Point4

Impact Report December 2015

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CONTRIBUTORS

ABOUT TRUCOST

Trucost helps investors to understand the economic consequences of natural capital dependency in order to identify risk and opportunity from growing natural resource pressures and environmental costs.

Natural capital liabilities such as carbon, water, resource use, pollution and waste are threatening the ability of our natural ecosystems to deliver economic growth. The impact is already being felt through volatile
commodity prices linked to extreme weather events, pollution impacts and natural resource constraints.

We provide the world's most comprehensive natural capital data representing 93% of global markets by market capitalisation to support the investment community in evaluating the environmental efficiency of companies and their supply chains, analysing portfolios against benchmarks, and creating new products.
Key to our approach is that we not only measure natural capital risk in physical quantities, we also apply a financial value to provide an overarching metric for risk and opportunity analysis.

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1. CEO OVERVIEW

Encroachment of vegetation around electricity transmission and distribution lines is a key cause of electricity supply interruption. It is known that 12% of electricity faults in the UK are related to vegetation interference with transmission lines (Western Power Distribution), in some areas it can be as high as 30%. (Eaton, 2014). Electricity network interruptions not only leave households without essential access to electricity, they can impose significant costs on the economy and interfere with the delivery of critical services such as hospitals and schools. It is estimated that the total economic costs of short electricity outages that occur frequently in the USA total between £68 billion and £108 billion each year (Allianz, 2015).

Currently, effective mitigation of vegetation related risks to electricity supply has required regular surveillance of electricity transmission and distribution lines (by air and land) and ad-hoc removal of encroaching vegetation, at an annual cost of over £100 million (Energy Network Association, 2015) to UK electricity network operators. Using industry standard methods, over 300,000km (Energy Network Association , 2011) of electricity transmission lines in the UK must be surveyed every year to identify sections at risk of damage due to storms or vegetation encroachment. Once surveyed, prioritization of vegetation management over the sections of transmission and distribution line most at risk remains a challenge due to difficulties in predicting changes in vegetation patterns over time. This situation results in high vegetation management costs for Distribution Network Operators (DNOs)[1] and Transmission Operators (TOs)[2], the occurrence of avoidable unplanned network outages, and planned network outages to remove vegetation that is longer than necessary.

Point4 was conceived to address the need for more effective and efficient vegetation management in the energy sector and aims to deliver improved energy security for UK electricity customers whilst improving the operational and environmental efficiency of the sector. Point4 combines remote sensing technologies with sophisticated vegetation modeling techniques to safeguard the transmission and distribution of the national power supply by pinpointing when and where vegetation risks are likely to occur and enabling mitigation of this risk. Point4's digitalized process control system, 'ProMS', enables TOs and DNOs to better plan and implement their vegetation management works and improve compliance reporting to regulating authorities. Point4 offers UK TOs, DNOs and other operators of sensitive infrastructure, a cost effective solution to increase the quality and scope of vegetation surveillance whilst reducing the cost. Better information informs better vegetation management decision making delivering significant improvements in the security of the electricity network, whilst reducing the environmental footprint of vegetation management operations.

Point4's strategic advantage comes from the effective integration of a range of technologies including, LiDAR[3] aerial data capture, hand held survey devices with geo-spatial, laser range finding capabilities and digital photography to produce an integrated asset management tool. In the context of electricity network management, Point4 uses aircraft equipped with LiDAR technology to map the environment and vegetation surrounding electricity transmission lines and combines this with data captured via foot patrols to produce a map of vegetation encroachment risks across the network. Point4 can then apply sophisticated vegetation modelling methods to predict changes in vegetation over time with reduced need for additional surveying, in order to pinpoint the location and times at which vegetation risks are greatest. This information is then provided to DNOs to inform asset management decisions and the planning

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[1] Distribution network operators (DNOs) are companies licensed to distribute electricity in Great Britain by the Office of Gas and Electricity Markets (Ofgem)

[2] A transmission system operator is an entity entrusted with transporting energy in the form of natural gasor electrical power on a national or regional level, using fixed infrastructure

[3] LiDAR is a remote sensing technology that measures distance by illuminating a target with a laser and analysing the reflected light.

of vegetation management activities. This digitalised process control system is designed around the Energy Networks Association, Engineering Regulations G55/2 regulatory framework, and meets the practical needs of the DNOs, surveyors, and tree cutting contractors and regulators alike. The data is delivered to the user in a way that is unprecedented in the electricity utility industry creating both a unique forecasting tool and an exceptional audit mechanism for customers and regulators. Figure 1 provides a simplified overview of the Point4 system for the identification and removal of vegetation encroaching on electricity transmission lines.
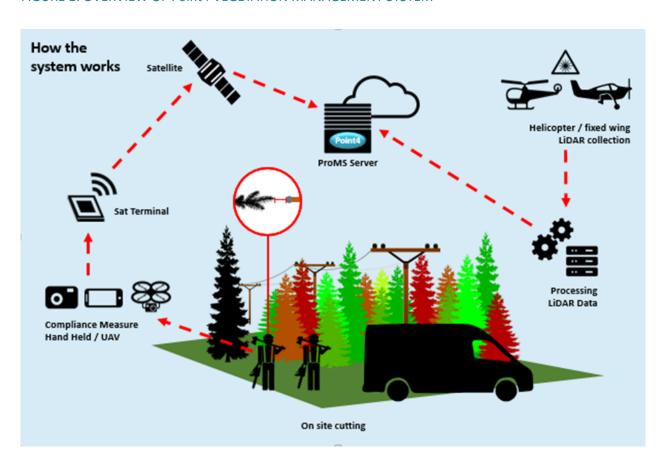
FIGURE 1: OVERVIEW OF Point4 VEGETATION MANAGEMENT SYSTEM

Point4's capabilities are presently focused on vegetation management for DNOs, power companies and other service and utility providers. This need is equally relevant to rail, telecoms, highways and water. In addition to vegetation management, our platform has relevance to many other applications within the transport, coastline management, highways, wind farm optimisation, geology and many more.

Organizational Summary

Point4 is a private company based in UK that develops integrated vegetation risk management solutions for major infrastructure operators, focusing initially on the electricity distribution sector and then expanding in the future to the rail, telecommunications, highway and port infrastructure sectors. The company was founded by its Director, Martin Stanley, who has over 20 years of experience in the arboriculture and vegetation management sector. Point4 is currently in the research and development phase and employs a small staff of four including a highly experienced

Chairman (Elect) from the Satellite communications industry. This team will soon expand with three additional graduate technicians to be appointed in 2016 with funding through the European Space Agency Business Incubation Scheme and the UK Knowledge Transfer Partnership scheme.
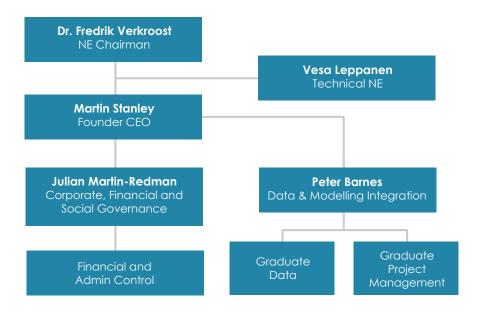
Point4's target markets are currently the UK and Ireland where the company has tendered for network surveillance contracts with DNOs worth an average of £6 million each. Point4 is currently forecast to be contracted to survey 100,000 kilometres of transmission line in 2016 and expects to expand to 134,000 in 2017. Owing to the interdisciplinary nature of Point4's work, it has established partnerships with leading service providers and consultancies including Arbonaut (Finland) who specialise on the data processing and EA Technology who are a major consultancy operating in the engineering service sector. EA Technology is a global service provider and partnership with them is expected to aid Point4's future expansion into other infrastructure sectors in the UK, Australia, New Zealand and the US.

