SP Angel Healthcare

Ananda Developments

Initiation of Research

6th June 2023

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INITIATION OF COVERAGE

Ananda Developments* (ANA.AQ)

Developing superior cannabinoid medicines

Non-Independent Research

MiFID II Exempt

** SP Angel acts as AQSE Corporate Adviser and Broker to Ananda Developments*

6th June 2023

Stock Data

Ticker	ANA.AQ
Share Price:	0.56p
Market Cap:	£16.0m

Source: AQUIS Stock Exchange (prior trading day's close)

Company Description

UK-based developer of cannabinoid based medicinal products for humans (CBPMs), via its wholly owned subsidiaries, DJT Plants Limited (cultivation) and MRX Medical Limited (cannabis oil formulation and manufacturing),

Share Price Chart (p)

Source: Bloomberg Terminal

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Key points

- **Two Phase 2 clinical trials set to begin:** Researchers at the University of Edinburgh have selected MRX1, the Company's lead asset, to be evaluated in Phase 2 placebo-controlled trials in two chronic pain conditions: Chemotherapy-induced peripheral neuropathy (CIPN) and endometriosis.
- **Trials expected to be fully funded by grant financing:** £1.55m in non-dilutive grant funding has been awarded to support these two trials, a significant achievement for studies of a cannabinoid product.
- **Growing acceptance of cannabinoids:** According to Prohibition Partners, a think tank, the UK is poised to become the second largest market for cannabinoid medicines in Europe. Adoption will continue to grow as the clinical benefits of cannabinoids are better understood. The upcoming Phase 2 trials should provide further evidence to support use, particularly on the NHS.
- **UK cultivation facility up and running:** A genetic breeding programme to develop cannabis plant variations with superior traits is progressing well. Planned construction of a GMP pilot manufacturing facility should support the key aim of receiving Home Office and MHRA approval to grow and manufacture medicinal cannabis for commercial supply.

Ananda Developments ("Ananda", "the Group", "the Company") is making substantial progress towards its aim of becoming a leading UK grower and supplier of high-quality cannabis and cannabinoid-based products for medicinal use in humans (CBPMs). To achieve this, the Group is advancing several activities at its two subsidiaries: MRX Medical, which is focused on the formulation and commercialisation of cannabidiol oil medicines, and DJT Plants which aims to grow medical grade cannabis to produce CBPMs.

Ananda is close to launching its first product, MRX1, a cannabidiol-based oil, as an unlicenced medicinal product (special), the standard route for CBPMs in the UK. Ananda is positioning MRX1 as an option for patients with complex chronic inflammatory conditions to help manage pain and other symptoms when conventional treatments, such as highly addictive opioids, have failed. Given the unmet need, MRX1 has been selected to be used in two placebo-controlled UK Phase 2 trials run by the University of Edinburgh. The trials aim to evaluate the safety and efficacy of MRX1 in two chronic inflammatory pain conditions: chemotherapy-induced peripheral neuropathy (CIPN) and endometriosis. These conditions have large addressable populations and are underserved by current treatments. The trials are expected to be funded by external grant awards of £1.55m from leading medical research agencies. The selection of MRX1 for these trials is a significant achievement for the Group. Positive data should drive adoption of the product as a special within the NHS and help clarify the route for approval for MRX1 as a licenced therapy.

At DJT Plants' dedicated facility in Lincolnshire, UK, Ananda is using cost-effective and proven growing methods to cultivate consistent, high-quality medical cannabis. Ananda aims to obtain regulatory approval from the UK Home Office and the MHRA to grow, process and supply CBPMs for UK patients. An ongoing genetic breeding programme aims to develop novel cannabis strains with superior traits to existing variations. Alongside the commercial production of CBPMs, the genetic programme has the potential to offer additional revenue streams, such as selling seeds or genetic licences to breeders.

UK adoption is growing after the use of CBPMs was legalised in 2018. The UK is set to become the second largest European market for cannabis medicines in 2023. However, patient access remains limited (under 10 patients are prescribed CBPMs in the NHS) with clinicians citing a lack of clinical data and lack of transparency of product quality (most medical cannabis is imported from abroad). We believe Ananda is well placed to provide confidence to prescribers and regulators via the upcoming clinical trials and the replicability of its MRX1 formulations which can generate safety and efficacy data whilst DJT Plants can provide high quality and consistent batches of CBPMs with a fully domestic supply chain.

Investment Thesis

Acquisition of MRX Medical bolsters company offering

The recent acquisition of MRX Medical offers a new commercial opportunity for Ananda, providing access to a clinically ready product with the potential to deliver near-term revenues. MRX Medical has developed a proprietary formulation method of generating THC-free cannabidiol oil for medical applications. MRX products are appealing to patients, prescribers and regulators who would like the therapeutic benefits of cannabidiol without the psychoactive side effects of THC. Furthermore, MRX product composition remains consistent between batches, another key requirement of regulators and clinicians who want to know the provenance and composition of what a patient is receiving. MRX's offering complements the work at DJT Plants which is focused on the commercial production of the cannabis plant. Collectively, this provides Ananda with a diverse product offering of CBPMs to meet the patient needs.

Clinical trials due to begin at a leading UK medical institution

The Group's lead asset, MRX1, is due to be evaluated in two placebo controlled clinical trials as a treatment for two chronic inflammatory pain conditions: chemotherapy-induced peripheral neuropathy (CIPN) and endometriosis. These conditions have large addressable populations which are underserved by current treatment approaches. The studies are set to begin soon and will be conducted by leading specialist clinical researchers at the University of Edinburgh. The trials will be conducted to international standards using recognised clinical endpoints and provide an excellent opportunity to generate safety and efficacy data on MRX1. Such information should support future regulatory and reimbursement discussions regarding the product. Given the large number of cannabidiol products available, the selection of MRX1 for these trials is a significant validation of the Group's science-led approach to product development.

Trials supported by £1.55m in external grant funding

The trials are expected to be funded by £1.55m of combined grants from two third-party grant agencies. This not only provides non-dilutive funding but also external validation for Ananda's approach as the grants were peer reviewed and the trials are being conducted by internationally recognised clinical experts. One of the key barriers for adoption of CBPMs and cannabinoid-based medicines in the NHS is the lack of data from randomised, placebo controlled clinical trials. The funding for the MRX1 trials shows the growing interest in the potential therapeutic benefits of CBPMs and cannabidiol.

Lead product close to commercial launch

Ananda is looking to commercialise products through the unlicenced medicine (specials) route. This is a shorter route to market than the traditional licenced therapy route. Should positive data be generated from the Phase 2 trials, the Company is looking to explore the potential for developing MRX1 as a licensed therapy for a number of chronic inflammatory conditions and pain. Unlike specials, manufacturers of licenced therapies can make claims that the treatment is effective against a disease. Given the lack of current treatments for CIPN and endometriosis, management believe there is scope for an accelerated approval pathway which may reduce the requirements for filing a market authorisation application.

Plant breeding programme underway at DJT Research Facility

The Company is progressing an extensive cannabis plant breeding programme at its specialist facility in Lincolnshire, UK. The aim is to generate new genetically stable lines of cannabis plants with improved traits compared to existing varieties. These new plant varieties would be grown to produce CBPMs. The development of genetically stable varieties (which can be grown from seed) should support the requirements of the MHRA which would like to see consistency between batches. Furthermore, the programme should enable the Group to claim IP surrounding the new plant varieties. This could support revenue generating opportunities such as selling the seeds to breeders or striking genetic licensing agreements. The programme is progressing well with the Company currently in the process of planting for the second season of field trials. This follows the successful results of the first season of field trials.

Focus on becoming a domestic supplier of medical cannabis

The Group's medium-term goal at DJT Plants is to receive a commercial licence from the Home Office and the MHRA to grow, process and sell medical cannabis products. To support this, the Company is planning to construct a Good Manufacturing Practice (GMP) certified pilot manufacturing facility at the site in Lincolnshire. Plants grown at the site would be processed at this facility under GMP conditions to provide source material (Active Pharmaceutical Ingredients) which can be used to manufacture CBPMs. Having the full process under one roof should reduce overheads. Furthermore, providing UK grown and manufactured product should be appealing to prescribers and patients who would like to know the provenance of the product. The Group has a good working relationship with the UK Home Office and has already received a licence from the department in 2021 to grow cannabis for large scale research purposes.

Growing adoption of CBPMs in the medical community

Whilst the medicinal use of cannabis was only legalised in the UK in 2018 there is early, but growing acceptance of CBPMs as an effective treatment option for a number of conditions, including chronic inflammation and pain that is resistant to other treatment options currently available, including highly addictive prescription drugs, such as opioids. However, there remains slow uptake in the NHS as clinicians and trusts are hesitant to prescribe and reimburse CBPMs, largely due to a lack of clinical evidence from placebo controlled randomised trials and the varied quality and composition of available CBPMs. The cultivation of cannabis at the DJT facility should provide a high-quality consistent product with a transparent, domestic supply chain to meet this challenge.

Experienced management team

Ananda has assembled a skilled team to provide comprehensive support across all aspects of the business. This includes significant expertise in cannabis plant science and cultivation, as well as pharmaceutical R&D, manufacturing and marketing. Before being acquired, DJT Plants cultivated medical-grade cannabis for GW Pharmaceuticals (acquired by Jazz Pharma (JAZZ.NQ) for $7.2b). Ananda is collaborating with renowned scientists, such as Professor Clive Page, who recently joined the Board whilst specialist pain researchers Professor Marie Fallon, Professor Andrew Horne, Professor Philippa Saunders and Dr Lucy Whitaker are lead investigators for the upcoming Phase 2 trials with MRX1. DJT's Head of Cultivation has extensive experience cultivating cannabis in the UK, under contract for GW Pharmaceuticals and its Head of Genetics has a PhD in Plant Physiological Ecology and has extensive industry experience growing and breeding cannabis variations.

Upcoming News flow

The Company has several future milestones which it looks to achieve across the short and medium term. We expect the two Phase 2 trials to begin shortly as well as the launch of MRX1 (and subsequently MRX2) into the UK market. At DJT Plants we expect to see additional results from the field trials and analysis of plants as well as plans for the GMP facility.

