Ripple Sense

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Executive Summary / Abstract

- ‘Ripple Sense’ is an IOT (Internet of Things) water level and consumption monitor, intended for use in agricultural applications. Ripple Sense allows farmers to monitor the water levels and consumption in livestock reservoir and feeding tanks/troughs.
- Research has shown that farmers on average take a round trip every one to two days to manually check livestock’s water supply. This greatly reduces the time a farmer can spend on other farm activities along with the added expense of travel.
- Farmers across the world find it difficult to monitor the water consumption of their livestock. It is next to impossible to detect leakages and breaks to livestock’s water supply, prior to their manual checks.
- There are over 43,347,000 ruminants across Ireland and the United Kingdom. These numbers remain stable over the previous five years
- 98% of survey respondents had no means of keeping track of their livestock’s water consumption in Ireland and all of the respondents made routine journeys by foot or vehicle to manually check their livestock’s water supply.
- There are currently no products that provide both an interactive and cloud based solution to the problem of monitoring water levels and consumption.

Figure 1: Ripple Sense

- In Year 1 Ripple Sense will be assembled on our premises in Shankill, Dublin 18.
- In Year 4 production will move to an industrial unit in Keypoint, Rosemount Business Park, Blanchardstown, Dublin.
- It is the companies aim to use Ireland and the United Kingdom as a test bed for the product in Year 1. In Year 2 and 3 we plan to expand our operations to reach continental Europe, the United States as well as Australia and New Zealand where the most potential exists following our research.
- ‘Ripple’ will be sold primarily through the ‘Ripple’ website and e-commerce platforms for an RRP of €60.00, as well as agricultural co-ops and retailers. Ripple will be directly sold on to these co-ops and retailers for €30.03.
- Reduced costs, live consumption, improved livestock health and peace of mind will form a key part of our product promotions.
- Each of the founding members of Core Devices Ltd will invest €14,000 in the company, along with seeking a €20,000 loan from the bank at an annual interest rate of 4.5%.
- By the end of Year 3, Core Devices Ltd intend make an operating profit of €454,421.

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1 Management

Core Devices Ltd. is a, disruptive and innovative start-up, focused on delivering world class products to the agriculture equipment market with the aim of solving issues facing everyday farmers. The company was founded in 2016 by Ciaran Sullivan, Rachael Ryan, Olivia Holbrook and Evan Stuart, all of who remain present in the day to day operations.

The company's first revolutionary product – "Ripple Sense" – was inspired by problems noticed from personal experiences of water management of the farm. With members of the team directly involved in the Irish agricultural scene and have a keen interest in the keeping and management of livestock, our team realised a gap in the market for a wireless, Smart, water monitoring and alert based product. Our in-depth interviews and feedback allowed us to design a product that gives farmers with livestock and water supplies in remote locations, peace of mind that their herd has plentiful amounts of water to drink.

Around the globe, many farmers operate farms in remote locations. This presents many problems. Immediately, the simple task of ensuring their animals have an adequate water supply becomes a major burden, unnecessary financial drain and a stress inducer. As many farmer's livelihood and financial income is derived from their livestock, the loss of a single animal due to dehydration is detrimental to the family's livelihood. "Ripple Sense" seeks to solve this dilemma. This discrete, affordable and detachable water consumption monitor, will reduce the worries of those involved with livestock management and wellbeing. Through the use of a smart water monitor, connected through the IOT Sigfox network, a farmer can remotely check the water levels of any trough or tank through the use of a companion iOS/ Android App. When implemented, Ripple Sense will eliminate the burden of manually checking water levels for many around the world.

The group is working hard to launch a website (currently at a trial stage) which will serve as a low cost medium for sales, information source and a means of easily attracting new customers. The website will be how the company initially reaches out and exports to the international markets in Year 1. The companion mobile app is currently in Beta testing and is expected to roll-out to the public during Q1 2017. This online launch coincides with the company beginning operations within Q1 2017.

2 The Company

2.1 Mission Statement

Our mission is to create a product which improve and enhance the daily tasks performed by farmers across the globe. Our goal is to create an innovative and commercially sustainable agricultural product, that will help farmers in their daily lives but also save vital resources and help farmers in tough climates manage their livestock's water supplies effectively and efficiently. The potential for 'Ripple Sense' is enormous, given the uptake of technology use in farming and the evolution of IOT networks such as Sigfox. We will continue to develop products for our target market in the future.

2.2 Business Objectives

- To develop a successful and reliable agricultural product. 'Ripple Sense' can be used by farmers across the world to help them monitor water levels and water consumption.
- Establish 'Ripple' as a household brand with farmers across a broad market in the major continents of the world within three years.

- To sell over 45,000 units by the end of Year 3.
- Continue to work with farmers in order to make their livelihoods more comfortable and profitable with 'Ripple'.
- To actively update and develop our web and smartphone based app over the three-year period.
- Continue to develop new products to connect other aspects of modern farming with IOT (Internet of Things).

2.3 Organisational Structure

CORE Devices Ltd. is registered as a Private Limited Company (PLC). The benefit of a PLC allows the company to raise finance by issuing shares to private investors. The company is comprised of four employees in Year 1. These employees are the founders of Core Devices Ltd and will all sit on the Board of Directors. Each member owns an equal share (25%) of the company. The Board of Directors will meet monthly to share information and evaluate the performance of various areas within the business's operations. The Board of Directors will be the chief operational unit within the organisation. The four members of the organisation are:

- Ciaran Sullivan, CEO
- Evan Stuart, CDO
- Olivia Holbrook, CFO
- Rachael Ryan, COO

Ciaran Sullivan - is the Chief Executive Officer of Core Ltd and serves as Managing Director. With a proven track record in other managerial positions, a strong understanding of the business and marketplace, Ciaran serves as the point of contact for important investors and shareholders.

Evan Stuart – is the company's Chief Design Officer. As head of the Industrial Design team, Evan leads a team of talented designers, who are responsible for creating and imagining the future of Core Devices products. Evan's responsibilities include overall hardware design, material selection, packaging, user interaction and manufacturing quality control.