Key members of the Point4 team include:

- **Martin Stanley** has 20 years' experience in the vegetation management industry within the utility sector. He built an arboricultural contracting and consultancy company that he sold to a FTSE 250 company. Martin also develops patented products and solutions for the utility industry which was subject to a sale with ongoing royalties.

- **Peter Barnes** is responsible for modelling and systems integration and delivery of projects. He has 25 years' experience in technology, programme, transformation and change management with global blue chip companies.

- **Julian Martin-Redman** is responsible for financial; corporate and social impact governance. He is a qualified stockbroker with 20 years' experience in building large scale technology interfaces and financial applications to bring efficiencies to complex processes.

- **Vesa Leppanen** leads the technology strategy and management of geospatial modelling. He has been in the industry 20 years, 10 years of which he spent in the US developing and patenting LiDAR processes for vegetation management that industry uses today.

- **Chairman Elect: Dr Fredrik Verkroost, C.Eng FIET FIoD** is a highly experienced CEO and Board member, having recently transformed the Unified Communications business of NEC Europe following the development and turnaround of a host of technology-based SME's – some through to IPO. He was previously deputy CEO & CCO for the Nasdaq listed mobile satellite operator ICO Global Communications, and on the management boards of Landis & Gyr / Electrowatt (now Siemens) and Square D (now Schneider-Electric). Fredrik is also a member of the IET Policy Panel for Innovation & Emerging Technologies, and a Mentor for the Satellite Applications Catapult.

The chart overleaf provides an overview of how Point4 business is structured.

Commitment to Social Value

Point4 was established to revolutionise the way in which vegetation risks to major infrastructure are managed and in doing so, to deliver significant social benefits by securing access to critical infrastructure and environmental benefits by minimising the use of aerial infrastructure surveillance without compromising on quality. Specifically, Point4's social and environmental objectives in the short term are to:

• Reduce the frequency and duration of planned and unplanned electricity outages caused by vegetation encroachment on transmission and distribution lines.

• Increase the security of electricity access for households, businesses and critical public services such as hospitals and schools.

• Increase efficiency and reduce the cost of vegetation management to electricity network operators, liberating additional funding to reinvest in improving the network.

• Reducing greenhouse gas and air pollutant emissions associated with aerial and ground based electricity network infrastructure surveillance and vegetation management.
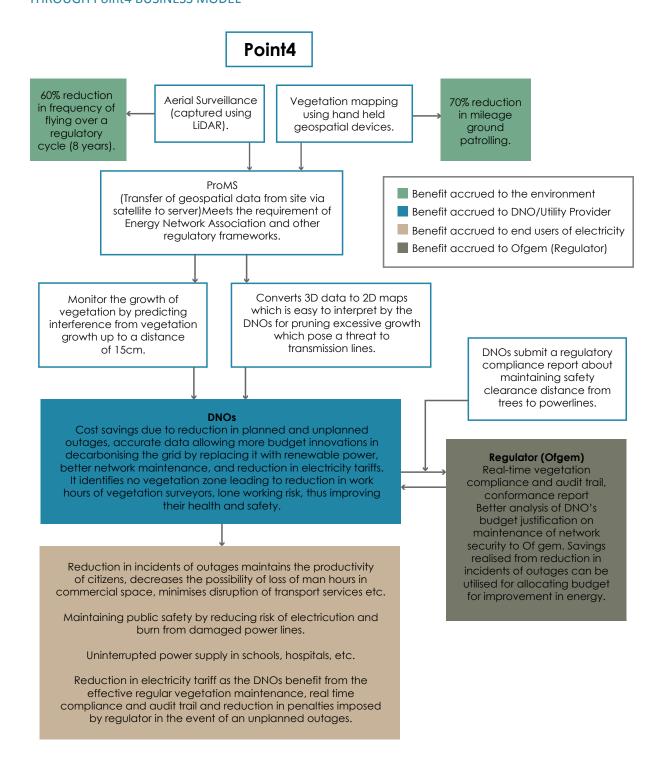
Figure 3 encapsulates the social and environment benefits achieved by Point4 activities and operations.

Point4's initial focus is on eliminating vegetation risks to the UK national electricity network. However, the use of airborne and satellite data modelling has far wider applications across the service and utility sectors, spanning rail, telecommunications, road networks and water in the UK and internationally.

Point4 is compliant with key international standards for quality, health and safety and environmental management including ISO 9001 (quality management systems); IS0 14001 (environmental management); and ISO 18001 (health and safety). This commitment to achieving high standards in these areas is reflective of the Point4 management team's commitment to ensuring that the company operates to the highest possible social and environmental standards. Point4's commitment to delivering a social and environmental impact is embedded within the company's management systems with Julian Martin-Redman taking responsibility for advancing Point4's impact objectives across all facets of the business.

Point4 commits to disclose key information about the company's environmental and social impact through its annual impact report to the Social Stock Exchange, via its website and through targeted ongoing communication with various stakeholders and investors. Point4 believes that its corporate values are closely aligned with the goals and principles of the Social Stock Exchange and looks forward to working with the Exchange to connect with investors that share its commitment to social and environmental impact reduction.

FIGURE 3: SOCIAL AND ENVIRONMENT BENEFITS TO THE VARIOUS STAKEHOLDERS THROUGH Point4 BUSINESS MODEL

2. SOCIAL PURPOSE & CONTEXT

The Challenge

Increasing rates of vegetation growth due to climate change has been identified as a major threat to the integrity of the UK power network (Energy Network Association, 2011). Furthermore, the Electricity Safety, Quality and Continuity Regulation (ESQCR) mandates that 20% of the UK electricity network be made storm resilient over a 25 year period (SP Energy Networks , 2014)These challenges are unlikely to be addressed within the limited vegetation management budget afforded to DNOs by the regulator, currently set at £100 million per annum across the sector.

