53x	1.24
NextEnergy Solar	633	7.0	6.05	1.21x	1.05x	1.05
TRIG	1,223	6.8	5.86	1.21x	1.08x	1.09

Source: Morningstar, Marten & Co. Note – 1) assumes normal pattern of four dividend payments each year. 2) target is 7% on 100p issue price but not until the financial year ending 31 March 2020. 3) accounts cover period from 15 February 2017 to 31 December 2017; figure would be misleading.

Cash flow dividend cover figures have been calculated by Marten & Co and are for the last full financial year for each company.

Dividend

Figure 21: JLEN dividends declared or targeted to be declared since launch



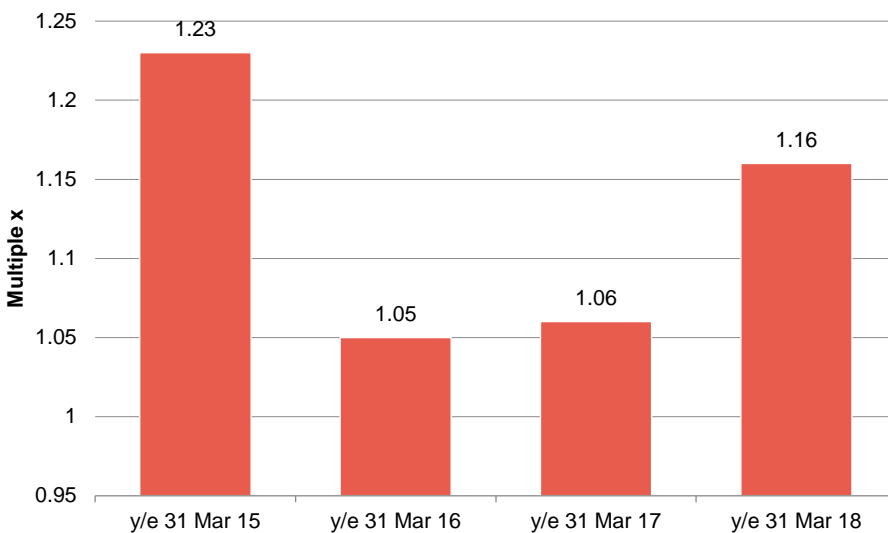
Source: JLEN *Note: Dividend data for the year ended 31 March 2019 is a target and not a forecast. The managers highlight that there is no guarantee that this target will be met.

6.51p dividend target for 2018/19 financial year

JLEN increased its dividend forecasts for the year ended 31 March 2019 to 6.51p or 1.6275p per quarter and has declared the first of these.

Figure 22 shows that JLEN's dividends have been covered by the cash generated from the portfolio after running costs. Cash flow dividend cover may be a more valid measure than earnings cover for a fund such as JLEN, as it is less subjective.