Olivia Holbrook - is acting as Chief Financial Officer. As CFO, Olivia oversees the accounting, business connections, financial planning and analysis, treasury, and tax functions at Core Devices Ltd. More importantly she supervises the finance unit and is the chief financial spokesperson for the organization. The CFO directly assists the Chief Operating Officer (COO) on all strategic and tactical matters.

Rachael Ryan – is acting as Chief Operating Officer. Rachael is responsible for all of the company's sales, marketing efforts and operations, end-to-end management of Core's supply chain, and sales activities in all markets and countries.

When the company is well-established, Core Devices Ltd. will hire a registered accountant on a part time basis. Enda Sheehy, will manage the company's accounts and liaise with our CFO when needed. In addition to this, Tom Norris, a practising solicitor will be hired to advise the company. Ciaran O'Loughlin will provide all major technological expertise such as developing the iOS / Android mobile OS as well as the online website. Ciaran, Tom and Enda will be appointed as key advisers to the company. These members will also be present during the board of directors meeting. Marketing mentorship will be sought through the South Dublin, Local Enterprise Board.

3 Product Description

3.1 The Product

'Ripple Sense', is an IOT connected, wireless and universally mountable water and consumption monitor, created with the intention of reducing the time spent by farmers manually monitoring their livestock's water supply. This product, is a revolutionary and innovate technological advancement in this area, which will save farmers time, money but most importantly – provide them peace of mind.

3.2 How it works

The device is designed to be mounted to any surface in/on the desired water supply. Using the custom-designed industrial-strength waterproof adhesive mount, a secure and adjustable connection can be made. This design choice, provides a simple, effective and non-destructive method of attachment to any open top water tank/trough. When installed, the monitor is calibrated and set up through the "Ripple Companion App", this allows Ripple to thereafter function without any manual oversight or human interference. Using the ultrasonic sensor, the device can accurately monitor water levels and provide real-time information to the farmer through a coherent UI in the App. The product will send alerts if unusual activity is ever detected which may imply a leak or greater than normal evaporation. Wireless connectivity will be made possible through the use of next-generation Sigfox connectivity. A low power, cost-effective and low maintenance wireless communication network.

Figure 2: Proposed Implementation of Product

The Ripple companion app, an iOS and Android mobile application, will be the primary method of user interaction with the device. Through the application, the user can easily check a specific locations water supply and decide if it needs filling or check the water consumption. The application can serve as a "Hub" for all Ripple monitors, allowing easy, quick check-ups of multiple water supplies.

The main body of Ripple (which houses all electrical components and modules), is made of durable, UV resistant Polycarbonate as its properties are ideal for this intended use. This body will then be clear coated Pepper based spray lacquer, this will act as a deterrent/repellent to livestock chewing or damaging the exposed product. The clear Polycarbonate cover acts as a shield for the solar panel. The industrial strength water proof mount will be a unique, specialist blend of polycarbonate that allows a secure mounting method, compatible with a wide variety of surfaces but can be removed by applying heat to the adhesive bond, then peeling it off the mount. The plastic components will be tested via a Quality Control System to meet the requirements of EN ISO 9002.

4 Market Research

4.1 Market Information

There are nearly 9.5 million livestock animals being farmed in Ireland today. In 2015 Ireland exported just under €6bn beef product. Sheep meat exports were also valued high in terms of export at approximately €230 million. These figures clearly show that agriculture is one of the major industries in Ireland in terms of exports. Across Europe there are over 236 million animals being farmed for produce. This stands above the United States with over 103 million and also Australia and New Zealand with over 142 million. It is important to note that that many of these areas with the largest number of animals are hot climates the majority of the year. There is already pressure placed on food production to keep up with the demand as the population grows and this pressure falls directly on the farmers to keep up with the food production demand.

Country	**Livestock Animals**	**Farm Holdings**	**Average Livestock Per Farm**
Ireland	9747000	139860	70
United Kingdom	32600000	186660	175
Europe	236700000	10800000	22
United States	103320000	2109363	49
Australia/New Zealand	142571000	135000	1056

4.2 Recent Market Trends

For the past number of years, it has been obvious to many, that one of the sectors most in need of modernization is the Agriculture sector. Despite generating a worldwide turnover of $6.4 trillion, the agriculture sector has historically been remarkably slow to adopt newer and revolutionary methods.

With the emergence of the AgriTech revolution, the benefits of this movement are profound and clear. Early adopting, tech-savvy farmers have found that software, IOT (Internet of Things) and sensors enable them to easily collect and interpret farm data. This will be crucial in the coming years to help them manage their operations more efficiently, resulting in maximising profit. The Agsector is without question modernising, evolving and more importantly – growing exponentially.

4.3 Problems Facing Farmers with Livestock

The world's population is expected to reach 10 billion by 2062. This will place untold strain on worldwide agricultural production in the future, but more importantly, drinkable water supplies. Unseasonable droughts, heavy rains and storms are having a negative effect on farming produce across the globe. Farms in hotter climates that rely on stockpiled water to feed their livestock, are put under severe stress, especially those located in hotter climates year-round. In these situations, water is the most scarce and valuable commodity at the farmer's disposal. Often time's, water is pumped from lakes and rivers nearby to be stockpiled, which is then distributed to their livestock.

Tracking water consumption accurately is one of the greatest difficulties faced by farms. Clean drinking water is a precious resource and is being wasted in massive quantities due to leakages, improper use and. Just 2% of the world's water supply is fit for consumption. In order to keep up with food production the water required for livestock will also rise as the population grows. It will therefore be of major importance that livestock water supplies and consumption are monitored in the future to prevent wastage. These areas, clearly and concisely demonstrate the need for a product such as Ripple Sense.

4.4 Livestock Water Consumption

Water is an essential resource required for running a farm with livestock and has a significant impact upon stock welfare, farm productivity and business profitability. Knowledge of drinking water requirements and potential sources of water are important for planning on both a daily and annual basis. This allows a farm owner to easily and effectively distribute this valuable commodity to areas of the farm that needs it most. It is critical for a farmer to understand his herd's water consumption to accurately operate the farm. Daily water intake of animals is not a set amount each day.

As represented clearly in the below table, there is no "one size fits all" model when it comes to distributing water among various breeds of livestock. Even more noticeable is the extreme amounts of water each animal consumes to survive. On a small-scale operation, thousands of litres per year used purely for the consumption of animals is extraordinary, let alone on an industry level, serving hundreds in a herd.