The industry has yet to fully map the location of some 7 million wooden electricity poles (Point4 data), let alone identify locations of encroachment from vegetation. Such encroachment is already a major challenge for DNOs and one that is likely to aggravate further. It is widely recognized that the current process of surveying and tree-cutting is flawed in a number of key areas, including intelligence gathering, accurate recording of compliant/non-compliant sites, resources wasted surveying non problem sites and limited integration with existing systems. The auditing of safety clearances and the mismanagement of data for cyclic pruning result in unnecessary vegetation related outages that incur loss of income to the energy suppliers. As an added pressure, the regulator has recently increased the required level of annual survey by two-thirds and also introduced a storm resilience survey, with no additional budget allowance. In response to these challenges, DNOs across the UK are urgently seeking a solution to reduce vegetation management survey cost whilst simultaneously increasing the scope and quality of available survey and audit information. Access robust, timely and high quality survey data is critical to effective transmission network management and the minimisation of electricity supply interruptions.

In March 2014, DNOs re-submitted RIIO – ED1 to Ofgem for the current regulatory period 2015-2023 and it is estimated that Ofgem will be looking at spend of over £940 million for vegetation management over the 8 year period (Western Power Distribution, 2013). Under current management systems achieving compliance with this budget will not be possible. UK Government documents obtained under the Freedom of Information Act 2000 documents demonstrate that under the current vegetation management budget of £100 million per annum, vegetation related faults on the network are projected to increase at a rate of 34.8% per annum (Kingdom, 2015) .

Currently vegetation surveys are carried out by foot patrols but with LiDAR data becoming more accessible there are opportunities to attain a more accurate, cost effective view of electricity companies' tree stock. This information alongside scientifically captured LiDAR data can support the evidence of safety compliance on the networks. As stated above, LiDAR collects vegetation data in the form of 3D maps, which if captured scientifically can identify hot spots (high risk zone), where vegetation encroachment could potentially overrun the transmission line causing outages. The main restriction using LiDAR data for vegetation management is that this data is static in time, but the subject matter (vegetation) is constantly changing as the vegetation grows. This problem has limited the application of LiDAR data to vegetation management to date.

Point4 has overcome this challenge through the development of novel predictive vegetation growth techniques that build upon static LiDAR data to monitor vegetation growth over time. Two LiDAR data sets taken 12 months apart and overlaid shows growth over the same period, which proves pivotal in predicting the growth. Key to the service is the transfer in real time, of on ground geospatial captured data points (safety clearance distances) via satellite to update a server of network safety compliance. This will allow the monitoring of growth and ultimately eliminate vegetation

related outages. The system can use the data for budget analysis, a valuable tool for DNOs and TOs justifying spend to Ofgem for maintaining network security and public safety. Flexibility of being able to report compliance data in real time gives the product scalability with allied industries rail, highways and water companies all of which face similar challenges with compliance and security of infrastructure. Table 1 highlights the social and environment benefit derived from the use of Point4 system.

TABLE 1: ALIGNMENT OF OUR BUSINESS WITH OUR SOCIAL AND ENVIRONMENTAL IMPACT GOALS

WHAT WE DO	HOW DOES THIS CHANGE BUSINESS AS USUAL VEGETATION MANAGEMENT?	HOW DOES THIS BENEFIT THE ENVIRONMENT AND SOCIETY?
Point4 helps UK electricity Distribution Network Operators (DNOs) to more effectively manage risks to the electricity network due to vegetation – a key cause of network outages and facilitates vegetation audit as a compliance measure mandated by Ofgem. Point4 achieves this though: • Efficient aerial and ground surveillance of electricity lines to map surrounding vegetation • Precision modelling of future vegetation growth to pinpoint locations where vegetation may interfere with networks in the future. • Providing timely and accurate data to DNOs to help them efficiently plan and target vegetation management on their networks. • Real time monitoring of safety clearance distance for vegetation data via satellite and formulation of regulator compliance reports.	60% reduction in aerial electricity line surveillance.	Reduced greenhouse gas and air pollutant emissions from vehicle operation.
	70% reduction in ground patrolling of electricity lines.	
	100% reduction in unplanned network outages phased over three years due to vegetation interference.	More efficient planning and execution of vegetation removal – targeting the locations likely to interfere with the network.
	50% reduction in the duration of planned network outages due to vegetation removal.	Reduced hours without electricity for customers.
	More efficient planning and execution of vegetation removal – targeting the ocations likely to interfere with the network.	Lower costs to DNOs enabling the liberation of new funding for re-investment in network improvement, decarbonising the electricity grid mix.
	20% reduction in costs to DNOs due to accuracy of vegetation growth data and reporting to regulators.	

Mission

Point4's mission is *"to deliver the technology and data needed by infrastructure network operators to effectively manage vegetation risks leading to improved infrastructure security and reductions in environmental impacts for infrastructure survey operations"* .

Point4's patent pending technologies for forecasting results in significant emission reductions on data collection and vegetation management by:

- Reducing aircraft data capture by 66%

- Reducing vehicle site visits by 70%

- Reduced mismatched information by 20%

- Reduce DNO back office processing 100%

- Remove up to 4 month time lag from site survey to contractor work instruction

- Reduces year on year physical maintenance cost 25%

- Improving regulatory compliance year on year across the utility and service sectors

- Reduced fines allow for enhanced investment into vital services

For the first time the technology will be used in the field creating a new generation of work regimes and desirable jobs.

Point4 takes its social and environmental impact seriously despite being a small business. While Point4 does not currently have a social impact committee, the company has appointed a board member with responsibility for ensuring that Point4 delivers on its social and environmental commitments. Point4's strong commitment to its social and environmental goals, combined with the support of its advisors and encouragement from customers to meet the highest international standards, Point4 is ideally positioned to deliver on its goals and avoid mission drift over time.

Organisational Strategy and Alignment with Social and Environmental Purpose

Point4 was established to address the challenge of inefficient management of vegetation risks to critical infrastructure and alleviate the negative social and environmental impacts that result from this. Whilst Point4's core business model is to serve as an enabler of more efficient and effective vegetation management by electricity DNOs initially, and other infrastructure operators in the future, this connects directly with the social and environmental benefits it aims to achieve. Better risk management by its clients helps to reduce the frequency and duration network interruptions and the social impacts that result from this, and more efficient vegetation management reduces greenhouse gas and air pollutant emissions by minimising the need for aerial and ground based infrastructure surveillance. As such, future development of Point4's technology and the expansion of its business will naturally increase the social and environmental impact we can create in the future. Point4 has also adopted a series of measures to ensure that the company remains true to its social and environmental values, and will build upon this into the future. Point4 has nominated a board member with responsibility for leading the company's social and environmental impact strategy and the senior management team is fully committed to delivering on this. Point4 will ensure that the monitoring and delivery of its target impacts is considered regularly at the board level and Point4 has pursued ISO accreditation under various standards relating to health, safety and the environment which aids in formalising its commitment to creating a positive impact. These initial measures will expand and develop as the company grows, as will the specific commitments discussed in Section 6, to ensure its delivery of social and environmental impact grows as the company expands in the future. Furthermore, Point4 aims to be an active member of the Social Stock Exchange, seeking opportunities to learn from other listed companies to increase its positive impact and regular disclosure of impact targets and achievements to investors, stakeholders and the public.