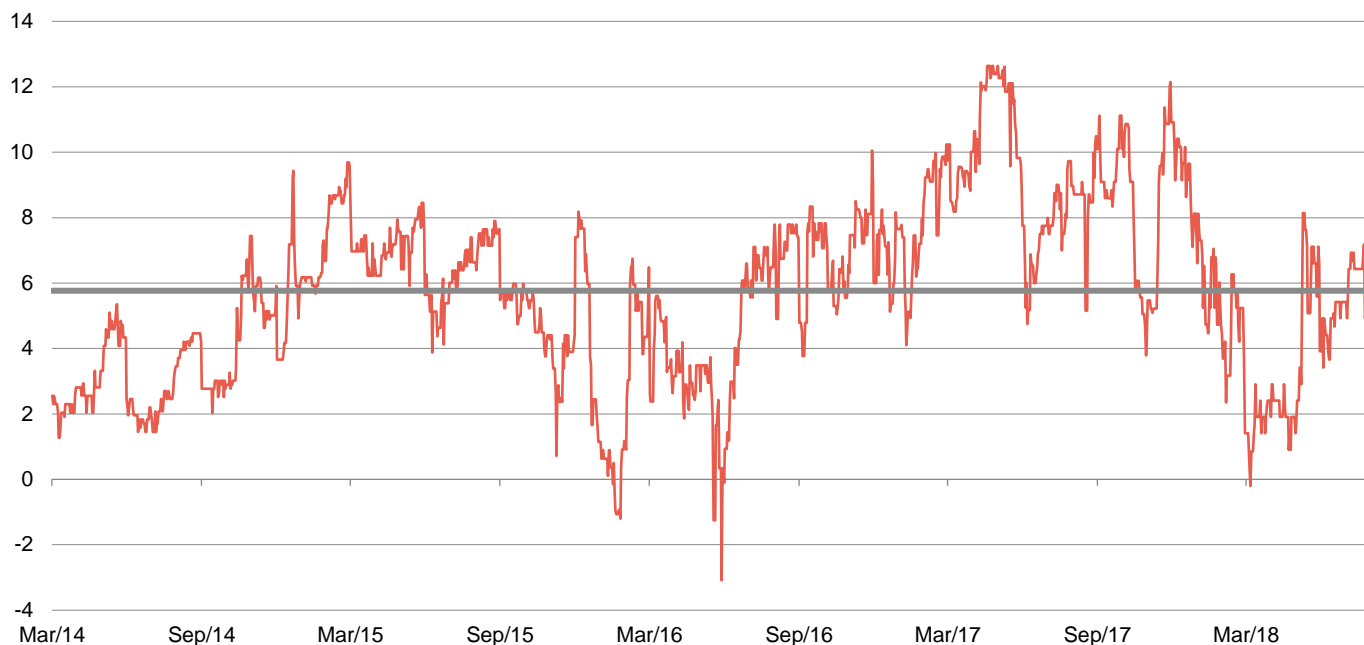
Figure 22: Cash flow dividend cover



Source: JLEN, Marten & Co

Premium/(discount)

Figure 23: JLEN premium since launch



Source: Morningstar, Marten & Co

Since launch, JLEN has traded at an average premium of 5.8%. Over the year to the end of August 2018, it has traded between a discount of 0.2% and a premium of 12.1%.

Range of discount control features including a discount triggered discontinuation vote

If needed, JLEN has powers to repurchase its shares into **treasury**. These would only be reissued at a premium to NAV. JLEN would consider using tender offers to control its discount if necessary. In addition, if, on average, the shares traded at a discount of 10% or greater over its financial year, JLEN's board would propose a resolution at the next AGM that the company ceases to continue.

Tiered management fee, no performance fee

Fees and costs

As highlighted on page 18, JLEN's **ongoing charges** ratio is 1.31%. This fell year on year for the March 2018 accounting year (from 1.46%). The advisers are entitled to a base fee of 1% on the first £500m of adjusted portfolio value and 0.8% on the balance. Their contract can be terminated on one year's notice. There is no performance fee.

Administration services are provided by Praxis Fund Services Limited. Its fee was £89,000 for the year ended 31 March 2018.

Capital structure and life

JLEN is domiciled in Guernsey and is listed on the main market of the London Stock Exchange. It invests through a subsidiary, John Laing Environmental Assets Group (UK) Limited (UK Holdco) in which it may own both equity and loan notes.

Plenty of headroom for new share issuance under existing permissions

JLEN has 394,077,029 ordinary shares in issue and no other classes of share capital. In conjunction with a prospectus that was published in February 2018 and updated in June, JLEN can issue up to 200m new shares. 15.6m new shares were issued in March 2018 (making a total of 54.4m shares over the year to the end of March 2018). Unissued shares cannot be issued at a price less than the prevailing NAV plus a premium to reflect the costs associated with the issue.

JLEN has an indefinite life but a discontinuation vote (a vote to end the life of the company) may be triggered if its shares trade at a discount for a prolonged period of time (see Premium on page 19). The company's financial year end is 31 March and, typically, AGMs are held in August.