Livestock unit	Daily			Annual litres/ year/head
	Daily average litres/day	Winter litres/day	Summer litres/day	
Sheep				
Nursing ewes on dry feed	10	6	14	3,650
Prime lambs on dry pasture	4	2.4	6	1,460
Mature sheep on dry pasture	6	4.2	10	2,190
Prime lambs on irrigated pasture	1.1	0.7	1.5	400
Mature sheep on irrigated pasture	3.5	2.1	4.9	1,280
Cattle				
Dairy cow, dry	80	48	112	29,200
Dairy cow, milking	150	90	210	54,750
Beef cattle	80	42	100	29,200
Weaners (250-300kg)	55	30	70	20,075
Horses				
Working	55	33	77	20,075
Grazing	35	21	49	12,775
Pigs				
Brood sow	45	27	63	16,424
Mature pig	20	12	28	7,300
Grower (25-90kg)	12	7.2	16.8	4,380
Poultry				
Laying hen	0.33	0.2	0.46	120
Pullet	0.18	0.1	0.25	65
Turkey	0.55	0.3	0.77	200

4.5 Maintenance of Water Sources

Water tanks and troughs installed by farmers can often be a costly investment. In the case of absentee farmers or farms located in remote areas, animals can be left to themselves for days on end. In this time frame of just a few days, if a water source is compromised, thousands of litres could be wasted over a few days. In this common situation, when an issue arises, it may not be discovered for days.

It is well known in the Agriculture sector, that low water levels in remote water troughs can be caused by pump and generator failures, pipe and tank leaks, damage, and vandalism. At the time of writing, few companies provide an option to accurately monitor or alert a farmer if an unexpected issue arises. Often in such remote places, ranches are located in sparsely populated areas and are not covered by cellular communication. This can add extra complications to the process of alerting an owner to any sudden changes in water levels.

4.6 Unnecessary Financial & Labour Intensive Expenditure

One case study documents how Australian farmer Chris Patmore travelled over 400km every few days in order to keep track of his herd's consumption as he grazed them in remote areas of Southern Australia. To put this in context, unleaded fuel typically costs $1.24c per litre. At a total round trip of 400km three times per week over the course of a year, will cost Chris around $2,160. The cost financially of this inefficient scheme is large, however, the more important waste is Chris's lost time checking his herd. Driving to and from each farm may cost him an entire day to this routine. In such situations, it is clear the need for a better method of achieving the same results.

4.7 Market Research – Quantitative & Qualitative

We carried out both quantitative and qualitative primary research to better understand the viability of our product concept. We made contact with a number of livestock farmers directly to gain an insight into the different scenarios and methods they use to manage their livestock.

- To find out how often farmers were monitoring these water supplies.
- To gain an insight into the problems faced with livestock water supplies.
- To find out how/if they monitor their livestock's water consumption.
- To discover how many farmers would purchase our product and at what cost.

We created a survey to tackle these issues and within a 24-hour period, we received 55 respondents. All of which derived from all forms of social media. The findings are as follows:

Findings:

- The average distance from their homes to their farm holdings was 12km.
- 100% of the respondents travelled at least once a week by foot or vehicle to manually check water supplies. 74% of these travelled once every 3 days.
- 78% of respondents owned a smartphone. 54% said they would regularly use their smartphone.
- 85% of respondents used only piped water to fill troughs while the remaining 15% used some form of refillable tank.
- None of the respondents knew how much water was being consumed from piped water feeds while only one respondent kept rough track of how many times a storage tank was refilled.
- 52% said they would purchase a device to keep track of their water levels and consumption. Provided it be reliable.
- The most popular price bracket, our respondents would feel comfortable paying was €30-€60 (67%)

Our qualitative research consisted of interviews with both large and small scale farmers. The aim of these interviews was to build a list of user needs in the form of features and functions. From the meetings we were given an excellent insight into the future of the industry as well as constructive feedback on our product concept from their personal and industry experiences.

The nature of the feedback we received was extremely positive overall for 'Ripple Sense'. Most of the interviewees have had negative experiences with piped feeds being damaged, having broken seals and loose connections to troughs. They found monitoring their water consumption impossible as it stands, accepting the water charges they receive throughout the year to be correct.

4.8 Competitor Analysis

Water monitoring systems are available on market but are difficult to get a hold of depending on location. The existing systems available are also very un-intuitive and only one product has remote cloud capabilities. All of our competitors' products are aimed at more large industry uses rather than mainstream farmers. Our product will cater for both these categories. Unlike its competitors 'Ripple Sense' will display its data on both web browsers and mobile devices allowing farmers to access live data anywhere in the world.