3. WHO BENEFITS?

Point4 aspires to be an equitable and sustainable business that shares its success with all those participating in the value chain, society and the environment. The following section describes the key beneficiaries of Point4's activities and the ways in which they benefit:

Electricity Customers

Electricity distribution in the UK is divided into fourteen licensed distribution areas which are managed by seven DNOs that maintain over 300,000 km of transmission and distribution lines (Energy Network Association , 2011). Across the UK network, an average of 21,646 network interruptions (Western Power Distribution, 2013) (Change, 2014) (Ofgem, 2012) (Western Power Distribution) occur each year specifically for the purpose of removing vegetation that is encroaching on the overhead transmission lines (OHL). In addition to this, numerous unplanned outages occur each year in the UK due to storms and other unforeseen incidents. Loss of access to electricity can cause significant economic and social costs, both directly (such as loss or damage of products or assets e.g. spoiled food due to lost refrigeration) and indirectly (such as lost time and productivity at work and schooling). The UK Royal Academy of Engineering estimated in 2014 that the total average direct and indirect cost of one hour of electricity outage in the UK could range from £6,500 in winter to £5,700 in summer (off-peak) per megawatt hours (Engineering, 2014) Electricity outages can impact significantly on key community services such as hospitals, schools, water and sewage utilities, and transport, and also impact upon basic individual needs for energy for cooking, heating and lighting. Key examples include:

- A catastrophic power cut in London in 2003 caused major chaos disrupting rail and tube services and plunging commuters in darkness. Approximately 1800 trains and 250,000 people were affected (Power cut causes chaos, 2003).

- In 2015, thousands of travellers were severely inconvenienced due to an electricity failure at Heathrow Airport that disables the electronic baggage system (guardian, 2015).

According to the Blackout Tracker published by Eaton (EATON, 2014) the number of power outages in the UK has more than doubled in the past year, indicating that electricity supply disruption remains a significant challenge in the UK.

Point4's vegetation management systems enable UK DNOs to more effectively and efficiently manage vegetation risks to the networks they operate by predicting areas of the network that are likely to be at risk due to vegetation and streamlining the process of removing risky vegetation before an unplanned outage occurs. This technology has great potential to significantly reduce the number and duration of planned and unplanned electricity outages in the UK by enabling more efficient targeting of vegetation clearance work to the precise locations where it is needed. Table 2 presents estimates the number of Customer Minutes Lost (CML) that can be avoided each year through the use of Point4's ProMS system. CML is an indicator of the reliability of electricity networks, representing the duration of electricity supply interruption (in minutes) experienced by customers in a year. In the early years of operation, Point4 aims to reduce the occurrence of planned and unplanned outages by 50%, with a longer term goal of entirely eliminating planned outages through better risk management and planning.

The CML avoided by the use of Point4 technology was calculated to be 292,068,000 minutes during the regulatory cycle and 36,508,500 minutes during 2016 and 2017 respectively.

TABLE 2: CML AVOIDED DUE TO REDUCTION IN INCIDENCE OF OUTAGES BY THE USE OF Point4 TECHNOLOGY

SCENARIO	TARGET MARKET	ESTIMATED CUSTOMER MINUTES LOST (CML) PER KM PER YEAR DUE TO VEGETATION ENCROACHMENT	ESTIMATED CML LOST ON SURVEYED NETWORK (MINUTES)	REDUCTION IN CML PER ANNUM DUE TO REDUCED OUTAGES ASSOCIATED WITH THE USE OF THE Point4 SYSTEM	CML AVOIDED BY Point4 SYSTEM (MINUTES)
Life cycle of the project (8 years)			584,136,000		292,068,000
2016	UK	730	73,017,000	50%	36,508,500
2017			73,017,000		36,508,500

Key Assumptions

- The Estimated Customer Minutes Lost (CML) per kilometre per year due to vegetation encroachment is the Minutes lost per customer due to vegetation outage (7.3) times the total number of customers purchasing electricity in the UK (29,925,000) divided by the total length of the network (300,000km)

- The total CML avoided was calculated by multiplying the average CML lost per kilometre per annum, with the total length of network that Point4 is contracted to monitor in each year (100,000km). The Point4 system is assumed to be 50% efficient in reducing the incidents of an outage.

The Environment and Public Health

Under current Ofgem regulations, TOs and DNOs are required to survey the transmission and distribution lines they operate annually to identify vegetation risks over an eight year regulatory cycle. This surveillance is typically undertaken using a combination of aircraft, typically a small helicopter, and ground staff on foot or in vehicles. Surveys of the entire 300,000km UK electricity transmission and distribution network requires aircraft operation over long periods every year, resulting in significant emissions of greenhouse gasses (contributing to climate change) and air pollutants (such as particulate matter and nitrogen oxides which are harmful to public health). Air pollution is a significant environmental health hazard that was responsible for over 3.7 million premature deaths globally in 2012 (WHO, 2014)Fossil fuel combustion is a significant source of air pollutant emissions to ambient air, which can be transported by wind to impact on the health of individuals living far from the source.

Adoption of the Point4 system enables the frequency of aerial survey flights to be reduced by 75%, with flights only operated in the first and third year of the regulatory cycle and vegetation growth modelled over the remainder of the cycle. Table 3 presents the annualised net greenhouse gas emissions and air pollutant emissions avoided through reduced frequency of aerial surveillance under the Point4 system. These estimates have been calculated by estimating the greenhouse gas and air pollutant emissions associated with annual survey flights over the regulatory cycle, and comparing this to the emissions associated with Point4's survey system per kilometre of transmission line. The net emissions reduction was then multiplied by the total length of transmission line that Point4 has been contracted (or forecast to be contracted) to monitor each year. Emissions from the operation of the surveillance helicopter were estimated based on life cycle inventory data for an average light helicopter as published in the Ecoinvent database (Weidema, et al., 2013)

As shown, it is estimated that under current contracts awarded to Point4, greenhouse gas emissions in the UK and USA will be reduced by an average of 370 and 387 tonnes of CO_2e per regulatory cycle of eight years respectively. Furthermore, annualised air pollutant emissions are estimated to be reduced by 0.20 tonnes of NO_x, 1.21 tonnes of SO_x, 0.32 tonnes of PM10 in UK and 0.21 tonnes of NOx, 1.26 tonnes of SO_x and 0.33 tonnes of PM10 in US.

The prevalent method of surveying involves foot patrolling. The Point4 system can reduce emissions by 70% on current surveying operations but the headline benefits are reducing emissions from power generation. Power stations can't store electricity under outage conditions and all electricity lost during these periods result in unnecessary emissions being produced. Under current Ofgem regulations, DNOs are required to survey transmission lines once per annum over an eight year regulatory cycle. Survey flights are typically undertaken via a light helicopter, with support from foot patrols. Adoption of the Point4 system enables DNOs to undertake a superior standard of surveillance by only requiring surveillance flights in the first and third year of the regulatory cycle, thus reducing the number of flights by 75%. Similar reductions in annualised harmful air pollutant emissions are also forecast in both the USA and UK markets.