Longer term we expect results from the MRX1 clinical trials, completion of the genetic breeding programme and further progress towards commercial production of medical cannabis plants at DJT Plants, such as MHRA and Home Office approvals.

Alongside these workstreams, we also expect Ananda to file additional patents as it builds a robust IP estate around the MRX platform. Furthermore, the Company is actively pursuing opportunities to conduct additional investigator-led clinical studies. Should the two Phase 2 trials be successfully completed we expect this to drive future interest across a number of disease indications.

Peer-group review

We believe that Ananda's diversified strategy and the progress made to date is not fully captured by its current valuation. The Company's lead product is being evaluated in two investigator-led, placebo-controlled Phase 2 clinical trials which are expected to be fully funded by established granting agencies and the Company is also close to launching its first products.

In terms of growing, the Group is progressing its proprietary genetics programme and has a cultivation facility in Lincolnshire that can offer low-cost, low-carbon flower production with a fully domestic supply chain.

We have compiled a group of listed companies operating in a similar area as Ananda. Ananda's £16.0m market capitalisation is below the £26.2m average market capitalisation for the group, corroborating our view.

Table 1: Peer Group review of listed companies focused on the cultivation and supply of cannabis in Europe or progressing clinical trials

Ticker	Name	Market Cap (£m)	Revenue (£m)	UK commercial cultivation licence?	Genetics programme	Clinical Trials?	Grant funding?	Cultivation facility?	Cultivation Conditions (facility size)
Average		**26.2**	**0.5**						
ANA PZ	**Ananda Developments**	**16.0**	**-**	**No (UK research cultivation licence)**	**Yes**	**Phase 2 trials imminent**	**Yes**	**Lincolnshire, UK**	**Multi-chapelle growing structure (20,000 ft²)**
MXC AU	MGC Pharmaceuticals	10.50	2.6	No	Yes	Phase 1 trial (Phase 2b planned)	No	Malta and Slovenia	Unknown
CEL LN	Celadon Pharmaceuticals	103.30	-	Yes	Yes	No - Phase 1 study planned	No	Midlands, UK	Indoor (100,000 ft²)
HELD LN	Hellenic Dynamics	21.93		No	No	No	No	Thessaloniki, Greece	Greenhouse (40,000 ft²)
KNB LN	Kanabo Group	13.01	0.6	No	No	No	No	No, Spanish facility under construction	-
OCTP LN	Oxford Cannabinoid Technology	10.08	-	No	No	No, Phase 1 trial planned	No	No	-
KHRN DC	Khiron Life Sciences	5.4	-	No	No	No	No	Colombia, third party suppliers in Spain and Portugal for EU markets	Greenhouse (80,000 ft²)
STENO DC	Stenocare	10.30	0.5	No	Yes	No	No	No, imports from Canadian business (AgMedica)	-
CRDL CN	Cardiol Therapeutics	34.84	-	No	No	Phase 2 study planned	No	No	-

Source: Bloomberg, Company websites, Company presentations; Aquis exchange

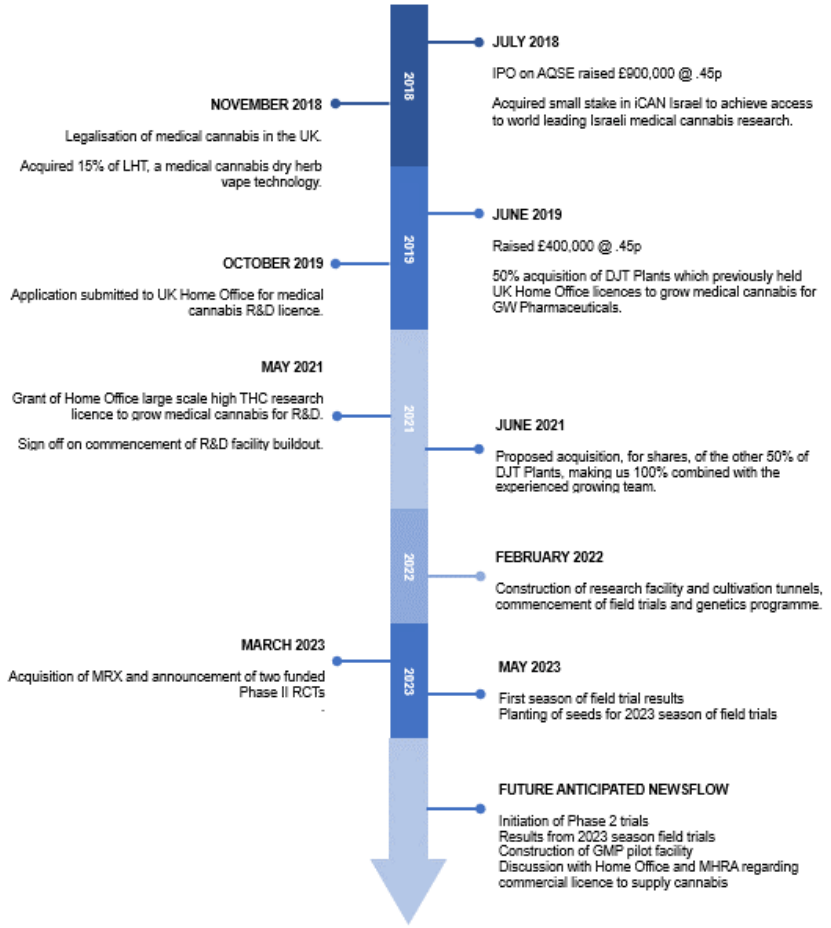
Company overview

History

Ananda Developments is a UK-based healthcare company. The Company was founded in 2018 and listed on the Aquis Stock Exchange (AQSE) later that year. Since listing, Ananda has invested in several projects and is now focused on progressing activities at its two wholly owned subsidiaries (DJT Plants Limited and MRX Medical Limited).

By ensuring the highest quality standards, a streamlined supply chain, and conducting UK-based research, Ananda aims to establish itself as a leading domestic provider of high-quality CBPMs.

Figure 1: Company History



Source: Compiled by SP Angel from Company announcements

Company structure

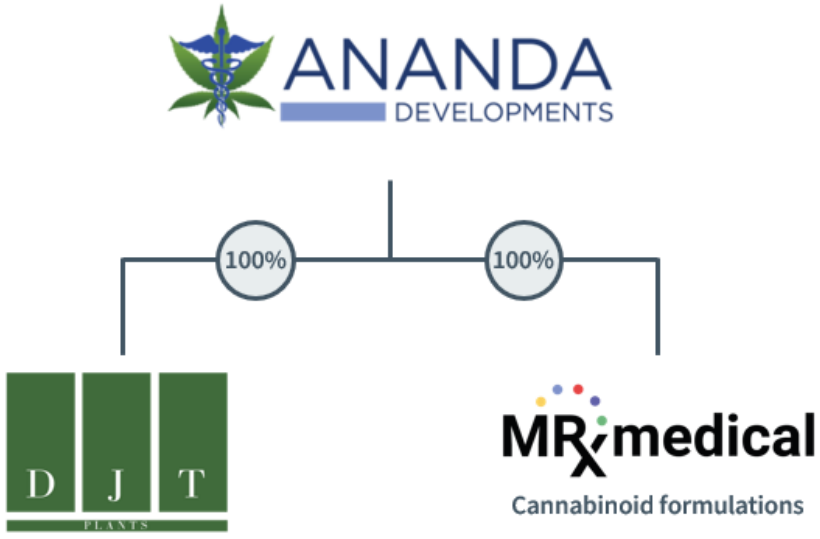
MRX Medical

At MRX, Ananda plans to commercialise cannabinoid-based medicines to support the treatment of certain chronic inflammatory conditions and pain with high unmet need. The group are close to launching their first medicinal products (MRX1 & MRX2). Furthermore, through a partnership with the University of Edinburgh, MRX is supplying MRX1 and a matched placebo formulation to be evaluated in two Phase 2 trials which are expected to be fully funded by external granting agencies.

DJT Plants

At DJT Plants, the Group is using cost-effective and proven growing methods to cultivate medical cannabis at a dedicated facility in Lincolnshire, UK, as well as developing unique strains through their breeding program. They are also performing strain stabilisation research and scaled cultivation trials, with the goal of obtaining regulatory approval to manufacture medical grade cannabis for UK patients.

Figure 2: Ananda company structure



Source: Company presenation

MRX Medical: Formulating medical cannabinoid oils

Company overview

In April 2023, Ananda acquired MRX Global Ltd and its wholly owned subsidiary, MRX Medical Ltd for a consideration of £2m paid in shares. MRX is developing and commercialising proprietary formulations of cannabidiol oil for medical use. The company was originally established to develop cannabidiol oils for food supplements. Whilst it was difficult to scale the food supplement business commercially, the formulation method was found to be applicable for medical purposes due to the consistent composition of oil-based formulations produced by MRX as well as positive feedback from consumers.

Product pipeline

The Company has two near-commercial stage products in development and is looking to develop additional products via its manufacturing platform.

- **MRX1** is positioned to treat a range of chronic inflammatory pain conditions including CIPN, Endometriosis and Fibromyalgia.
- **MRX2** utilises a different strain of cannabis and terpene profile and is being developed to be used for a range of neurological disorders such as Parkinson's disease, Multiple Sclerosis and disease associated spasticity.

Both products are oil formulations which are delivered as droplets under the tongue. This is a more discreet approach with fewer harmful side-effect compared to smoking or vaping products. This approach provides good bioavailability and allows for the rapid delivery to the blood stream via the mucous membrane in the mouth.

Business model

MRX Medical is now looking to commercialise MRX1 and MRX2, via the unlicenced medicine (specials) route. This provides an opportunity to generate revenues in the short term. The long-term goal is to explore achieving regulatory approval as a licenced therapeutic. Whilst this may require further clinical trials, it would enable the Group to make claims that the products can treat a certain disease. This could drive higher sales due to more comprehensive public and private reimbursement and clinical adoption. This was the route that GW Pharmaceuticals took for its cannabis-based medicines, such as Epidyolex (cannabidiol) approved in 2019 by the UK MHRA to treat seizures associated with Lennox-Gastaut syndrome or Dravet syndrome, two rare forms of epilepsy.