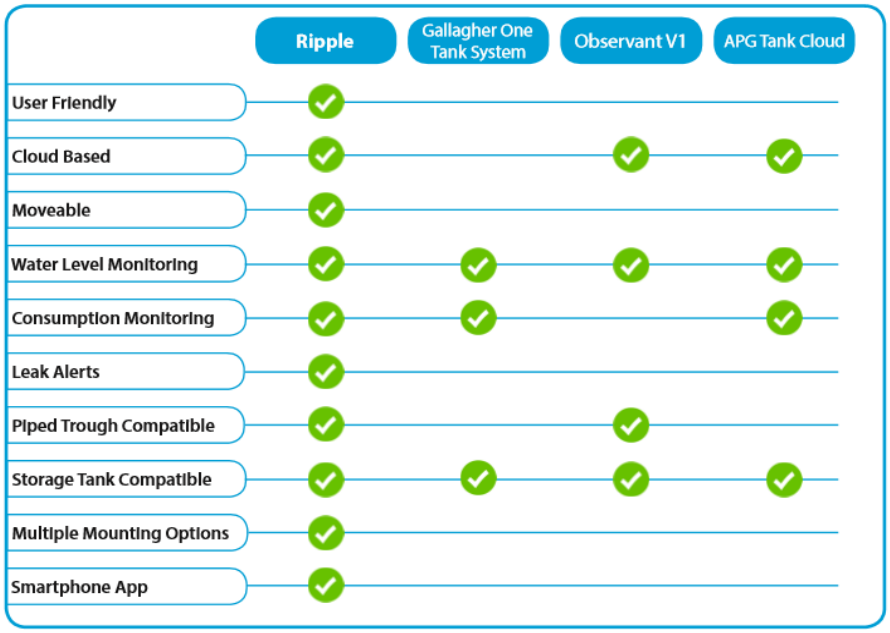


Figure 3: Competitor Analysis

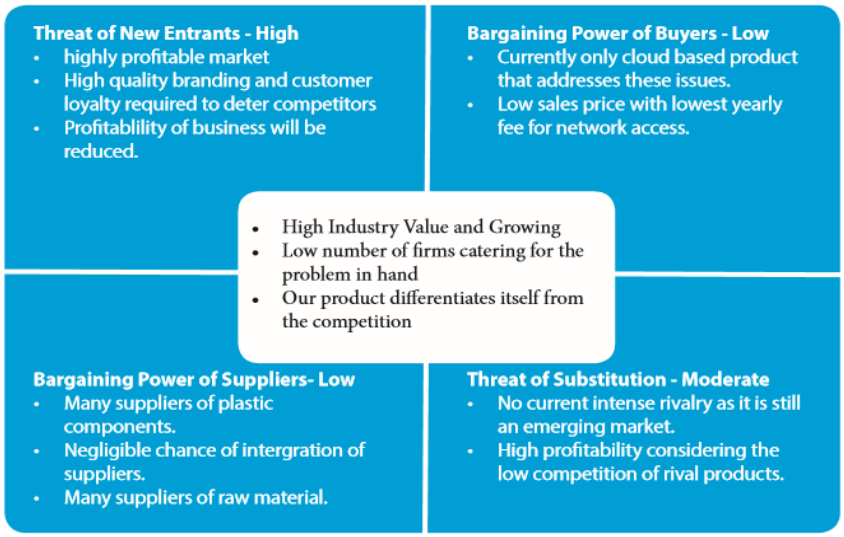
4.8.1 SWOT Analysis

Research was carried out to determine the strengths, weaknesses, opportunities and threats to our company Core Devices Ltd. Below shows a table detailing these external factors.

Strengths:	Weaknesses:
• Extremely hardworking team. • Background in farming and technology. • First cloud based monitor of its kind. • First to measure water level and consumption together. • User developed both in design and application interface. • Easy to use and implement. • Usable by anyone with access to broadband. • Exporting worldwide by Year 3.	• Limited knowledge of business aspects • No market share • No brand awareness • Limited Knowledge of managment aspects • No initial business connections • No advertising/marketing experience
Opportunities:	**Threats:**
• Clear gap in the market • Extremely large target market (Global Agriculture Industry worth $2.4 trillion to the global economy) • No current market leader • No current product that addresses as many issues • Increases in technolgy usage across farms • Increase in smartphone sales/usage across the globe.	• Development of rival products • Rapid advancments in technology • Possible decrease in livestock farming

Figure 4: SWOT Analysis

4.8.2 Porters Five Forces



4.8.3 Pestel Analysis

Political: • Cut-Backs on budgets placing more pressure on pricing • Taxing uncertainties • New employment laws • Political instability in neighbouring countries	**Technological:** • Rapid advancements in technology overtaking previously used technologies • More responsive and higher quality help services required • Higher dependence on technologies
Economic: • UK EU uncertainty possibly creating trade barriers • Trump presidency uncertainty over trade • Rising competition as we exit global economic rescission = improving economies • Changes in interest rates	**Environmental:** • Growing environmental agenda to reduce emissions • Environmental aspect often required to promote business
Social: • Increasing expectations of consumers in terms of technology and reliability • Rapid advancements in technology • Possible decrease in livestock farming	**Legal:** • Increasing quality standards • Global inconsistencies • Increased litigation

4.9 Unique Selling Points

Few devices currently exist in the marketplace which tackles the same problem “Ripple Sense” does. The creators of Ripple Sense set out to provide a seamless and unified monitoring device to aid farmers around the world. This device, will be in a league of its own in terms of functionality, ease of use and accessibility. Ripple Sense will fundamentally change the way farmers manage their livestock’s water supply, allowing them to easily check any water supply of their choosing remotely. “Ripple Sense” was designed in conjunction with constant feedback and input received from farmers and sample groups consisting of the target audience. Ripple Sense, will be the only low cost, all in one smart water monitor connected to the Sigfox network to provide a real-time overview of water levels.

Key Points:

- The first universal, all in one wireless water monitor
- The device can be easily mounted to both open water troughs and sealed tanks.

- Developed in partnership with many targeted sample groups and users.
- Easy installation, use and maintenance.
- Provides a real-time overview of water level of any water source when “Ripple Sense” is implemented.
- The first Agriculture orientated smart water monitor with a custom designed mobile application.

5 Sales & Marketing

5.1 Pricing

The unique function and design of Ripple will allow Core Devices Ltd to access the Agricultural and technological markets. “Ripple Sense” competes against only one other main product in these industries, the “wireless water monitoring” produced by Gallagher Group ltd. They are based in Australia and are applicable only to large scale industrial farms. The wireless water monitor is priced at €380, therefore we have applied a competitive pricing strategy to allow for maximum sales in this potential market. “Ripple Sense” will be targeted at a wider range of consumers globally and at a lower price. We aim to provide the best value for money device on the market, guaranteeing safety and high quality parts.