TABLE 3: ANNUALISED NET GREENHOUSE GAS AND AIR POLLUTION EMISSIONS AVOIDED THROUGH REDUCED AERIAL SURVEILLANCE FLIGHTS OPERATED UNDER THE Point4 SYSTEM.

SCENARIO	TARGET MARKET	ANNUALISED NET AIR POLLUTANT REDUCTION DUE TO REDUCED SURVEY FLIGHT FREQUENCY (TONNES)			ANNUALISED NET GHG REDUCTION DUE TO REDUCED SURVEY FLIGHT FREQUENCY (TONNES)
		NO_2	SO_2	PM_{10}	CO_2e
Life cycle of the project (8 years)	UK	0.20	1.21	0.32	370.44
First year		0.02	0.15	0.04	46.31
Life cycle of the project (8 years)	US	0.21	1.26	0.33	387.11
First year		0.03	0.16	0.04	48.39

Key Assumptions

- Life cycle greenhouses gas emissions per hour of helicopter operation used in aerial surveillance of transmission lines was estimated based on data extracted from the Ecoinvent database (Weidema, et.al.,2013), applying the ReCiPe impact assessment methodology (Goedkoop M., 2009).

- Life cycle air pollutant emissions per hour of helicopter operation used in aerial surveillance of transmission lines was estimated based on data extracted from the Ecoinvent database (Weidema, et.al.,2013), applying the ReCiPe impact assessment methodology (Goedkoop M., 2009).

- Speed of the helicopter was assumed to be 110 kilometer per hour per hour for calculating the distance flown for surveying OHL of 100,000 km (Point4 data)

- The UK electricity network regulatory cycle is eight years and the benefits presented represent the average annualised benefits over this eight year cycle.

Electricity Network and Utility Operators

Cost savings from reduction in network outages

DNOs have a statutory obligation to maintain a safety clearance between overheated electricity distribution lines and surrounding vegetation, and it is recognised that this activity represents a significant drain on a substantial proportion of their budget. Understanding the growth rate of vegetation is paramount to maintaining this safety clearance, but is challenging using conventional vegetation management methods. The average cost to the DNO of a network outage is approximately £1076 (CN Utility Consulting, 2011), and thus outages can present a significant cost to DNOs when they occur frequently. This direct cost includes personnel expenses, vehicle operation, the use of mobile elevated working platforms and back-up electricity generators, in addition the engagement of a vegetation management company to survey, consent and carry out cutting operations. The DNO is required to pay compensation to customers affected by an outage.

A range of factors are expected to drive an increase in the cost of vegetation management to DNOs in the future:

- Changes in climatic conditions are expected to extend the growing period for vegetation in the UK to up to 328 days a year (MET office), increasing the requirement to remove vegetation to maintain safety clearances.

- Overcapacity in the UK electricity sector is leading to overheating in the transmission lines resulting in the lines 'sagging' and further reducing the safety clearance from vegetation.

- Pressure to increase the storm resilience of the UK electricity network is likely to increase the need to remove vegetation with high risk of damaging transmission lines during a storm (The Electricity Safety, Quality and Continuity (Amendment) Regulations, 2006).

Each of these factors is likely to increase the need, and consequently the cost, of vegetation management for DNOs. Increasing vegetation management costs are likely to reduce the funding available to invest in improving and strengthening the UK electricity network. A recent report by the Royal Academy of Engineering (Royal Academy of Engineering, 2015) suggest that investment of over £200 billion will be required over the next 10 years to update and decarbonise the UK electricity network, and thus opportunities to more cost effectively maintain the network are highly demanded by DNOs.

The Point4 ProMS platform offers a cost effective solution for DNOs to more efficiently manage vegetation risks and reduce the incidence of both planned and unplanned network outages. As noted, Point4's goal in the short term is to enable a reduction in the number of outages by 50% with an ultimate long term goal of eliminating outages completely. This will help to significantly reduce costs to the DNOs and liberate additional funding for much needed reinvestment in the quality of the electricity network. This may also contribute to controlling the cost of electricity to customers, 16% of which is currently directed to the maintenance and upgrading of network infrastructure (UK Power Networks, 2015)

Table 4 outlines the estimated cost savings to DNOs associated with a reduction in planned and unplanned outages by 50% through the use of the Point4 ProMS system. The number of outages avoided were calculated as described above and costed at an average of £1076 per outage (CN Utility Consulting, 2011). The use of Point4 system would enable saving of £31 million during the regulatory cycle and £3 million during the first year of operation.

TABLE 4: COST SAVING (IN MILLION POUNDS) REALIZED FROM REDUCTION IN OUTAGE

SCENARIO	TARGET MARKET	AVERAGE COST OF OUTAGE PER KM(IN POUNDS)	ESTIMATED COST TO REPAIR VEGETATION RELATED FAULTS ON SURVEYED LINES	REDUCTION IN VEGETATION RELATED FAULTS DUE TO POINT4 SYSTEM	NET COST SAVING (IN POUNDS) BY DNO
Life cycle of the project (8 years)	UK	78	£621,10,163	50%	£31,055,082
First year			£7,763,770		£3,881,885
Second year			£7,763,770		£3,881,885

Key Assumptions

• The average incidence of electricity outage per kilometre of transmission line was estimated by dividing the total number of outages in 2014 by the total length of the network 300,000km. Total incidents of outage were sourced from Ofgem, 12% of those were assumed to be due to vegetation growth.

• Total cost savings to DNOs were estimated based on a Point4 estimate of the average cost to the DNO per outage (£1076 per outage).

• Estimated cost to repair vegetation related faults on surveyed lines is the product of average cost of outage per kilometres times the total area surveyed by the Point4 system. Point4 estimates that outages can be reduced by 50% through the use of the ProMS system to estimate the total cost saved by reduction in vegetation related faults.

Ofgem allows the DNOs a restricted number of Customer Minutes Lost, where exceeded, the fines can be imposed on the DNO equivalent to up to 10% of revenue (Ofgem, 2015). In 2013, two of the UK DNOs, reported 505 unplanned outages 17% of which were caused by vegetation (Eaton, 2014).