Validation from well-regarded medical research institutions

Alongside the commercial launch, the Company is working with researchers at the University of Edinburgh to conduct two placebo controlled clinical trials evaluating the safety and efficacy of MRX1 in patients with two diseases underserved by current treatments (CIPN and Endometriosis).

These studies are expected to be funded by £1.6m in funding commitments from third-party granting agencies. This not only provides non-dilutive funding but also external validation for Ananda's approach with cannabidiol from a well-regarded medical research institution.

Manufacturing approach

MRX's proprietary THC-free approach to formulation

A key feature of MRX Medical's manufacturing approach is the generation of cannabidiol oil formulations which are essentially THC free. THC is the main psychoactive compound in cannabis and can cause a range of negative side effects, including altered perception, mood, and behaviour. Many clinicians are concerned about the presence of THC in cannabis medications, particularly in individuals who may be sensitive to the psychoactive effects, such as children.

By being THC-free, MRX products enable patients to benefit from the therapeutic effect of cannabidiol without the psychoactive effects associated with THC. MRX products also meet the requirements of NICE, an organisation which evaluates new treatments for the NHS, and the NIHR, the NHS research funding agency, who have made calls to fund research into cannabidiol treatments which are free of THC. Positive results from the trials at the University of Edinburgh should support reimbursement, patient access and grant funding discussions with these key stakeholders. Most importantly, it also addresses the concerns of patients and prescribers who may be keen to use or prescribe cannabidiol medication but are concerned about the negative side effects of THC.

Pharmaceutically consistent batches

MRX Medical's manufacturing approach produces cannabidiol oil-based formulation which are consistent from batch to batch. This is a key requirement to become a licensed medicine. MRX's formulation method is patent pending and is developed and manufactured in the UK to meet EU-GMP requirements.

As is standard in the pharmaceutical world, the Company uses a contract manufacturer to manufacture MRX products. MRX's manufacturer is UK MHRA Approved and NHS Accredited for the manufacture and wholesale of unlicensed medicines (specials) and has considerable experience in manufacturing a range of CBPMs including flower and oil products with varying levels of THC and cannabidiol.

Long term plan is to produce MRX therapies in-house

In the long term, Ananda aims to manufacture MRX products from plants grown at its Lincolnshire facility. This would enable Ananda to have full control over the manufacturing process and should bring down costs. Furthermore, it would create a fully domestic supply chain, which is of significant interest to the regulators, prescribers and patients.

Clinical trial programme underway

The Company's lead asset, MRX1, has been selected to be used in two investigator-led Phase 2 placebo controlled clinical trials. The trials aim to investigate the effectiveness of cannabidiol in patients in two complex chronic pain conditions: Chemotherapy-induced peripheral neuropathy (CIPN) and endometriosis. The selection of MRX1 for these trials is a significant validation of the Group's approach to product development.

The trials, set to begin later this year, will be conducted by researchers at the University of Edinburgh and are expected to be fully funded by grant awards. One of the largest barriers in the adoption of medical cannabis and cannabidiol into clinical practice is the lack of evidence from placebo controlled clinical trials. Results from these trials should provide clinical and patient confidence regarding the safety of MRX1 as well as supporting future regulatory and reimbursement discussions.

Chemotherapy-induced peripheral neuropathy (CIPN) trial

This trial aims to evaluate the safety and efficacy of MRX1 as a treatment for CIPN patients. 92 patients with stable CIPN (three months after completion of chemotherapy) and no active cancer are expected to be recruited. The trial is a double blinded crossover trial, meaning both patient and clinician do not know if the patient received MRX1 or placebo and all participants will receive both the active and placebo over the course of the trial.

To assess patient responses, researchers will conduct nerve pain assessments, questionnaires, and functional MRI (fMRI) imaging. fMRI can help obtain objective measures of brain activity associated with pain perception. The study also aims to assess certain inflammatory biomarkers in the blood. These biomarkers could also help identify subgroups of patients which respond to MRX treatment. The study is led by Professor Marie Fallon, Professor of Palliative Medicine at the University of Edinburgh. Professor Fallon is an internationally recognised experienced researcher who has conducted several clinical trials in pain conditions.

Endometriosis trial

This randomised, double-blind, placebo-controlled trial aims to investigate if MRX1 can reduce endometriosis-associated pain. 100 patients with pelvic pain due to endometriosis will receive either MRX1 or placebo for 12 weeks. Patient responses will be evaluated via questionnaires. This data will be used to assess the safety and efficacy of MRX1 compared to placebo and help guide future studies. Positive responses from this trial could be incorporated into clinical guidelines for managing endometriosis-associated pain. The trial is led by Dr Lucy Whitaker, a researcher at the MRC Centre for Reproductive Health at the University of Edinburgh and is supported by Professor Andrew Horne and Professor Phillipa Saunders – who recently co-chaired the 2023 World Endometriosis Congress.

Non-dilutive grant financing in place for clinical trials

The clinical trials have received combined commitments of £1.55m in external grant funding. Not only is this a non-dilutive source of revenue, but it provides third-party validation from an experienced institution.

Positive data should support discussions with the NHS and the regulator

Management believes that positive data from the trials could support discussions with the NHS regarding funding of prescriptions via the unlicensed (specials) route as well as conversations with the UK MHRA regarding the pathway for approval as a licensed therapy. Both conditions being evaluated in the trials have large addressable populations which are underserved by current treatments (further discussed on page 15).

MRX1 is ready for commercial launch

The Company is looking to initially launch its MRX products, beginning with MRX1, as unlicenced medicinal products (specials). This is the standard route for CBPMs in the UK.

What are specials?

Unlicensed medical products (specials) are medicinal products that have not been granted marketing authorisation by the regulator to treat a certain patient group. However, these products can be prescribed when there are no licensed alternatives available, or when the licensed product is not suitable for a particular patient's needs. Unlicensed medical products may be produced and supplied by licensed pharmaceutical companies or specially licensed compounding pharmacies.

Majority of CBPMs are specials

CBPMs can be prescribed by specialist doctors on the NHS or privately. Currently, most CBPMs in the UK are prescribed privately as unlicensed specials. There are only three licenced CBPMs that are available as a licenced therapy (Sativex, Epidyolex Nabilone) and are routinely prescribed via the NHS.

Specials route provides short-term route to market and revenue generation

The unlicenced (specials) route provides a short-term path to market for MRX1 and revenue generation. Whilst revenues are not expected to be as high as licenced drug sales, the strategy provides an opportunity to build relationships with pain clinics and form a deeper understanding of the needs of physicians and patients. This knowledge can help guide the future commercial strategy.

Initial focus on three key clinics to drive growth

Ananda initially looks to rollout MRX1 at three UK medical cannabis clinical networks. The Company has developed good working relationships with these clinics and selected these networks based on their experience in prescribing CBPMs and the fact they are not affiliated with any producer, importer or pharmacy. This gives clinicians freedom to evaluate and prescribe CBPMs without any bias. Subsequently, the Company looks to make the product available across other networks in the UK.

MRX formulations offer advantages over competitor products

There are many cannabidiol oils on the market, however many of these are whole plant/flower based. As a result, the chemical composition can vary significantly from one batch to another. This variability makes it difficult to establish standardised dosing, a concern for clinicians. MRX1 is formulated using purified cannabidiol isolates with each component having a product specification to validate the provenance and composition of the material. This provides confidence to the prescriber and patient as to the composition of the product.

The ability to know the provenance of the ingredients is an appealing feature especially given the reduced clinical information available for specials compared to licenced therapies. Many oil products may have residual levels of THC. Given the psychoactive properties of THC, Physicians are more inclined to prescribe oils such as MRX1 which are known to have essentially no THC content.

Pharmaceutical approach to branding

Ananda is taking a pharmaceutical approach to marketing to make the MRX products appealing for clinicians. MRX products will have materials like those found on licenced treatments, such as a clinician pack and dosing guidance.

Figure 3: MRX formulations

Source: Company presentation

Pharmaceutical approach to IP

Ananda is building a robust IP estate around the MRX platform with patents aimed at covering methods of manufacture and specific formulations for different disease areas.

The Company recently filed four patent applications with the UK Patent Office. The applications cover three novel cannabidiol formulations (MRX1, MRX2, and MRX3) whilst the fourth application covers a proprietary method for formulating these products. MRX is also looking to add further IP as opportunities arise.

Long-term ambition to develop MRX1 into a licenced therapy

The current focus of MRX is to commercialise MRX via the specials route and generate revenue opportunities in the short term. The long-term goal is to develop MRX as a licensed treatment i.e., one that has been approved by a regulatory authority as a treatment for a specific disease.

Whilst this is a long, capital-intensive process which requires clinical trials and adherence to other regulations and guidelines, it is an opportunity to generate significant value. Unlike specials, licenced medicine manufacturers can make claims for certain diseases. This makes the treatment more likely to be included in medical treatment guidelines and covered by private insurance or the NHS which should drive prescriptions and allow the drug to command higher prices.

Potential to achieve accelerated approval

MRX has a head-start in the process to become a licensed therapy with the upcoming Phase 2 trials. Management believes there may be an opportunity for the trial data to support a Marketing Approval Application with the MHRA. Whilst it is uncommon for investigational drugs to skip Phase 3 trials and go straight to marketing approval, the regulator may grant accelerated approval based on Phase 2 trial data, particularly for diseases underserved by current treatments such as CIPN and endometriosis (further discussed on Page 15).

Market overview

Given the upcoming clinical trials evaluating MRX in endometriosis and CIPN, we have focused our market overview on these conditions. We acknowledge that there are several other indications that these treatments may be prescribed, such as fibromyalgia, a chronic pain condition which is not well understood.

Endometriosis

Endometriosis is an incurable, chronic condition whereby the tissue lining of the womb (uterus) grows elsewhere in the body such as in the fallopian tubes and ovaries or in the peritoneum (the lining of the abdomen). The growth of lesions can lead to inflammation and scarring. Symptoms include moderate to severe pain, heavy bleeding, fatigue, and infertility. There is also an increased risk of developing ovarian cancer.