	Cost (€)	Gross Profit Margin (%)
Cost of manufacturing	10.70	-
Total cost per unit	13.86	-
Cost to retailer	30.03	50.05%
Online Sales	60.00	76.9%

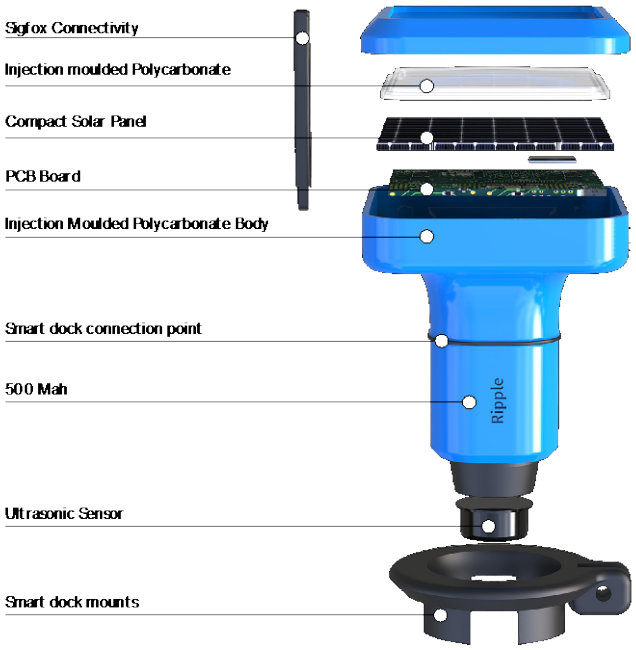


Figure 5: Breakdown of product

The "Ripple Sense" will be sold mainly on a business-to-customer basis at €60.00. Online, direct sales from our website and e-commerce platforms will be the main source of revenue, therefore there will be free shipping worldwide and charge no additional delivery fees and include the standard "Ripple Dock" mount, used for attaching the product to a water container. We have included additional expenses in our finances to accommodate for the free shipping worldwide.

Per unit		€
Plastic parts		
Housing		1.76
Plastic cover		1.15
Mount		0.9
antenna		0.84
Circuit board		0.30
Seals		0.05
Sensor		1.88
Communication Module		1.51
Battery		0.85
Solar Panel		0.91
Packaging		0.40
Instructions		0.15
Total cost of components		**10.70**
Import Duty	29.50%	3.16
Cost per unit		*13.86*

5.2 Distribution

Once *Ripple Sense* components are imported, they will be sent straight to our main premises. Domestic and international orders can be ordered online through the company website and will be outsourced to DHL for delivery. Products will be stored in the main premises (Shankill, Dublin 18).

Our primary sales will be generated online through our website and other agricultural sites. *Ripple Sense* will also be available in several local and online retailers such as Glanbia, Agridirect and the local co-ops, who we have spoken to and all of which have expressed interest in our product. Contact has been made with both large scale farmers, who supply the nation's food & dairy produce and small scale farmers, who would work part-time in urban/suburban placed farms. From this knowledge, we are confident there is significant appetite for "Ripple Sense".

5.3 Promotion

Core Devices Ltd. will focus on highlighting the benefits of our product to the agriculture sector with several promotional methods. We will assign €15,000 to an advertising budget in year 1. This will be doubled in year 2 and tripled in year 3. Advertising will consist of placing ads in the farmer's newspapers and in the "Farmer's Journal" in the first year. "The Irish Farmer's Journal" can reach a portion of our target market for €29 a week. There are approximately 285,000 farmer journal readers, the journal has over 200,000 unique visitors per month and also has over 1,000 page views per month. Reaching such a wide demographic of customers, we feel it has the ability to pique the interest of farmers that may be difficult to contact otherwise.

We will showcase our product at the main farming events across Ireland in year 1, and plan to officially launch the *Ripple Sense* monitor in Ireland at the National Ploughing Championships. The event was attended by over 283,000 people in 2016. Core Devices Ltd. will rent an area where we can promote our product. By advertising *Ripple Sense* in this event, we expect both our online sales and physical sales to be significant due to the show's ability to introduce innovative products to the marketplace.

Core Devices Ltd. intend to have a strong online presence as both our own website and websites such as Agri Direct and Agri retailer will be a form of advertising. Our website will allow us to easily expand worldwide by Year 3. Using popular social media such as Facebook, Twitter and Instagram, will allow us to reach our online users in our target market. It will also give us an improved search engine ranking, more brand authority and a higher conversation rate.

The agricultural industry especially in Ireland isn't heavily commercialised or advertised in the same way a product would conventionally be marketed. High sales and good customer relationships are usually generated by a good reputation formed through word of mouth. Using this method of advertising will help build a positive feeling about *Ripple Sense* and help promote the product. An avenue to building relationships in the agriculture sector who deal with water and food level consumption will be sought. For product endorsement to increase sales and product distribution we will budget to sell below retail price to livestock food suppliers like *Connelly Red Mills*.

6 Operations

6.1 Location

Core Devices Ltd. will run its assembly operation from the CDO's premise in Shankill, Dublin 18. Due to the small size of the components, ease of assembly and light weight nature of the product, the 'Ripple Sense' can be assembled in a simple room setting with stations set up for various stages of assembly. Basing our operations at this premise will allow "Core Devices Ltd" to design farm equipment on a working farm. This allows us to constantly prototype, test and analyse any concepts in development.

In Year 4, Core Devices Ltd. will look to lease an industrial unit in Keypoint, Rosemount Business Park, Blanchardstown, Dublin for €800 per month. The intended use of the premise will be to move all assembly and operations to the Office / Storage depot. Due to its location, it serves as an easily accessible premise for suppliers/staff and is ideal for when we intend to ship large quantities of product around the world to fuel expansion.

6.2 Daily Operations

Core Devices Ltd. will operate from 9am to 5pm with a break between 13.00 and 14.00, Monday to Friday. This will result in a total of 35 hour working hours per week. Approximately 15 products can be produced in one hour using an assembly line production method, this will result in a minimum of 105 units per day and 525 per week. The CDO will act as our Quality Control Officer due to his knowledge of assembly line production and an eye for detail.

6.3 Patents

Before production begins, we will pursue patents, design rights and intellectual property for our product along with trademarks for our product and company name. Patent's will be our first preference of protection, however if this is unobtainable, the company will seek design rights. If patents or design rights aren't viable, we believe our innovative product will give us the temporary competitive edge we need as we differentiate ourselves from competitors.

6.4 Manufacturing Process

1. The *Ripple* components will be sent to our main premises via DHL.
2. Our COO will inspect 15% of all deliveries to ensure there is a continuous standard and quality throughout the entire batch of components, of which 95% of the parts tested must pass for the batch to be acceptable.
3. Employees will fabricate the parts on an assembly line.
4. Once the parts are assembled, a programming code will be uploaded to the in house circuit board and tested to ensure that all of the parts are fully functional.
5. When all products are completed, a final inspection will take place.
6. Packaging will be assembled on *Ripples* premises.