Gearing

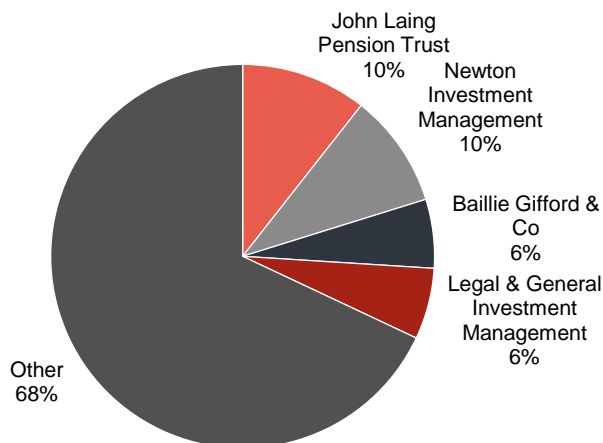
£130m multi-currency revolving credit facility available until mid-2021

Gearing (borrowing) is permitted at the fund level up to a maximum of 30% of JLEN's total net assets. Gearing is provided by a £130m multi-currency revolving credit facility that pays interest at a margin above LIBOR (or, in respect of loans denominated in euros only, EURIBOR) of 2.00%-2.25% depending on JLEN's loan-to-value ratio. Interest rate risk is hedged out using swaps. The facility has been extended to June 2021.

In addition to the revolving credit facility, the stable, predictable cashflows generated by the underlying projects make it easier to borrow money secured against them. At the project level, JLEN is constrained to a maximum 65% gearing on gross project value for renewable energy generation projects and maximum 85% gearing on gross project value for PFI/PPP type projects. Actual project gearing is much lower than this. At the end of July 2018, project-level gearing across the whole portfolio was 35.7%. Within this, project-level gearing in the renewable energy projects was 29.3% and in the PFI processing assets 55.8%. This finance is non-recourse to the fund (in other words, the lender cannot pursue JLEN for the money).

Major shareholders

Figure 24: Major shareholders as at 31 March 2018



Source: JLEN

The advisory team

Chris Tanner joined JLCM in January 2014. Prior to this, Chris was a principal in Janus Henderson's private equity infrastructure team, often working closely with JLG on a range of special projects, including the buying of investments in environmental infrastructure, as well as corporate refinancing and valuations. For the 18 months prior to joining the advisers, he was on secondment to JLG, focusing on its renewable energy business as corporate finance director. Before joining Henderson in 2007, Chris worked at PricewaterhouseCoopers for 11 years, including seven years in the infrastructure concessions team, where he focused on project finance advisory services for both public and private sector clients, covering a wide range of projects with a strong focus on the waste sector.

Chris Holmes joined JLCM in January 2018 to take on the role of joint lead adviser to the company, working alongside Chris Tanner. Chris Holmes is formerly of the UK government's Green Investment Bank, where he was head of its waste and bioenergy division. His background is in project finance banking and he spent 12 years at Dutch bank NIBC heading the UK lending and advisory activities for infrastructure and renewable transactions. He also managed the bank's initiative to bring institutional investors into infrastructure projects via structured capital market solutions. Prior to working at NIBC, Chris spent a number of years in project finance at firms including Grant Thornton. Chris has served on the board of directors of the International Project Finance Association and is currently chair of its UK Council.

The wider team has extensive experience in the PPP and environmental infrastructure marketplace. It comprises Jane Tang (investment director), Muxin Ma (investment director), Gaby Amiel (asset manager responsible for operations strategy for JLEN's wind projects), Joe Miletec (asset manager responsible for operations strategy for JLEN's solar projects) and William Mezzullo (asset manager with responsibility for JLCM's anaerobic digestion assets).

Board

The five directors are all non-executive and independent of the adviser. They all took up their positions at the launch of the fund. The bill for the total remuneration and benefits in kind payable to the directors is capped at £300,000 per annum.

Figure 25: The Board

Director	Role	Appointed	Fees [†]	Shareholding*
Richard Morse	Chairman	12/12/13	65,000	83,042
Christopher Legge	Chairman of audit committee	12/12/13	37,000	29,896
Denise Mileham	Chairman of nomination committee	12/12/13	37,000	28,160
Peter Neville	Chairman of risk committee	12/12/13	37,000	29,896
Richard Ramsay	Director	12/12/13	47,300	53,813

Source: Marten & Co, * as at March 2018, [†] fees proposed for 2018/19 financial year

Previous publications

QuotedData's initiation note, [Diverse renewables exposure](#), was published on 6 September 2017 and an update note, [Anaerobic Diversification](#), in March 2018.

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