Current treatments for endometriosis are inadequate

Endometriosis is a common condition; 10% of women of reproductive age suffer from endometriosis. In the US alone, c.6m women are thought to suffer from the condition. Despite the prevalence of the condition, there is no cure and current treatments remain suboptimal. Endometriosis is thought to cost the UK c.£8.2b per year in NHS costs and lost income (Simoens S. et al,. Hum Reprod. 2012;27(5):1292-9). GlobalData estimates that the endometriosis market (US, France, Germany, Italy, Spain, the UK and Japan) is expected to grow from $1.1bn in 2020 to $2.9b in 2030. There are treatments available however, they have several side-effects and there is a need for additional options.

Table 2: Current treatments for endometriosis are suboptimal

Treatment	Description	Side effects/ Risks	Cost estimates
Contraceptives	Hormone-based medications that suppress ovulation and menstruation	Nausea, irregular bleeding, depression, Inability to conceive	$10-50 per month
Analgesics (Painkillers)	Over the counter or prescription medications that relieve pain	Nausea, diarrhoea, kidney damage, cardiovascular risk, Opioid addiction	$5-20 per month
GnRH treatments	Hormone-based medications that reduce oestrogen production.	Reduced bone density, fracture risk, osteoporosis	$500-1,000 per month
Surgery	Surgical removal of endometriosis tissue	Infection, permanent infertility, recurrence of symptoms	$5,000-10,000

Source: Company websites; Endometrisosis UK; NICE; FDA.gov

Cannabidiol potential mechanism of action

Whilst there has been limited clinical research with placebo-controlled trials, there is a considerable body of evidence from experimental work suggesting that cannabidiol treatment could help alleviate symptoms associated with endometriosis, such as pain and inflammation. Cannabidiol interacts with the wider endocannabinoid system in the body which plays a key role in regulating pain, inflammation, and other bodily processes. Recent preclinical studies have suggested that a dysfunction in the endocannabinoid system is present in endometriosis patients and that aspects of endometriosis-associated pain may be targeted by modulating the endocannabinoid system. Additionally, some people with endometriosis experience anxiety and depression, and it is anticipated that the application of cannabidiol may help relieve these symptoms. Furthermore, cannabidiol also has anti-inflammatory properties that may help reduce inflammation in the pelvic area. In one preclinical study, cannabidiol was shown to reduce inflammation in endometrial tissue samples from women with endometriosis (Genovese et al. Int J Mol Sci. 2022 May 12;23(10):5427).

Chemotherapy-induced peripheral neuropathy (CIPN)

Chemotherapy-induced peripheral neuropathy (CIPN) is a common side effect of chemotherapy. It is thought to affect up to 80% of people who receive certain types of chemotherapy. CIPN is caused by damage to the nerves that carry signals from the brain and spinal cord to the rest of the body. This damage can be caused by the chemotherapy drugs themselves, or by the way that the drugs interact with the body's immune system.

Symptoms vary between patients, but key symptoms are mild to severe pain, numbness/loss of balance and muscle weakness as well as depression and anxiety caused by the physical symptoms. There is currently no cure for CIPN, with a range of treatment options used to relieve symptoms and improve quality of life, such as:

- **Medications:** There are several medications that can be used to treat CIPN, including antidepressants, anticonvulsants, and opioids. These medications can help to reduce pain, numbness, and tingling.
- **Physical therapy:** Physical therapy can help to improve range of motion and strength in the affected areas.
- **Occupational therapy:** Occupational therapy can help people with CIPN to adapt to their new limitations and to learn how to perform daily activities safely and effectively.

Whilst these treatment options can help alleviate some symptoms, there is a need for new pharmacological treatments to support patients, particularly those with severe pain who are typically given opioids.

Table 3: Current treatments for CIPN are inadequate

Category	Medication	Description	Issues
SNRIs	Duloxetine (Cymbalta)	Duloxetine is a serotonin-norepinephrine reuptake inhibitor (SNRI) that is used to treat depression and anxiety. It has also been shown to be effective in reducing pain and improving function in people with CIPN.	Can cause side effects such as nausea, vomiting, diarrhoea, and dizziness. May increase the risk of suicidal thoughts and behaviours.
Anticonvulsants	Gabapentin (Neurontin), Pregabalin (Lyrica)	Used to treat seizures and nerve pain. They have also been shown to be effective in reducing pain and improving function in people with CIPN.	Can cause side effects such as dizziness, drowsiness, and weight gain. May interact with other medications.
Opioids	Tapentadol (Nucynta), Fentanyl (Duragesic patch)	Opioids are effective in reducing pain in people with CIPN, but they should only be used as a last resort due to the risk of addiction and other side effects.	Can be addictive. May cause side effects such as nausea, vomiting, constipation, and drowsiness. May interact with other medications.

Source: Company websites; FDA.gov; Mayo Clinic

Potential use of cannabidiol to alleviate CIPN symptoms

Cannabidiol has been shown to have potential therapeutic benefits in reducing symptoms of CIPN. Cannabidiol's ability to interact with the endocannabinoid system may help to reduce inflammation and pain associated with CIPN. Additionally, cannabidiol's neuroprotective properties may help to prevent nerve damage caused by chemotherapy drugs. However, more research, such as the upcoming Phase 2 trial using MRX1, is needed to fully understand the efficacy and mechanisms of cannabidiol in treating CIPN. We have outlined some of the potential ways cannabidiol can support CIPN patients:

- **Reduce inflammation:** cannabidiol has anti-inflammatory properties that can help to reduce inflammation in the nerves, which can lead to pain and numbness.
- **Protect nerve cells:** cannabidiol can help to protect nerve cells from damage, which can help to prevent or slow the progression of CIPN.
- **Reduces pain:** cannabidiol has analgesic properties that can help to reduce pain.
- **Improves quality of life:** cannabidiol can help to improve quality of life by reducing pain, numbness, and tingling, and by improving sleep and mood.

DJT plants: Genetic approach to plant breeding

Company overview

DJT Plants is focused on becoming a leading, UK-based cultivator and manufacturer of medical cannabis and a breeder of cannabis plants with superior and stable genetics. Ananda originally acquired a 50% stake in DJT Plants in June 2019 and acquired the remaining 50% of DJT Plants in 2022.

Aim to be a commercial supplier of medical grade cannabis for the UK market

DJT Plants' key aim is to receive approval from the Home Office and MHRA to grow and supply medical cannabis for commercial purposes. To achieve this, the Group is developing genetically stable cannabis plant strains and subject to funding, looks to construct a GMP compliant manufacturing and processing plant at its cultivation facility in Lincolnshire.

Importance of the genetic breeding programme

In 2021, DJT Plants was granted a licence from the Home Office to grow medical cannabis for research. The group is now performing genetic stabilisation studies and field trials at the cultivation site in Lincolnshire. The aim is to create proprietary strains of cannabis plants with the desired traits to produce CBPMs.

To do this, DJT Plants is using selective breeding techniques to create purebred genetic lines that are ideal for producing specific Active Pharmaceutical Ingredients (APIs). This approach also has the potential to create IP around the new varieties which can lead to additional commercial opportunities alongside the supply of medical product. Alongside the genetic breeding programme, the Company has selected three existing strains which it can commercialise subject to receiving the requisite approvals from the MHRA and Home Office. This provides additional options should the breeding programme take longer than anticipated.

DJT has considerable experience in cultivating medical cannabis

The cultivation site in Lincolnshire is staffed by a team of five individuals with significant experience across various aspects of the cannabis industry, including growing, plant breeding, and regulatory activities. DJT Plants has substantial experience in the space. The company previously supplied medical cannabis to GW Pharma for over three years.

Research facility is up and running

In Q1 2022, DJT Plants completed construction of the cannabis research and cultivation facility in Lincolnshire. The site consists of a laboratory research building and a growing facility. The site currently covers 0.5 hectares but there is room to expand (up to 40 hectares) to cater for commercial production. The facility meets strict security requirements and is audited regularly by the local police and Home Office. The key parts of the site are:

- **Mother plant room:** Female cannabis plants are kept in a vegetative state in the room (meaning they do not flower). This keeps the plants alive for a longer period (cannabis plants are annuals and typically die after flowering). This enables the plants to be cloned to produce new plants. Mother plants are also used to study the cultivation process and evaluate yield.

- **Father plant room:** Father plants produce pollen, which is needed for cannabis plants to reproduce. However, if a male plant pollinates a female plant, the female plant will produce seeds instead of buds. This can significantly reduce the amount of cannabinoids in the buds. Therefore, it is important to keep father plants separate from female plants.
- **Nursery plant room:** Young plants that are still growing are kept in a separate room to prevent them from being pollinated. Nursery plants are also kept in a controlled environment to ensure that they receive the proper amount of light, water, and nutrients.
- **Growing structure:** This is where the plants are grown as part of field trials and future commercial production. Growing takes place in "multi-chapelle" structures. These are flexible, polymer tunnels which enable precise airflow management to create stable temperature and humidity.

Lincolnshire offers ideal growing conditions and enables low-cost approach

Lincolnshire is a region with a long history of agriculture due to its temperate climate, ample daylight and fertile soil. The location's favourable conditions were demonstrated in 2022 when a Lincolnshire farmer generated a yield of wheat of 17.96t/hectare, surpassing the existing world record (17.40t/ hectare) achieved in New Zealand in 2020.

DJT Plants is using natural growing conditions for cannabis cultivation. Management believes this is the most effective way to grow high-quality cannabis crops and reduces the need for artificial light and heat, bringing down running costs substantially. This strategy has been validated by Ananda's first season of field trials, which have produced positive results in terms of crop growth and quality.

Figure 4: DJT Plants growing multi-chapelles

Source: Company website

Business model provides multiple opportunities for revenues

Primary focus is the commercial supply of medical cannabis products...

DJT Plants is focused on growing clinical grade cannabis for medical use. The availability of cannabis with stable, known genetics and a fully domestic supply chain should be appealing to regulators, clinicians and patients.

The company looks to produce both medical cannabis flower products as well as isolates such as cannabinoid oils, including MRX formulations. Many doctors prescribe both oil and flower as they have different properties (Cannabis flower can be used to treat 'breakthrough pain' due the fast-acting nature of cannabinoid inhalation, while cannabinoid oil tends to be slower to take effect but can last for longer). The Company aims to follow a similar commercial strategy to MRX, offering the product to clinics and prescribing clinicians, initially via the specials route with the long-term goal of offering licenced therapies.