There are three parts to "Ripple Sense" that are made by an injection moulding process. This equipment required for the moulds will be expensive initially, but will reap long term benefits. All polycarbonate components will be injection moulded. In total, three moulds will be needed and purchased from *Sunwaymold.* All electronic components are all standardized, widely available parts

that will purchased. The final product packaging will be outsourced. Labels and instruction manuals will be included in the box. These will then be shipped to our premise.

6.5 Research & Development

The company will continue to innovate and better our current product, introduce revolutionary new sensors and monitors and expand into other areas. Core Devices Ltd. will continue to develop products hand in hand with sample groups form target markets. This focus on the end user, by encouraging feedback during the design process, allows us to truly ensure a fit for purpose final product. As there is no definitive market leader in this category, we feel Core Devices Ltd. has the opportunity to become that leader.

Currently, the design team are working on developing a product line to tackle a wide variety of problems experienced on the farm as well as introducing complementary products to Ripple. Some of which innovations currently in development stage include:

- Various connectivity options.
- A 2nd Generation Ripple device with new and innovate features
- New, innovative methods of mounts and accessories.

Introducing new products after the “Ripple Sense” will expand our opportunities to sell product, build a reputation but also show retailers that the founding members are committed to the product and company.

7 Finances

Core Devices Ltd. Will be part financed by its four founding members. Each member will contribute an investment of €14,000 to cover the initial start-up costs. The start-up investment costs will be raised by personal investments alongside a €20,000 loan from the bank, which will be repaid over two years with 4.5% interest.

This brings our initial start-up amount up to €76,000 in order to cover all product costs as well as getting the business up and running. To ensure sufficient start-up capital and encourage company growth, each member of Core Devices has agreed to forego a wage in year one. Therefore, money can be injected back into the company at the beginning of year two, thus allowing us to fulfil hopes to encourage as much capital as possible in both year two and three.

It is expected at the end of year one, that Core Devices Ltd. will make an operating profit of above €100,000. This is due to the size of the initial lump sum injected into the company, as well as the fact that the product is reaching an international market in year one. A profit will also be made at the end of year two, although it will not be a relative increase from year one as expenses, such as wages and salaries, will be incorporated within this year. Each founding member will get €10,000 for the year, plus another €7840 for the additional employed workforce. It is forecasted that the increase in profits will continue throughout year three, while still being offset by the increase in salaries and employment. With each year in business this product will look to capture an increasing percent in the international market. Starting with Ireland and the UK in year one, then in year two moving into Europe, Australia and New Zealand, and finally entering into the United States of America in year three. Our constant increase in profits is related to the expansion of the Ripple Sense into the worldwide industry.

A.N.Other

Wages and Salaries

			Year 1												
	Base salary	PRSI	1	2	3	4	5	6	7	8	9	10	11	12	Total
CEO	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
CDO	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
CFO	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
COO	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
Workforce	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
Total			-	-	-	-	-	-	-	-	-	-	-	-	-

			Year 2												
	Base salary	PRSI	1	2	3	4	5	6	7	8	9	10	11	12	Total
CEO	10,000	10.75%	923	923	923	923	923	923	923	923	923	923	923	923	11,076
CDO	10,000	10.75%	923	923	923	923	923	923	923	923	923	923	923	923	11,076
CFO	10,000	10.75%	923	923	923	923	923	923	923	923	923	923	923	923	11,076
COO	10,000	10.75%	923	923	923	923	923	923	923	923	923	923	923	923	11,076
Workforce	7,840	10.75%	724	724	724	724	724	724	724	724	724	724	724	724	8,688
	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
Total			**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**4,416**	**52,992**

			Year 3												
	Base salary	PRSI	1	2	3	4	5	6	7	8	9	10	11	12	Total
CEO	80,000	10.75%	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	88,596
CDO	80,000	10.75%	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	88,596
CFO	80,000	10.75%	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	88,596
COO	80,000	10.75%	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	7,383	88,596
Workforce	20,200	10.75%	1,864	1,864	1,864	1,864	1,864	1,864	1,864	1,864	1,864	1,864	1,864	1,864	22,368
	-	10.75%	-	-	-	-	-	-	-	-	-	-	-	-	-
Total			**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**31,396**	**376,752**

Figure 6: Employee Wages & Salaries

Appendices

Appendix 1: Price Model

Ripple

Assumptions

Pricing Model

Costs:			
Molds:		€ -	
Housing		8824.36	
Plastic Cover		5277.59	
Mount		6213.94	
Total Cost of Molds		20,315.89	
Per unit		€ -	
Plastic parts			
Housing		1.76	
Plastic cover		1.15	
Mount		0.9	
antenna		0.84	
Circuit board		0.30	
Seals		0.05	
Sensor		1.88	
Comms Module		1.51	
Battery		0.85	
Solar Panel		0.91	
Packaging		0.40	
Instructions		0.15	
Total cost of components		10.70	
Import Duty	29.50%	3.16	
Cost per unit		13.86	
Cost for 5,500 units		76,210.75	
Retail Price		60.00	(incl VAT)
Retail Price		46.2	(excl. VAT)
Retailer Margin		35%	
Price to retailer		30.03	

Sales Forcast

Agriculture Industry	(Ireland & UK)	(Europe, Australia & NZ)	US
Total Farm Holdings	326,520.00	10,608,480.00	2,109,363.00
Total Applicable Market (units)	685,692.00	6,272,154.00	6642967.50
Capturing 52% of App. Market	356,560.00	3,439,800.00	5,085,103.14
% that will buy	1.5%	0.4%	0.5%
Number that will buy	5,348.40	13,759.20	25,425.52

Sales Target	Year 1	Year 2	Year 3
Ireland & UK	1.5%	-	-
Europe, Australia & NZ	-	0.4%	-
US, EU, Aus & NZ	-	-	0.5%

Units sold			
Ireland & UK	5,348.40	-	-
Europe, Australia & NZ	-	13,759.20	-
US,EU, Aus & NZ	-	-	25,425.52
Price to make amount we wish to se	74,110.10	190,654.35	352,308.66
Price to make stock amount	76,210.75	191,219.70	353,340.75