The DNOs came under fire for responding too slowly to the outages at Christmas and for failing to communicate with consumers effectively in an Energy and Climate Change Committee hearing where Tim Yeo MP accused the DNOs of "utter complacency" and an "astonishing" degree of neglect of their customers (201437, n.d.). For many members of the public, this was the first time that DNOs had been in the spotlight regarding security of supply. Ofgem was also criticised for its failure to ensure that the DNOs responded effectively to the incident. This case study therefore reveals the potential pressure which blackouts can place onto operators and regulators. The Regulator has recently increased fines for customer interruption by three fold. A large scale black out in 2003 cost society in the US and Canada $8 billion (CRO forum, 2012). Inadequate vegetation management was the major contribution factor for the blackout. It is estimated that vegetation related faults in the US today is a $120b annual problem. Point4's system can identify interference to OHL to a distance, even less than 15 cm and also has the ability to report compliance data in real time, which can direct the ground surveillance team to high risk areas. This prevents the occurrence of any unwanted outage due to vegetation growth and also removes the 4 month time lag from site survey to contractor work instruction. In addition, there will be 20% saving on the accuracy of data captured.

Operational efficiencies of DNOs

The Point4 system also creates a range of operational efficiencies for the DNOs which may contribute to reducing costs and improving services to customers, as described below.

- **Improved Ofgem Compliance Reporting:** Ofgem relies on accurate data from the DNOs to monitor performance and also to set revenue allowances at the start of the price control period. Ofgem requires that companies take full responsibility for submitting accurate data and prioritise the establishment and maintenance of appropriate systems and processes to ensure compliance with the licence. Directors of DNOs have to sign off high-risk areas of work. At present, there are not enough robust audit systems in place to protect the Directors from liability. Point4's system will scientifically demonstrate vegetation compliance with greater accuracy than is possible with current systems that are not able to capture high-risk trees.

- **Reduction in Lone Working, Patrolling and Associated Costs:** A key output of the Point4 system is the differentiation of transmission and distribution line areas affected by vegetation and areas unaffected by vegetation. Vegetation infestation can vary from 4% to 54% per km. If we take an average figure of 30% vegetation infestation per km, then Point4 can easily and scientifically identify 70% of the network where no trees or vegetation exist. This means that 70% of the network does not have to be walked by vegetation surveyors. For a network of 300,000 km, this means that 210,000 km of network do not have to be walked by vegetation surveyors saving man-hours, lone working risk, vehicle hire, and fuel.

- **Refurbishment Outage Planning Efficiencies:** The Point4 system identifies all vegetation that is within close enough proximity to the transmission line as to require an outage to allow safe vegetation removal. The system can accurately pinpoint the location of each tree and the section or span of network where it is located. Ofgem states that 31% of all outages are tree related, so reducing these outages by as little as 25% would deliver a considerable benefit to UK electricity consumers and the DNOs. With appropriate use of a combination of data, programming and cross referencing, a 100% reduction of tree related CML could be achieved.

- **Ongoing Network Improvement and Compliance:** The Point4 system's predictive growth modelling capacity will enable DNOs to achieve a new level of efficiency in work programming. The use of handheld laser measuring and geo-reference tagging of locations creates two primary triggers of efficiencies and savings. A tree worker cannot leave site until the site is cut and checked via laser; and the ability to capture images of finished sites means a quality audit can be captured on every site, this can also be linked to contractor payments. The hand-held tool that captures the new cut / tree safety clearance can then update the Point4 system with compliance clearance and reprogram the date for the next cut prior to an outage requirement.

- **Data Collection Accuracy:** Case studies have identified that there is a 20% mismatch between data collected by conventional aerial and ground transmission line patrolling. This is primarily down to non-overlap of images in the captured data. Sometimes data is captured by pen and paper and sometimes on hand held tablets. When the data is pulled together in the back office for processing, site numbers, pole numbers, work specifications and images are not always matched up. This would sometimes only come to light on the day of the programmed work and if these sites were subject to outages there would be far reaching effects and work operations sometimes cancelled.

- **Reduce In-Field Data Capture Costs:** A two-year case study of a DNO with over 40,000 end users showed that using handheld GPS devices (such as those used by Point4) for capturing onsite data delivered 50% savings in data capture costs compared to traditional survey and data capture. This was attributed to the fact that all the data is captured in one place, including laser measuring, work specifications, images, time and date stamping and geo tagging. The case study identified that these savings were associated with field workers not having to return to site to recheck previously captured data, i.e. site number, pole numbers or tree numbers. Although the requirements for survey data collection vary from company to company, in this case it was found that two surveyors could now do the same work, to a higher standard, as 12 surveyors.

- **Elimination of Back End Data Entry:** Conventional survey methods typically require the manual upload of survey data to servers resulting in additional work load and long-time lags (up to four months) before updated survey data is made available for use. As a connected and integrated system, the Point4 system eliminates the need for back end data processing, improving efficiency and improving accuracy.

Competitive Advantage

Point4 operates in a highly competitive market, where a number of smart technologies are already available to the DNO market. However, none provides a fully integrated survey, management audit system that is capable of fully replacing the existing processes used by the DNOs. Point4 has a number of key competitive advantages that will aid the company in achieving its commercial goals along with social and environmental impact objectives:

- **Cost effective Proprietary Platform Solution:** Point4's ProMS system is the only platform which provides cost effective solution to reduce vegetation related outages and managing safety compliance in real time via satellite. The system provides the flexibility to be able to report compliance data in real time and is both scalable and adaptable to other infrastructure sectors, such as rail, highways and water utilities, all of which face similar challenges in regulatory compliance and infrastructure security. The system also facilitates significant improvements in data accuracy and assurance compared to conventional approaches used by DNOs.

- **Intellectual Property Rights:** 'Point4's system is based upon patent pending technology.

- **Established Partnerships:** Point4 has established partnership with suppliers such as Arbonaut Oy of Finland who work on the data processing, contractors and EA Technology, a major consultancy operating in the service sector space which will help Point4 to access the UK, Australia, New Zealand and US markets.

- **Reduced Survey Requirements:** The Point4 system enables the frequency of network survey flights to be reduced by 75%, delivering significant benefits in the reduction of survey costs and emissions from survey vehicles.

4. ACTIVITIES & OPERATIONS

Point4 Core activities

Point4 undertakes a range of activities in the implementation of its business model that is closely aligned with, and complimentary to, it's social and environmental objectives.

- Conducting vegetation management surveys using LiDAR equipped aircraft and ground patrol teams to collect data on vegetation risks to electricity infrastructure.

- Vegetation growth modelling to identify locations at high risk of vegetation encroachment over time.

- Transfer, storage and processing of LiDAR data into ProMS database and delivery to customers in an easily accessible format that supports effective decision making, planning and compliance reporting.

- Research and development into data capture and processing techniques with support from the UK Knowledge Transfer Partnership scheme and the European Space Agency Business Incubation Programme.

- Business development and negotiation of long term contracts with potential clients and partners. For example, Point4 will be providing vegetation risk data to EA Technology for integrating into their 'Condition Based Risk Management' system which will boost the company's presence in UK, Australia, New Zealand and the US.

- Monitoring and measurement of the environmental, social and economic benefits delivered through the use of Point4 services.