...breeding programme offers additional agricultural-focused revenue streams

Unlike conventional crops such as wheat, there has been little scientific research into the production of genetically stable cannabis seeds due to its history of illicit use. DJT is one of the first businesses to perform a cannabis breeding programme. This provides additional revenue opportunities outside of the supply of medical cannabis including:

- **Seed sales as a service**: DJT Plants could provide seeds to farmers on a subscription basis. This would allow farmers to access the latest and most innovative seeds without having to make a large upfront investment. DJT Plants could generate recurring revenue from this subscription model.
- **Technology services/genetic library:** As part of its research programme, DJT Plants is building an extensive genetic library of cannabis. This is a valuable data source that can be used to develop new strains of cannabis with improved properties. DJT Plants could generate revenue by supporting growers and breeders in developing new strains of cannabis with improved properties, such as pest resistance or a certain THC: cannabidiol composition, in return for a technology service fee.
- **Genetic licencing:** DJT Plants is developing proprietary strains of cannabis that are protected by IP. DJT Plants can generate revenue by licensing these genetic traits to other companies. In return for a license, DJT Plants could receive an upfront payment and a royalty on each unit of the product that is sold.

Table 4: Agricultural opportunities for revenue generation

Opportunity	Description	Benefits
Seed sales as a service	DJT could provide seeds to farmers on a subscription basis. This would allow farmers to access the latest and most innovative seeds without having to make a large upfront investment. DJT could generate recurring revenue from this subscription model.	* Reach a wider audience of farmers. * Provide farmers with the seeds they need to grow their crops. * Generate recurring revenue.
Technology services and genetic library	DJT could generate revenue by supporting partners in developing new strains and charging a technology service fee.	* Access to a valuable data source that can be used to develop new strains of cannabis with improved properties. * Generate revenue from its IP. * Build relationships with other companies in the cannabis industry.
Genetic licensing	DJT could generate revenue by licensing its genetic traits to other companies. In return for a license, DJT would receive an upfront payment and a royalty on each unit of the product that is sold.	* Expand its reach into new markets. * Generate revenue from its IP. * Build relationships with other companies in the cannabis industry.

Source: Compiled by SP Angel

Looking to develop genetically stable plants grown from seed

Home office research licence received in 2021

In 2019, Ananda applied to the Home Office to grow medical cannabis for research. This 'Schedule 1' licence was granted in May 2021. Under the licence, DJT Plants can grow high THC (>0.2%) medical cannabis for research.

Creating a library of stable cannabis genetics

Having received the research licence, DJT is progressing an extensive breeding programme with the aim of generating a library of cannabis plant variants with desirable traits and stabilised genetics that can be grown from seed. DJT is focused on developing three types of plant based on the desired profile of the patients (table below).

Table 5: Key profile of cannabis plants

Type of Plant (THC:CBD ratio)	Key Traits
	High yield
High THC, Low cannabidiol (1:0)	Easy growth
Low cannabidiol, High THC (0:1)	High potency
Balanced THC and cannabidiol (1:1)	Consistent cannabinoid and terpene profile
	Disease resistance

Source: Compiled by SP Angel

Why is genetic stabilisation needed?

Ananda aims to develop cannabis plants that can be grown from seed, a relatively novel approach to cannabis cultivation which is normally achieved by plant cloning. Cloning involves taking a cutting from an existing plant and rooting it in a controlled environment. The cutting will then develop into a new plant that should have the same characteristics as the original plant, such as potency and yield. Cloning has been the conventional method of growing cannabis. Given its history of illicit use, there has been little research into cannabis breeding compared to traditional crops. As a result, producers typically rely on cloning even though there are several disadvantages.

Clones can be more expensive and difficult to grow and maintain than seeds, the natural way plants grow. Clones are also more susceptible to genetic drift, a process where the genetic makeup of plants changes over time. This can lead to decreased yields and increased variance. Growing from seed is less likely to cause genetic drift. This can ensure plants retain the desired genetic traits and same consistency, an important requirement to produce medical cannabis. Furthermore, seeds can be easily and inexpensively stored, transported and require no manipulation or attendant activities whilst not being used, unlike cuttings.

Table 7: Cloning Vs Seed

Criteria	Cloning	Seed
Time	Slower	Faster (if germinated at same time)
Cost	More expensive	Less expensive
Risk	Higher risk of failure	Lower risk of failure
Uniformity	Less uniform	More uniform
Productivity	Lower productivity	Higher productivity
Resistance to pests and diseases	Lower resistance	Higher resistance
Vigour	Lower vigour	Higher vigour

Source: Compiled by SP Angel

Plant breeding programme underway

Aim to get 98% genetic similarity between plants of the same variety

In early 2022, DJT Plants began the genetic breeding programme. Known as a single seed descent (SSD) study, the programme aims to develop proprietary strains of cannabis plant that can be grown from seed and have near identical genetics. These plants can be used to develop medicinal products with reliable and predictable effects.

SSD studies involves self-crossing and growing selected cannabis strains. The process is then repeated for six generations with the aim to reach c.98% genetic similarity between plants of the same strain. Cultivars are then selected for desired traits and seeds are taken from these plants and grown in field trials. This allows DJT to select new varieties of plants with desired traits, a high level of genetic similarity and can be grown from seed.

Field trials underway

To support the programme, the Company is performing field trials at the Lincolnshire site to evaluate the metabolic and growth profiles of each generation of cannabis strains. This can guide the future design of the study as well as plans for commercial growing such as the design of fertilisation, irrigation and harvesting protocols.

Positive results seen from first generation field trials

In late 2022, five of the cultivars grown as part of the first field trial were sent for detailed testing. The results showed that DJT Plants had successfully grown the three planned cultivars (high THC, balanced THC/cannabidiol, and high cannabidiol). The terpene profiles were consistent with expectations with a balance of key terpenes found in medical cannabis cultivars. Finally, the growth of healthy plants also provides validation of the Group's cultivation methods.

Next steps: 2023 field trial adhering to GACP standards

DJT Plants are now in the process of selecting the generation of cultivars for the next set of field trials. Alongside the analysis of the cultivars, the Group is progressing the next set of field trials in adherence to GACP (Good Agricultural Collection Practice) standards. The plants for this trial have already been selected with growing underway. GACP are a set of guidelines to ensure the quality, safety, and efficacy of medicinal plants. Documentation surrounding GACP forms part of the data package required to receive approval from the MHRA to commercially supply cannabis for medical use.

IP protection and generation of knowhow

By creating new cannabis strains that are unique and have specific characteristics, DJT can file for Plant Breeders' Rights (PBR). This can prevent others from producing or selling the same strain without their permission. PBR is a form of IP protection for new plant varieties. It grants exclusive rights to breeders over the production and distribution of their varieties. To receive protection under PBR requires genetically stable plants that can be grown from seed.

The generation of IP provides the Group with a competitive advantage in the marketplace and wider opportunities for revenues. e.g. if DJT Plants develops a new variant that is widely accepted in the medical cannabis market, it could provide licensing opportunities to partners interested in using this strain.

DJT Plants has also developed significant knowhow in terms of genetic breeding and plant cultivation which gives the group a competitive advantage over many of its peers. For example, researchers have developed a proprietary process for self-pollinating cannabis plants. This process allows DJT to produce genetically homogenous plants, at a faster rate than conventional techniques.

Future plans

Application to Home Office and MHRA for commercial licence

DJT Plants requires an amendment to its Home Office Licence as well as MHRA approval to proceed to commercial cultivation. Alongside the genetic breeding programme, the Company has selected three pre-existing strains which it can commercialise subject to receiving the requisite approvals from the MHRA and Home Office. This provides additional options alongside the breeding programme.

Furthermore, the group requires a MHRA GMP-certified medical cannabis processing and manufacturing facility. Once these workstreams are complete, the Group would seek Home Office licensure to sell its production.

In house GMP processing and manufacturing facility planned

Ananda is in the process of planning the construction of a GMP processing and manufacturing facility at its site in Lincolnshire. As mentioned, the facility will adhere to GACP/GMP and Good Distribution Practices (GDP) standards.

Detailed planning is ongoing. The Company is currently looking for a partner to design and build the facility and has sent pre-qualification letters to six shortlisted companies with pharmaceutical construction credentials.

Once the facility has been constructed, subject to funding, and approval by the regulator, flower grown and harvested at the cultivation facility can be processed and manufactured at pharmaceutical grade for sale to healthcare providers.

UK Regulatory Backdrop

The UK medical cannabis industry is still at an early stage, however, with growing clinical and patient acceptance and increasing regulation surrounding its use, we see the industry positioned for continued growth. We believe Ananda is well placed to capture market share in this area through its scientific approach to developing CBPMs.

UK regulation is now in place to support the use of CBPMs

UK legislation on medical cannabis has become more lenient over the past five years. In 2018, after significant pressure from patient advocate groups, the UK government changed the law to allow certain doctors to prescribe cannabinoid-based medicines on a case-by-case basis for any condition where they believe it could be beneficial. As a result, in addition to the licensed cannabis-based products (Sativex, Epidyolex, Nabilone), doctors on the General Medical Council's specialist register can prescribe unlicensed CBPMs if it is deemed clinically appropriate. GPs can also prescribe those products under the direction of a specialist, as part of a shared care arrangement.

Table 8: Snapshot of UK CBPM environment

Reimbursement & Health Insurance Coverage	Authorised Prescribers & Prescription Conditions	Treatable Pathologies	Available Products	Treatment Prices (Average)
NHS medical cannabis prescriptions (free) exist but are extremely difficult to get. Market is almost entirely private medical cannabis prescription. Private insurers may cover the cost if it falls in line with insurance firm's requirements, medical insurers will usually not cover it.	CBPMs can be prescribed if conventional treatments have been tried and have failed to work. Clinicians (public or private) may prescribe unlicensed medications if they are on the GMC specialist register. Must take into account GMC guidance and NHS trust governance procedures. Specialists on the GMC should only prescribe within their area of expertise	As with prescribing any other unlicensed medicine, it is a clinical decision to determine the most appropriate medication or course of treatment to prescribe for a patient, having considered the patient, the clinical condition, the clinical evidence of efficacy and safety and the suitability of licensed medicines.	Approximately 90 products (flower + extracts) on the market as of February 2023	Average price as of August 2022 were Flower: €11.4/gram Oil: €7.1/millilitre

Source: Prohibition partners

UK is one of the fastest growing markets for medical cannabis in Europe…

According to Prohibition Partners, a think tank, the UK is set to become the second largest European market for cannabis medicines in 2023. This growth is driven primarily by private clinics offering CBPMs. The rate of prescriptions is growing rapidly. Analysis of data from the NHS estimates that in 2022 there were c.77k private prescriptions for CBPMs, up 77% y/y from c.44k in 2021 and only 4k in 2020.