Cost Breakdown			
Cost of sales online	240,678.00	619,164.00	1,144,148.21
Cost of sales to retailer	40,153.11	103,297.19	190,882.06
Total cost sales	280,831.11	722,461.19	1,335,030.27

Appendix 2: Income Statement

INCOME STATEMENT	Year 1	Year 2	Year 3
Sales/Revenue/Income/Fees	280,831.11	722,461.19	1,335,030.27
Cost of Sales	74,110.10	190,654.35	352,308.66
Gross Profit	**206,721.01**	**531,806.84**	**982,721.61**
Gross Profit Margin %	*73.61%*	*73.61%*	*73.61%*
Add Income/Gains	-	-	-
Less Expensese			
Wages and Salaries	-	47,840.00	340,200.00
Rent and Rates	-	-	-
Light and Heat	-	-	-
Telephone and Internet	360.00	360.00	360.00
Advertising	15,000.00	30,000.00	45,000.00
Bank Charges	4,212.47	10,836.92	20,025.45
Depreciation/Amortisation	5,088.00	11,176.36	17,264.53
Molds	*5,088.00*	*11,176.36*	*17,264.53*
Software	3,000.00	3,000.00	3,000.00
Repairs and Maintenance	2,000.00	4,000.00	6,000.00
Insurance	12,000.00	14,000.00	15,000.00
Professional Indemnity	*3,000.00*	*3,500.00*	*3,750.00*
Product	*3,000.00*	*3,500.00*	*3,750.00*
Employee	*3,000.00*	*3,500.00*	*3,750.00*
Public Liability	*3,000.00*	*3,500.00*	*3,750.00*
Travel	4,000.00	10,000.00	20,000.00
Accountant	3,950.00	3,950.00	3,950.00
Provision for Impairment	2,000.00	3,800.00	7,000.00
Contractor	500.00	500.00	500.00
Shipping	12,000.00	25,000.00	50,000.00
Utilities/Misc	-	-	-
Total Expenses	64,110.47	164,463.28	528,299.98
Operating Profit	**142,610.54**	**367,343.56**	**454,421.62**
Less Interest	10,465.80	10,465.80	-
Profit After interest before Tax	132,144.74	356,877.76	454,421.62
Less Corporation Tax 12.5%	16,518.09	44,609.72	56,802.70
Proft/Earnings After Tax	115,626.65	312,268.04	397,618.92
Less Dividends 20%	0.00	0.00	0.00
Retatined Earnings for the year	115,626.65	312,268.04	397,618.92
Opening Retained Earnings	0.00	115,626.65	427,894.69
Closing Retained Earnings	**115,626.65**	**427,894.69**	**825,513.61**

Appendix 3: Cost of Sales

INCOME STATEMENT	Year 1	Year 2	Year 3
1 COST OF SALES - FOR DISTRIBUTOR			
Opening Stock	0	2,100.65	565.35
Plus Purchases	76,210.75	189,119.05	352,775.40
Less Closing Stock	2,100.65	565.35	1,032.09
= Cost of Sales	74,110.10	190,654.35	352,308.66
2 COST OF SALES - FOR MANUFACTURER			
Opening Stock	0	2,100.65	565.35
Plus Purchases	75,210.75	180,279.05	331,575.40
Direct Costs			
Direct Labour	0	7840	20200
Supplies	1000	1000	1000
Depreciation on manuf machinery	-	-	
Maintenance	-	-	
Rent for factory	-	-	
Less Closing Stock	2,100.65	565.35	1,032.09
= Cost of Sales	74,110.10	190,654.35	352,308.66

Appendix 4: Cash Flow

CASH FLOWS	Year 2	Year 3
Operating Profit (PBIT)	367,344	454,422
Add back Depreciation	11,176	11,176
Movement in WC		
(Increase)/Decrease Receivables	(72,597)	(100,696)
(Increase)/Decrease Stock	1,535	(467)
Increase/(Decrease) Payables	22,351	31,002
Prepaids		
Taxs payable		
Accruals	-	
Net Cash flow from operating activities	**329,809**	**395,437**
Interest paid	(10,466)	-
Tax Paid	(16,518)	(44,610)
Cash from investing activities		
Purchases of assets	(28,500)	(72,000)
Sale of Assets	-	-
Purchase/Sales of investments	-	-
Net Cash flow from Investing activities	**(28,500)**	**(72,000)**
Cash from Financing Activities		
Issue of Shares	-	-
Redemption of shares	-	-
Reserves	-	-
Repayment of Long term loans	-	(10,000)
Additional long term loans	-	-
Net Cash from Financing Activities	**-**	-
Dividends Paid	-	-
Increase (Decrease) in Cash and Cash Equilivants	**274,326**	**268,827**
Opening Cash and Overdraft	94,126	385,301
Closing Cash and Overdraft	385,301	648,446
Movement	291,176	263,145

Appendix 5: Balance Sheet

Balance Sheet
Year Ended 31st Dec
ASSETS

		Year 1	Year 2	Year 3
Fixed Assets				
Plant, Property and Equipment		20,315.89	20,315.89	20,315.89
Motor Vehicles and Vans		-	4,500.00	4,500.00
Computer and Office Equipment		4,100.00	4,100.00	4,100.00
		24,415.89	28,915.89	28,915.89
Less Accumulated Depreciation		5,088.18	11,176.36	17,264.53
		19,327.71	17,739.53	11,651.36
Intangible Assets				
Software and Licences		4,000.00	4,000.00	4,000.00
Brands		-	-	-
Servers		48,000.00	72,000.00	144,000.00
		52,000.00	76,000.00	148,000.00
Investments				
Current Assets				
Cash/Bank		94,125.85	385,301.49	648,446.22
Trade Receivables	60 days	46,164.02	118,760.74	219,457.03
Inventory	in COS working	2,100.65	565.35	1,032.09
Prepaid Expenses		-	-	-
		142,390.51	504,627.58	868,935.34
TOTAL ASSETS		**213,718.22**	**598,367.11**	**1,028,586.70**
Current Liabilities				
Trade Payables	70 days	14,212.90	36,563.85	67,566.04
Bank Overdraft		-	-	-
Taxes Due		16,518.09	44,609.72	56,802.70
Accruals		-	-	-
		30,730.99	81,173.57	124,368.75
Long Term Liabilities				
Long term Loans/Debt/Borrowings		10,000.00	10,000.00	-
Shareholders Equity				
Capital/Ordinary Shares		56,000.00	80,000.00	80,000.00
Share Premium		-		
Reserves		-		
Retained Earnings		115,626.65	427,894.69	825,513.61
Total Equity		171,626.65	507,894.69	905,513.61
TOTAL EQUITY AND LIABILITIES		**212,357.64**	**599,068.26**	**1,029,882.36**