Linking Business Activities to Social Outcome

TABLE 5: LINKING BUSINESS ACTIVITIES WITH SOCIAL AND ENVIRONMENTAL OUTCOMES

ENGAGEMENT WITH BENEFICIARY	ACTIVITIES	OUTCOMES (OR CHANGES EXPECTED) FOR BENEFICIARIES
Utility Network and Infrastructure Operators Point4 works closely with UK electricity network operators (and in the future, other infrastructure operators) to capture, process and deliver the data needed by these organisations to effectively and efficiently manage vegetation interference with their networks.	Aerial and ground based network surveys and data capture. Data processing and predictive vegetation modelling to locate vegetation risks in space and time. Delivery of timely and readily useable information for decision making through the ProMS system	• Increased business efficiency and cost saving by reduction in planned outage and elimination of unplanned outages • Improved network maintenance • Improved data accuracy and reliability • Improved health • Improved health and safety for DNO staff through better targeting of vegetation management works and reduced need for risky lone work in remote environments.

ENGAGEMENT WITH BENEFICIARY	ACTIVITIES	OUTCOMES (OR CHANGES EXPECTED) FOR BENEFICIARIES
Electricity Consumers While Point4 does not work directly with electricity customers, they benefit indirectly from the improved security of the electricity network through a reduction in customer minutes lost due to planned and unplanned outages.	Aerial and ground based network surveys and data capture. Data processing and predictive vegetation modelling to locate vegetation risks in space and time. Delivery of timely and readily useable information for decision making through the ProMS system	• Reduced impairment of critical community services (such as hospitals and schools) due to electricity outages. • Reduced economic losses due to business interruption and productivity losses associated with electricity outages. • Improved access to electricity for essential household cooking, heating and lighting applications.
The Environment and Public Health Point4's technology reduces the need for long distance aerial surveillance of electricity transmission lines leading to a reduction in greenhouse gas and air pollutant emissions.	Partial displacement of aerial surveillance flights with vegetation modelling.	• Reduced emissions of greenhouse gasses that contribute to climate change. • Reduced emissions of air pollutants that are harmful to both human health and ecosystems. • Reduction in noise pollution associated with aerial surveillance flights.
The Electricity Network Regulator Point4's services indirectly benefit the regulator (Ofgem) by enabling DNOs to more accurately report data on the status of the electricity network – providing better information on which to base regulatory decisions	Provision of a real time vegetation compliance data feed and audit trail.	• Better analysis of DNO's budget justification on maintenance of network security to Ofgem. • Accurate data from the companies in order to monitor performance and set revenue allowance. • Greater adherence to norms and reduced outages maintains public faith in the regulator.

5. STAKEHOLDERS

Identification and Engagement with Stakeholders

In addition to the broad range of beneficiaries of our business, Point4 has a range of key stakeholder groups. Point4 aims to interact and engage with its stakeholders in the course of its business through formalized processes and more informal interactions, in order to ensure the success of the business and the delivery of social and environmental objectives. These stakeholders both impact and are impacted by Point4's operations.

STAKEHOLDER	DESCRIPTION AND ENGAGEMENT
Utility Network and Infrastructure Operators	DNOs represent Point4's primary customers and target market. Point4 is in continuous two-way communication with the DNOs to better understand their requirements and improve the quality of its service. Point4 also seeks to understand the challenges faced by our DNO customers and the regulatory demands placed upon them. To this end, Point4 has designed the ProMS system to be compliant with the requirements of the regulation and structured around the Energy Networks Association Engineering Regulations (G55/2). This helps to ensure that Point4's services can interface effectively with the internal systems of the DNO and with other service providers contracted by the DNO. Point4 also aims to engage with the DNO directors and put in place a robust audit system to protect the Directors Liability. To date, Point4 has initiated discussions with DNOs including UK Power Networks, Scottish Power Energy Networks and Electricity Supply Board Republic of Ireland, with a view to initiating new trials of the company's technology.
Point4 Staff	Point4 employs a small team of staff with diverse skills sets ranging from management and financial, through to technical capabilities. Point4's staff are one of its most important stakeholders and are key to the delivery of its services to customers and to the delivery of its social and environmental impact goals. Point4 is currently participating in the UK Knowledge Transfer Partnership scheme to work with new graduates researching and developing new technologies, whilst providing the graduates with an opportunity to develop professionally and gain experience in the commercial context. Point4 has also secured funding and have been asked to participate in Business Incubation Programme to train graduates and nurture innovation in the industry. As the company grows, Point4 aims to develop an organisation culture that reinforces our corporate values and encourages its staff to advance the company's social and environmental objectives.
Investors	To date Point4 has been funded through its research and development phase by the founder Martin Stanley and one external investor. Point4 is currently going through a further funding stage and commits to publish electronically a quarterly update on financial, corporate and social impact governance for its investors.
Partners	Point4 works in partnership with other suppliers such as Arbonaut Oy of Finland who work on the data processing and EA Technology, a global engineering services company. Point4 seeks to cultivate partner relationships that are mutually beneficial where partners can contribute their strategic advantages whilst leveraging the advantages of Point4 to pursue new business opportunities.
The Electricity Network Regulator (Ofgem)	Point4 has held initial discussions with key personnel working on electricity network regulation at Ofgem and intends to further develop this relationship in the future.

Addressing Stakeholders' Needs:

Point4 demonstrates its commitment to all stakeholders through its compliance with International Standards where applicable, and its commitment to good corporate governance and transparency. Point4 also aims to become an active member of the Social Stock Exchange and audit its commitment to social responsibility on an annual basis.

Point4 works within very tight guidelines when tendering for business which require exacting standards and commitments to continually developing those standards. The required structure in gaining business is translated into its organizational framework giving all stakeholders the confidence that it adopts high principles and creates a socially responsible ethos.

In addition its modelling and risk management processes are continually enhanced to eliminate power outages; reduce health and safety issues in vegetation management; reduce disruption to key social services and reduce carbon emissions in the collection of data and the physical process of cutting vegetation.

Currently Point4 is in an early stage of development and as such, is still undergoing the process of developing its corporate governance systems and the strategy through which it engages with stakeholders to understand and respond to their needs. In future impact reports, Point4 will assess the views and impact on their stakeholders in more depth and report them appropriately. Point4 believes that stakeholder perspectives are intrinsically linked to the business strategy. It will be ensured that engagement is not an end in itself but a means to a process of continued dialogue.

6. EVIDENCING SOCIAL VALUE

Point4 is a start-up company and has not yet had the opportunity to collect primary data on the social and environment benefits of our services. As such, for this first impact report Point4 has sought to model its expected social and environmental benefits based on robust methods and publically available datasets. These modelled impacts have also been used to set future impact targets. In future reports, Point4 will endeavor to report real world data on its social and environmental benefits and has outlined a strategy to improve its impact reporting and data collection protocols in the following section.