Private clinics prescriptions are increasing every year…

There are c.27 private clinics that are authorised to prescribe/dispense CBPMs in the UK with three clinical networks (Lyphe Group, Curaleaf and IPS pharma) covering c.60% of the market. Some clinics are owned by specific suppliers of CBPMs and consequently offer limited products, whilst others offer a wider range of options.

Table 9: UK prescriptions of CBPMs

Prescription type	Timeframe	Number of prescriptions
NHS prescribing licensed medicines	Nov 2018 to Oct 2022	11,976
Private prescribing licensed medicines	Nov 2018 to Oct 2022	140
Private prescribing unlicensed medicines	Nov 2018 to Jul 2022	89,239

Source: Hansard Debate, 13 January 2023

...however, NHS prescription numbers remains low

Access to CBPMs on the NHS remains limited, with prescriptions coming from the three medicines licensed by the MHRA. There is often a reluctance to prescribe unlicensed CBPMs by doctors within the NHS. This is attributed to:

- **Lack of knowledge and conflicting guidance:** Clinicians face barriers to prescribing CBPMs due to limited knowledge and training, as well as confusion due to conflicting guidance from NICE, the NHS, and professional bodies.
- **Limited evidence base:** The lack of randomised controlled data undermines confidence in the evidence supporting cannabis prescribing, making healthcare professionals hesitant to recommend it as a treatment option.
- **THC concerns:** Many clinicians are concerned about the presence of THC in cannabis medications, particularly in individuals who may be sensitive to the psychoactive effects, such as children.
- **Personal liability:** Prescribers of unlicensed medicines (specials) carry the legal burden if there are issues, which may lead to fear of potential repercussions.
- **Administrative barriers:** Even specialists who are willing to prescribe cannabis face administrative hurdles. NHS prescriptions for CBPMs require approval from higher authorities, such as a CCG or trust, which are often reluctant to fund prescriptions due to the lack of evidence and contradictory guidance.

There is demand from clinicians and patients for CBPMs

We believe there is significant demand for CBPMs for both patients and clinicians. Over 1.4m people in the UK are thought to self-medicate illegally with cannabis with over half of this population doing so daily.

Whilst the lack of clinical data on CBPMs remains an issue, there is growing interest from doctors. There are thought to be c.100 clinicians in the UK that regularly prescribe CBPMs. Recently 50 doctors requested training on cannabis prescribing via script assist, a training platform developed by Sana Healthcare, a private pain clinic.

In terms of healthcare providers, CBPMs have the potential to offer health economic benefits such as reduced costs due to fewer hospital visits, reduced reliance on existing treatments with harmful side-effects, such as opioids, and an improvement in quality-adjusted life years because of reduced disease burden.

There is a need for an improved evidence base to encourage adoption

The ability to prescribe CBPMs on the NHS would open adoption and drive sales of CBPMs such as Ananda's. The number of doctors prescribing CBPMs is estimated to be c.100, out of 44,000 specialists who can prescribe. The latest clinical guidelines from NICE demonstrate a clear need for more evidence on the clinical and cost-effectiveness of unlicensed medicines to support routine prescribing and funding decisions on the NHS. In the absence of this evidence, clinicians are reluctant to prescribe.

Trials such as the two Phase 2 trials evaluating MRX1 should generate additional safety and efficacy data surrounding the use of cannabidiol. This should drive adoption. Furthermore, it could guide the pathway towards licenced therapies. On the following page we have outlined several clinical trials that are evaluating CBPMs as well as FDA or UK approved drugs.

Table 10: Overview of companies which have approved drugs or clinical trials/early-stage programmes evaluating CBPMs

Company	Lead asset	Lead Indication	Clinical stage
Ananda Developments	MRX1	Chemotherapy-induced peripheral neuropathy (CIPN), endometriosis	Phase 2 planned
Aphios Pharma	NanoCanna	Chemotherapy-induced peripheral neuropathy	Preclinical (Phase 2 planned for 2023)
Avecho Biotechnology	Cannabidiol TPM Capsules	Insomnia	Phase 3
Benuvia Therapeutics Inc.	Syndros (Dronabinol Oral solution)	Anorexia associated weight loss in AIDS patients; Chemotherapy-induced nausea and vomiting	Approved (FDA in 2016)
Benuvia Therapeutics Inc.	Marinol (Dronabinol liquid solution)	Chemotherapy-induced nausea and vomiting	Approved (FDA in 1985)
Benuvia Therapeutics Inc.	BEN-166S	Alzheimer's Disease Agitation	Phase 1
Bod Australia	BodECS BioAbsorb(TM) capsule	Insomnia	Phase 2
Botanix Pharmaceuticals	BTX 1503	Acne	Phase 2
Canopy Growth Corporation	Cannabidiol	Autism	Phase 1
Cardiol Therapeutics Inc.	CardiolRx	Recurrent Pericarditis	Phase 2
Cardiol Therapeutics Inc.	CardiolRx	Acute Myocarditis	Phase 2
Cymra Life Sciences	CybisTM	Chronic Back/Neck Pain	Phase 2
EmpowerPharm Inc	Cannabidiol oral solution	Social Anxiety Disorder	Phase 2
Jazz Pharmaceuticals	Sativex (nabiximols)	MS-related spasticity	Approved (UK in 2010)
Jazz Pharmaceuticals	Epidyolex (cannabidiol)	Seizures in epilepsy	Approved (UK in 2019, FDA in 2018)
Pure Green Pharmaceuticals Inc.	Cannabidiol	Phase 1/2	Diabetic Peripheral Neuropathic Pain
Radius Pharmaceuticals, Inc.	RAD011 (Cannabidiol Oral Solution)	Phase 2/3	Prader-Willi Syndrome
Receptor Life Sciences	RLS103 (Inhaled Dry Powder cannabidiol)	Anxiety	Phase 1b/2a
Tetra Bio-Pharma	PPP001	Chemotherapy associated nausea and pain	NDA
Tilray	TN-TC11G (THC + cannabidiol)	Glioblastoma	Phase 1b/2a
MGC Pharmaceuticals	CannEpil® (Cannabidiol and Delta-9-Tetrahydrocannabinol)	Drug-Resistant Epilepsy	Phase 2
Bausch Health (Valeant)	Cesamet (nabilone)	Chemo induced nausea and vomiting	Approved (UK in 1986, FDA in 2006)
Oxford Cannabinoid Technologies	OCT461201	Chemotherapy-induced peripheral neuropathy / Irritable Bowel Syndrome	Phase 1 ready
Oxford Cannabinoid Technologies	OCT130401	Trigeminal Neuralgia (TN)	Phase 1 planned in 2023
Celadon Pharmaceuticals	CBPMs	Non-cancer chronic pain	Phase 1 (yet to begin)
Zelira Therapeutics	ZLT-L-007	Diabetic Neuropathic Pain	Phase 1
Medlab Clinical	NanaBis	Intractable pain in oncology patients	Phase 1
Avicanna	RHO Phyto™	Musculoskeletal pain and inflammation	Phase 1
Kanabo Group	Undisclosed	Sleep Disorder	Preclinical

Source: Company websites, FDA.gov, Gov.UK, ClinicalTrials.gov

UK Manufacturing Backdrop

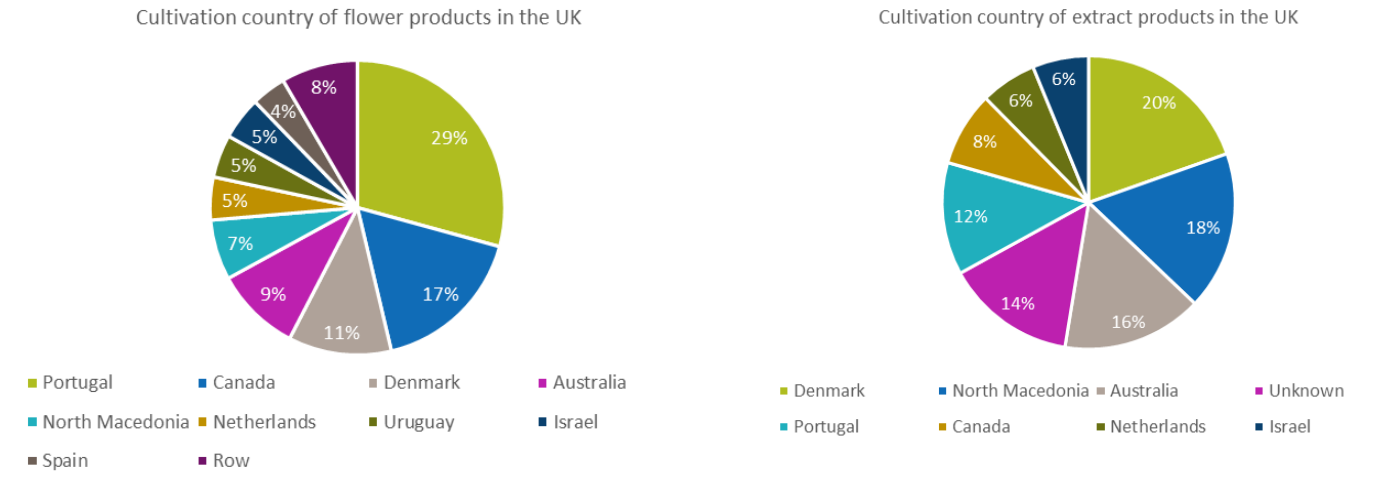
Supply chain from offshore is expensive and can be unreliable

Currently, most unlicenced CBPMs are imported into the UK. Given cannabis is a controlled substance, there are several legal and regulatory hurdles required to import product. This can be an expensive and time-consuming process which can lead to higher end user costs and delays in drugs reaching patients. Furthermore, there is limited visibility over the supply chain and quality control which may make clinicians reluctant to prescribe. Earlier this year, Spectrum Therapeutics UK, a CBPM distributor had to recall products due to contamination.