Appendix 6: Warranty

Core Devices Ltd seeks to implement a generous warranty of one year from original point of purchase. This will protect customers against defects in material, untimely functional faults and cosmetic imperfections upon purchase. Warranty on valid claims within the 'warranty period' can be resolved with either (i) a onetime replacement product, (ii) repaired product or (iii) customer refund. The product will come with a full 30 day no discussion money back guarantee, this will allow each and every user to test the product but if any difficulties arise (component malfunction/defects) this generous return policy will accommodate this.

Core Devices Ltd. is not liable for incidental, indirect, punitive or consequential damages, as in breach of the warranty of the 'Ripple Sense". Core Devices Ltd. warranty is limited to the "Ripple Sense" device itself, it's components and does not under any circumstance cover the damage inflicted to animals if the product was to be consumed or eaten. Every precaution has been taken to reduce this risk. Core Devices Ltd. will not under any circumstance cover the damage or reduction in functionality of any water tank or trough through the use of the "Ripple Sense". This will be noted on our website and instructions included in the packaging.

Appendix 7: Ripple Companion App

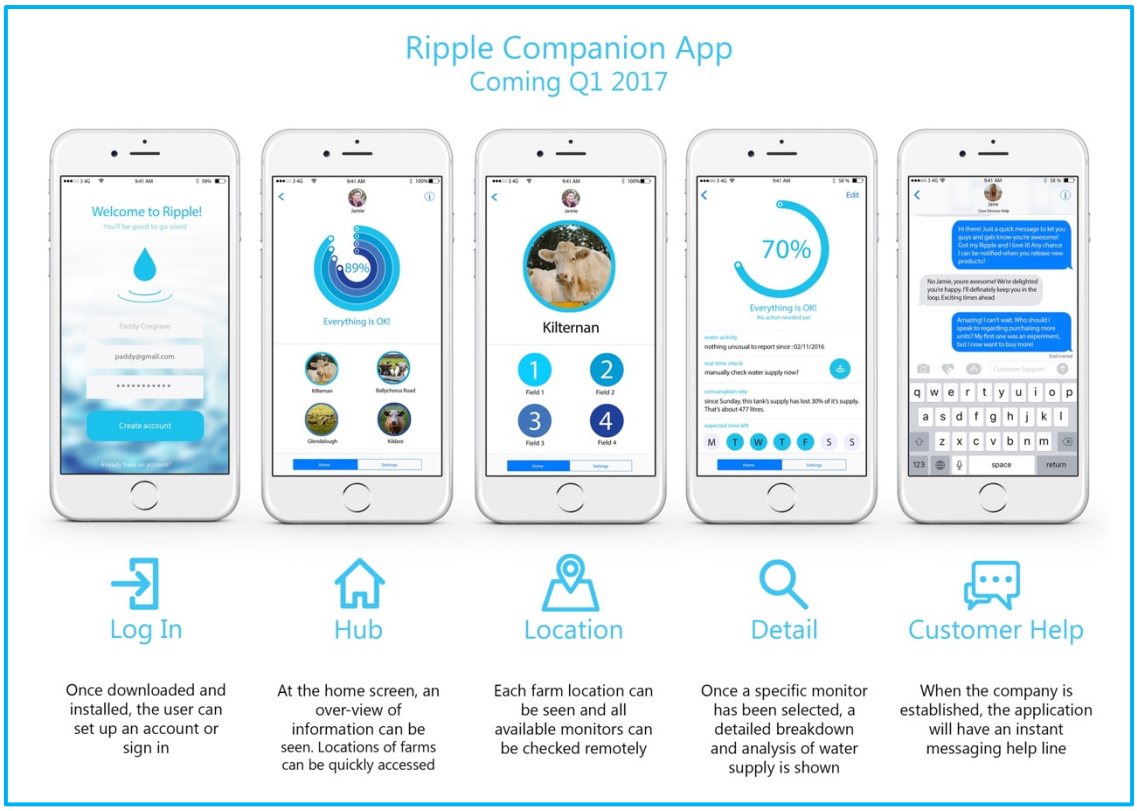


Figure 7: Proposed Design for Ripple Companion App

As many Irish, European and international farmers have adapted to the use of a smartphone, it makes perfect sense to introduce an easy to use, harmonious and useful application to greater enhance the user's experience with the product.
Currently, the Core Devices design team is working on the mobile app on which the "Ripple Sense" will communicate with to deliver a notification based system which will alert the user of any unexpected activities. The application's sole function, will revolve around allowing the farmer to easily, remotely and efficiently monitor a water supply of any tank or trough using the "Ripple Sense" device. Through the application, a number of main features will be available;

- Multiple User Sign In: For mobile devices, such as tablets, multiple user sign in is a valuable feature
- Ripple Hub: The Hub is where all devices used on the farm provide an overview of all water supply and is displayed in an easy to understand graphic.
- Specific Location: When selected if multiple farms are owned by a single farmer, a specific location can be selected and all active "Ripple Sense" monitors on-site can be selected for further, more detailed analysis.
- Specific Monitor: Each active "Ripple Sense" device, can provide a real-time, detailed analysis of a water supply. From here, estimates of water consumption, days left before expected depletion and any unusual activity are displayed.
- Customer Service Instant Chat: The "Ripple Companion App" will support live contact with a Core Devices customer service agent. Here, any problems experienced with the product, can be easily addressed and an answer can quickly be provided in real time.

We believe that the "Ripple Companion App" will fundamentally alter the user experience with the product. By creating a harmonious extension of the "Ripple Sense" to every smartphone and tablet, Ripple Sense becomes useable to everyone.