Evidencing Social and Environmental Value

BENEFICIARY	OUTCOME	INDICATOR	TARGET				SOURCES
Community	Reduction in customer interruption	Customer minutes lost avoided per annum through more effective vegetation management using Point4's ProMS system (minutes).				48,921,390	(Western Power Distribution, 2013) (Change, 2014) (Ofgem, 2012) (Western Power Distribution) (CN Utility Consulting, 2011), Point4
DNO	Cost saving due to reduction in incidents of outage	Electricity outage restoration costs to DNOs avoided through more effective vegetation management using Point4's ProMS system (in £million).				5.2	(Western Power Distribution, 2013) (Change, 2014) (Ofgem, 2012) (Western Power Distribution), Point4
Environment	Contribution To Combating Climate Change by Reducing Greenhouse Gas Emissions	Average annualized net greenhouse gas emissions (in metric tonnes) avoided per annum over the regulatory period through reduced requirement to operate aerial survey flights.	UK			90.8	Point4 Data** Ecoinvent Database (Weidema, et. al., 2013)
			US			70.7	
Public Health	Reduced Health Risks Associated With Exposure to Air Pollution	Average annualized net air pollutant emissions (in metric tonnes) avoided per annum over the regulatory period through reduced requirement to operate aerial survey flights.	Country	NO_x	SO_x	PM	Point4 Data** Ecoinvent Database (Weidema, et. al., 2013)
			UK	0.05	0.3	0.08	
			US	0.04	0.23	0.06	

*Total area to be surveyed in 2017 = 134,000 km

Current Management

Point4 was established with the purpose of enabling the utility and service sectors to design efficient strategies to eliminate power outages, reduce regulatory compliance costs and create environmental, social and business efficiencies. Point4 is always looking for ways to be efficient in eliminating power outages; reduce health and safety issues in vegetation management; reduce disruption to key social services and reduce carbon emissions in the collection of data and the physical process of cutting vegetation, by continuously innovating to improve its services through ongoing research and development.

Point4 is a newly established start-up business and is only now commencing full-scale commercialisation of its services. Point4 does not yet operate a social impact committee, but has appointed a board member responsible for corporate, financial and social governance and will endeavor to expand its formal processes and organizational structures for impact monitoring in the future. Point4 also adheres to the principles of various International Standards such as ISO 9001 (quality management system), ISO 14001 (environmental management); and ISO 18001 (health and safety) which echoes its attitude towards corporate governance and communication with all stakeholders.

Future Commitments

Point4 strives to continuously improve its processes for monitoring and managing its social and environmental impacts. Point4 plans to expand rapidly over the next few years in different markets and will invest in improving its monitoring and reporting capacity to improve robustness and verifiability. Specifically, Point4 plans to undertake the following actions in the next year to improve the monitoring of its social and environment benefits:

- **Understanding Our Social and Environmental Footprint:** While Point4's services and operations deliver an environmental and social net benefit, it is inevitable that a business operating at scale will impose some negative social and environmental impacts. Point4 commits to investigate the feasibility of undertaking targeted research to develop a thorough understanding of its social and environmental footprint and the net benefits delivered by our services. Point4 commits to undertake the following initiatives in this area:

  - Investigate the feasibility of undertaking an operation and supply chain environmental and social footprinting exercise to identify the source of any negative externalities and to identify priority areas of the business for investment to deliver improvements to its social and environmental performance. This will also enable Point4 to more accurately report on the greenhouse gas and air pollutant emissions avoided through the replacement of conventional technologies with the Point4 system.

  - Evaluate the scope 3 greenhouse gas emissions associated with Point4's reliance on data centres, and to identify opportunities to improve the environmental efficiency of these centres.

Point4 makes the following future commitments to improve its impact monitoring and reporting capacity in the longer term:

- **Set quantitative and time-bound targets for future impact** based on measured impact data by identifying key performance metrics to guide the collection of monitoring data and robust future sales projections. The targets presented in this first impact report are based primarily on modelling and will be refined in future years based on improved access to real-world monitoring data.

- **Adoption of new measurement methods** to enable the quantification of broader range social and environment impacts, such as reduction in incidences of unplanned outages, numbers of customers benefitted, increase in the duration of electricity per kilometre, keeping a track of money (saved by use of Point4 service) diverted by DNOs in public welfare measures such as improving network security by boosting the existing energy infrastructure.

7. OTHER SUSTAINABILITY AND REPUTATIONAL ISSUES

While Point4 endeavours to maximise the net positive environmental and social impact it creates, it is possible that the company's operations may generate some negative externalities as discussed below.

Damage to Natural Ecosystems and Vegetation

Point4 is in the business of improving the effectiveness and efficiency of vegetation management, which naturally involves damage to natural vegetation through cutting and removal of encroaching trees. While this may cause some local negative impacts on the local environment, these are offset through the broader environmental and social benefits created through improved vegetation management.

Although there are regulatory guidelines to follow in maintaining a safe clearance between vegetation and an overhead power line, it is also understood that there is a balance to maintain with social and environmental impacts. This approach is consistent with the view highlighted in the report 'Electricity Networks Climate Change Adaption Report 2011' published by the Energy Networks Association (Energy Network Association, 2011), which notes that *"it is not always possible and is both socially and environmentally unacceptable to remove all vegetation in proximity to overhead lines"* and goes on to say *"it is important to understand the growth rates of different types of vegetation with respect to the environment at the location and able to assess the risks posed by the proximity of the overhead line combined with the health and condition of the vegetation".*

To counteract the environmental impact of trees that have been removed from directly under the overhead line, there is generally a 2 for 1 replacement scheme. The agreement is that if a DNO removes a tree it will offer by way of compensation 2 saplings to be planted in another location away from overhead power lines.

Loss of Employment through Reduced Surveillance

Currently there is a national shortage of qualified surveyors for vegetation management in the utility sector. The pre requisite requirements for a surveyor role are now equivalent to a basic diploma level, recognizing the fact that the accuracy of information gathered in the surveying element of a vegetation management contract is paramount. This has restricted the entrance level for many potential candidates.

Point4 will actually have the reverse effect in this area as it will mean that the limited resources that are currently surveying kilometres of network without trees will now be sent to a pre-determined tree site, thus maximising efficiencies in otherwise limited resources.

In addition Point4 will improve the social working environment of the surveyor. Currently the role of the surveyor is a "poisoned chalice" and many surveyors leave the industry because of this.

A surveyor's outputs are subjective, the surveyor has to try and estimate tree compliance distances, growth rates, determine revisit dates at the same time find a balance between statutory requirements, employers commercial requirements (often different to statutory requirements), the land owner or tree owner requirements and the cutting contractor requirements, all of which pulls the surveyors judgment in compromising directions.

Point4 will be issuing the surveyor scientific data and incorporating a 100% compliant self-audit system that delivers intelligence based revisit dates giving confidence and support to the surveyor role.

Nonetheless, any potential negative impacts are expected to be small relative to the scale of the social and environmental benefits delivered by Point4's activities.

As Point4 develops and expands, it will engineer ways to handle the issues and continue to be committed to their mission.

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