Interest in domestic growers and suppliers of CBPMs

Given the regulatory challenges and lack of transparency for imported products there is growing demand for domestically grown cannabis, a key aim of Ananda. This should reduce end user costs, ensure consistent supply and provide confidence regarding the supply chain. Whilst yet to receive a commercial licence, Ananda noted that it has already had early indications of interest regarding the direct supply of cannabis and cannabis seeds.

Figure: 4: Most CBPMs are imported into the UK



Source: Prohibition Partners; MedBud UK

Ananda is well placed to receive a commercial licence

Whilst yet to receive a commercial licence, Ananda has a positive working relationship with the UK Government. The Company has already been audited by the Home Office and has received a research licence. Alongside the genetic breeding programme, the Company has selected three pre-existing strains which are ready to be commercialised. This provides additional options alongside the breeding programme. Once the GMP facility is constructed, the Group looks to apply to the MHRA and Home Office for the requisite commercial licences.

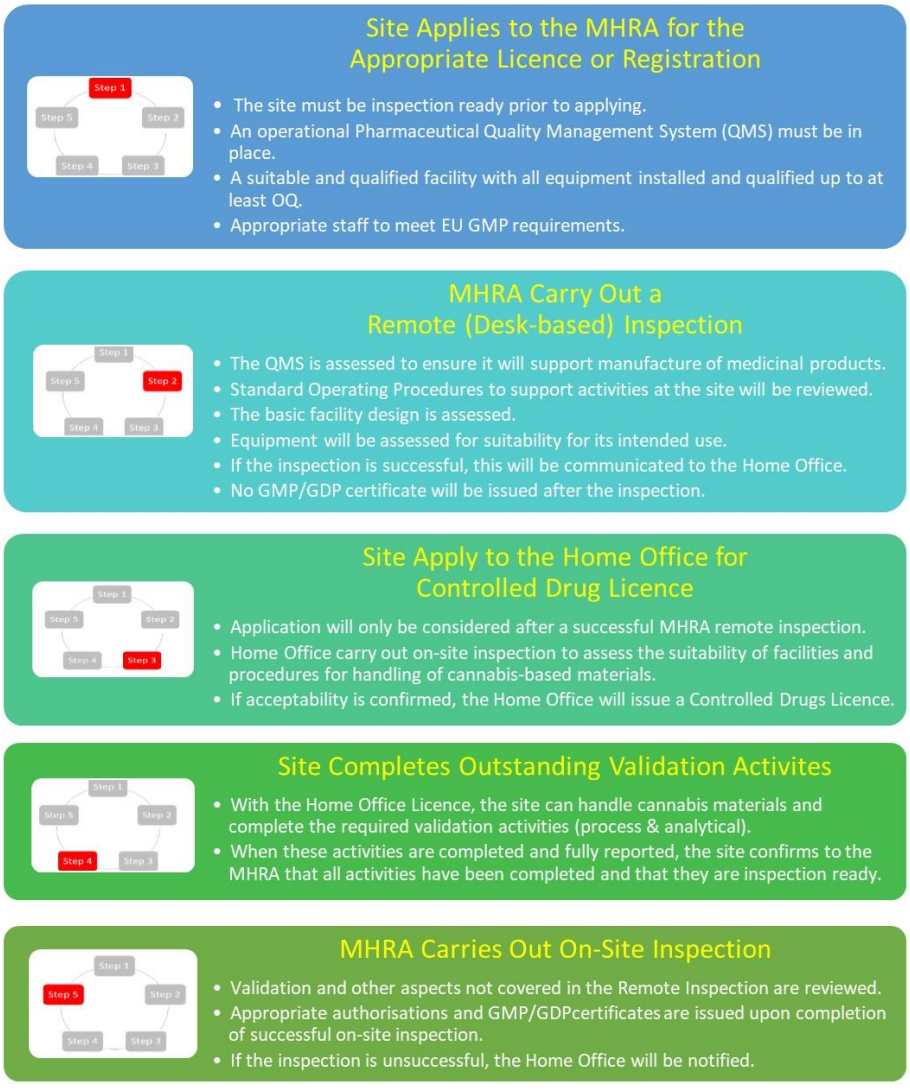
Increased clarity of UK regulatory framework surrounding CBPMs

To grow and manufacture CBPMs commercially in the UK, companies require authorisation from the MHRA and the Home Office. The Home Office issues Controlled Drugs licenses, which involve an inspection of the facility to ensure the appropriate procedures and facilities are in place to guarantee the security of controlled substances.

The MHRA issues manufacturing licenses, which also require an inspection to confirm that the site has the necessary measures in place to manufacture CBPMs to a clinical standard.

The UK Government recently released guidance to clarify the process. Previously, there has been no formalised joint approach from the Home Office and the MHRA. The improved regulatory infrastructure highlights the growing acceptance of CBPMs.

Figure 5: UK requirements to achieve approval for commercial growing and supply of CBPMs



Source: Gov.UK

Competitive landscape

There are several peers operating in a similar space to Ananda, either cultivating and manufacturing CBPMs in the UK or progressing clinical trials with cannabidiol. However, we believe that Ananda's diversified strategy offers of number of advantages. The Company is nearing the initiation of two UK Phase 2 trials which are fully funded by established granting agencies and is launching its first products via the unlicensed (specials) route. In terms of cultivation, the Group is progressing its proprietary genetics programme, low-cost flower production and UK supply. We have outlined a few peers below which are listed in London, have a focus on clinical trials for CBPMs or are looking to supply to the UK:

Celadon Pharmaceuticals (CEL.L) is a UK-based business focused on the cultivation and development of CBPMs to treat chronic pain and autism. The company has a cultivation facility in the West Midlands which was approved for the commercial supply of medical cannabis earlier this year. Celadon is using an indoor hydroponic facility for cultivation which is expected to have higher running costs than Ananda's multi-chapelle approach. Celadon recently struck its first commercial deal, highlighting interest in domestic supply. To our knowledge the company has not yet conducted clinical trials on its products. Celadon has a majority stake in LVL Health, a private pain clinic, which is planning a feasibility trial to support NHS reimbursement discussions.

MGC Pharmaceuticals (MXC.L) has constructed a GMP certified facility in Malta and is supplying CBPMs to Europe. MGC is not positioning itself as a UK based manufacturer. The company is also commercialising CannEpil®, a high-cannabidiol, low-THC formulation, for drug-resistant epilepsy as an unlicensed therapy (special). CannEpil has been evaluated in a 31-patient safety study which was conducted in Australia and in healthy subjects.

Hellenic Dynamics (HELD.L), is a licensed cultivator and supplier of THC-dominant CBPMs to European markets. They operate from a facility in Greece and are not currently supplying to UK.

Kanobo Group (KNB.L) is focused on the sale of THC-free cannabidiol products primarily for the UK retail market and has launched an online clinic for pain management. It is also exploring R&D activities to develop a range of unlicensed CBPMs for pain management, however this remains at an early stage of development. Kanobo is working with an Israeli cultivator (Medocann) and is planning to build a cultivation facility in Madrid, Spain.

Khiron Life Sciences (KHRNF.TSX) is supplying CBPMs into the European market and runs several cannabis clinics globally, including one in the UK. In January, the Group announced that for the first time, full reimbursement by the NHS of costs associated to cannabis-based medication and clinic fees for a patient enrolled in Zerenia™ Clinics UK.

Cardiol Therapeutics (CRDL.TSE) is progressing clinical trials and is using a similar IP strategy to Ananda. The Companies lead asset, CardiolRx™ is an oral solution containing cannabidiol that is being developed for the treatment of heart disease. A Phase I study evaluating CardiolRx™ was found to be safe and well tolerated at various doses, with no serious side effects reported. The company has received authorisation from the FDA to conduct Phase 2 studies in recurrent pericarditis and acute myocarditis, two rare heart diseases.

Oxford Cannabinoid Technologies (OCT.L) is also taking a pharmaceutical approach. The group recently received UK MHRA approval to conduct a Phase 1 trial evaluating OCT461201, the group's lead candidate. OCT461201 is a selective cannabinoid receptor type 2 agonist which has shown potential as an effective therapy for CIPN as well as irritable bowel syndrome. The trial, funded by the company, aims to demonstrate the safety and tolerability of OCT461201 in healthy volunteers.

Stenocare (STENO.CO) is a Danish company which is distributing CBPMs in Europe, including the UK with a focus on medical cannabis oil products. Stenocare does not manufacture the products, which are produced and imported by a Canadian business.

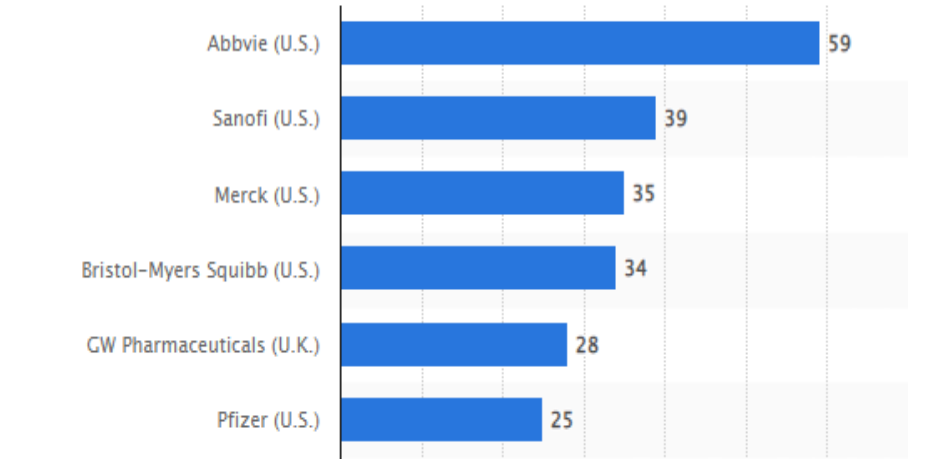
Corporate activity

In terms of corporate activities, there have been a few transactions of note. In 2021, Jazz Pharmaceuticals (JAZZ.NQ) acquired GW Pharmaceuticals a specialist in cannabis-based therapeutics, for a total consideration of $7.2b. The acquisition provides Jazz with access to GW Pharma's proprietary cannabinoid platform which aims to address a broad range of diseases. This includes Epidyolex and Sativex, two treatments that have been approved for the treatment of epilepsy and MS associated spasticity, respectively. In 2022, Pfizer acquired Arena Pharmaceuticals for c.$6.7b in cash. Arena's pipeline included, Olorinab (APD371), a Phase 2 stage a synthetic cannabinoid receptor agonist, however it subsequently failed to meet its endpoints as part of a trial in patients with irritable bowel syndrome (IBS). In 2019, Tilray signed a collaboration with Sandoz (Novartis' generic drug business) to supply CBPMs. Financial terms were not disclosed.

Larger US and Canadian companies are looking to gain a foothold in the growing European market. In 2020, Curaleaf Holdings (CURA.CNSX), a leading US cannabis provider, acquired EMMAC Life Sciences, a European cannabis business for c.$286m (paid 85% in shares and 15% cash).

Whilst few of the large pharma companies have CBPMs in development a number of these businesses have several patents related to the area. Whist these have not translated into candidate development, the generation and protection of IP by these companies is a positive indication of the potential value placed in this modality.

Figure 6: Large Pharma companies hold several cannabis related patents



Source: Statista (2019)

Key risks

As an early-stage healthcare company Ananda is exposed to risks inherent to the sector. We see development risk and regulation as the most relevant to the Group.

Clinical trial risk

The outcome of clinical trials cannot be pre-determined and there is no guarantee that any future clinical trial conducted by Ananda or its partners will meet the primary endpoint. The Company's development programmes are always at risk of termination should any future trial raise any concerns about a product's safety or efficacy. Clinical trials may raise safety issues and there may be requests for additional clinical data by the regulator.

Political risk

Whilst the outlook for the regulatory and social acceptance of CBPMs is positive, there is an ongoing debate in the UK and Europe concerning efficacy and the potential social drawbacks of widespread implementation. There is an increase in the amount of clinical research into the efficacy of medical cannabis which is hoped will broaden its acceptance. In the UK respected UK medical institutions continue to be cautious, however as more specialists are trained in the prescribing of medical cannabis there is a continued increase in the number of medical cannabis patients in the UK and internationally.

Regulatory risk

There is no guarantee that Ananda will receive marketing approval for its proposed treatments and a delay or failure to receive marketing approval could have a negative impact on the Company's operation. There is no guarantee that the Company will receive Home Office and MHRA approval to produce CBPMs at a commercial level.

Commercial risk

Potential commercial uptake of the Company's products may be slower than expected and there is no guarantee that the Group will successfully partner its assets.

Key personnel

The loss of key personnel may have a negative impact on the Company's strategy and ability to achieve future milestones.

Financial Risk

To fund its ongoing operations, we expect the Company to require additional capital over the coming years.

Management team

Ananda benefits from a management team with a wealth of experience running commercial businesses in the healthcare sector.

Charles Morgan, Chairman

Charles Morgan is a resources and technology venture capitalist who has identified emerging sectors and acquired early stage and strategic positions in a wide range of ventures around the globe. He has a proven track record in identifying early-stage commercial opportunities and acting as a corporate catalyst, acquiring strategic assets and positions, partnering with regional and technology experts, securing teams of appropriate executives and funds to build and develop projects and companies. He has several successful exits to his name.

Charles is involved in investing in various businesses and start-ups in the UK and elsewhere including Neuro-Bio Ltd (discoverer of cause and potential drugs for Alzheimer's, Parkinson's and Motor Neurone Disease), Brytlyt (GPU based data base analytics), SkyEngine (synthetic 3D data fand AI) and PensionBee (gathering people's various pensions into one).

Charles started his career in futures broking in London with M.L. Doxford & Co and left to join merchant bank Morgan Grenfell Limited in Sydney, Australia before moving to broking with ANZ McCaughan Dyson Limited in Melbourne and London. He then joined BZW Securities Limited in London before going back to Australia to form Morgan McFarlane a licensed securities dealer which raised equity funds for mining and oil exploration companies.

Melissa Sturgess, Chief Executive Officer

Melissa Sturgess holds a BSc and an MBA and has more than 20 years of experience as a director of UK and Australian Stock Exchange quoted companies, in the roles of Chair, CEO and non-executive director. She has also chaired listed company audit committees and served on remuneration and corporate governance committees.

Melissa commenced her listed company career as a member of the Executive Committee of Aquarius Platinum Limited, the most successful Australian/UK dual listed company and a miner of platinum in South Africa and Zimbabwe. She was also founding director of Sylvania Resources Limited and several other companies operating in the metals and mining sector throughout Africa and listed on the AIM Market in London. During her career Melissa has raised significant amounts of capital and in 2017 she spearheaded the structuring and £50m financing for the acquisition of a building materials business in the Channel Islands. She is also a non-executive director of Lexington Gold Limited, an AIM quoted gold exploration company.

Melissa's interest in the cannabis sector commenced with a trip to Israel in 2017 to review the medicinal cannabis research in that country. Melissa was the recipient of the Executive of the Year at the Malta Cannabiz Awards in November 2019. She is a committee member of the Cannabis Industry Council and Co-Chair of its Research Working Group.

Stuart Piccaver, Executive Director

Stuart Piccaver, in his role as CEO of JEPCO, has considerable horticultural experience and direct experience of Cannabis cultivation and has been the driving force for many of the leading agricultural initiatives and successes of JEPCO and its associated companies. From a standing start in July 2014, Stuart Piccaver led the team that proved a concept to grow natural season cannabinoids in the UK, lowering the cost of production by 78 per cent. The project grew 5 hectares in polytunnels (the same method used by Ananda in its growing) to fully assess and master the dynamics of UK production. The project proved its feasibility and created a growing blueprint for a highly scalable production technique.

Jeremy Sturgess-Smith, Executive Director

Jeremy Sturgess-Smith is a co-founder of Ananda and played a key role in its initial public offering in July 2018 and drove Ananda's acquisition of its initial 50% shareholding of DJT Plants in 2019 and led the acquisition of MRX Medical in 2022.

In addition to his corporate finance and investor relations responsibilities Jeremy manages the Ananda and DJT Group accounting functions, the audit process, DJT Plants' site security arrangements, IT and HR. Jeremy is also a director of both MRX Medical and MRX Global. He was also a director and continues as non-board COO of URA Holdings plc, a Standard List mining exploration company that Jeremy coordinating the restructuring, refinancing and relisting of in 2021 and 2022.

Professor Clive Page, OBE, PhD, Non-Executive Director

Clive Page is a Professor of Pharmacology at King's College London. Clive's main research interests are in the pharmacology of inflammation and respiratory diseases, and he has published over 250 scientific papers. Clive was the 2006 co-founder and previous Chairman of AIM quoted Verona Pharma plc, which is now capitalized at more than $1 billion and quoted on NASDAQ.

Inbar Maymon Pomeranchik, PhD, Non-Executive Director

Inbar Maymon-Pomeranchik is a Scientist and Biotech investment consultant expert, specializing in Life Science, Biotech, Ag-Tech with a particular expertise in the global medical cannabis industry. She holds a PhD in plant sciences molecular biology from the Hebrew University of Jerusalem and a multi-disciplinary post-doctorate from the Weizmann Institute, combining drug biochemistry with plant science. Inbar brings more than 15 years of experience in molecular & genetic research as an R&D researcher and project leader in the Biotech industry in large, small and start-up technology corporates.

John Treacy, Independent Non-Executive Director

Mr Treacy is an experienced London-based small cap financier who specialises in working with growing companies. He qualified as a solicitor in the London office of a major international law firm where he specialised in Capital Markets and Mergers & Acquisitions. From there he moved on to practice corporate finance in the advisory teams of several prominent UK brokerages where he acted as an adviser to several AIM companies and advised on numerous IPOs, acquisitions, debt restructurings and placings.

Financials

Income Statement (£)

Fiscal Period	FY21A	FY22A	H1-23A
Fiscal year end date	31/01/2021	31/01/2022	31/07/2022
Administrative expenses	(970,038)	(496,110)	(330,899)
Interest receivable	114	-	-
Loss from operations	**(969,924)**	**(496,110)**	**(330,899)**
Foreign Exchange Translation Gain/(Loss)	887	(305)	-
Total comprehensive loss for the year	**(969,037)**	**(496,415)**	**(330,899)**
Earnings per share	(0.11p)	(0.13p)	(0.10p)

Source: Ananda financial reports and SP Angel estimates

Balance Sheet (£)

Fiscal Period	FY21A	FY22A	H1-23A
Fiscal year end date	31/01/2021	31/01/2022	31/07/2022
Assets			
Investments	1,280,618	2,252,192	3,173,861
Non–current assets	**1,280,618**	**2,252,192**	**3,173,861**
Trade and other receivables	462,299	1,487,254	35,404
Current assets	**462,299**	**1,487,254**	**35,404**
Total assets	**1,742,917**	**3,739,446**	**3,209,265**
Liabilities			
Trade and other payables	462,299	1,487,254	2,559,399
Current liabilities	**462,299**	**1,487,254**	**2,559,399**
Convertible loan notes	-	587,860	587,860
Non-current liabilities	**-**	**587,860**	**587,860**
Total liabilities	**462,299**	**2,075,114**	**3,147,259**
Equity			
Share capital	928,278	1,597,031	1,641,110
Share premium	689,229	876,347	931,444
Share options reserve	447,337	18,788	24,502
Retained earnings	(1,233,807)	(2,204,150)	(2,535,049)
Total equity	**831,037**	**288,016**	**62,007**

Source: Ananda financial reports and SP Angel estimates

Disclaimer: Non-independent research

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Recommendations are based on a 12-month time horizon as follows:

Buy - Expected return >15%

Hold - Expected return range -15% to +15%

Sell - Expected return < 15%