



Haydale Graphene Industries

AIM Admission Document

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This Document, which is an admission document prepared in accordance with the AIM Rules for Companies, has been issued in connection with the application for Admission. Admission will not constitute an offer to the public requiring an approved prospectus under section 85 of FSMA or the Prospectus Rules published by the Financial Conduct Authority (“FCA”) (as amended) and accordingly this Document does not constitute a prospectus for these purposes and has not been pre-approved by the United Kingdom Listing Authority pursuant to section 85 of FSMA.

The Company (whose registered office appears on page 11 of this Document) and the Directors (whose names appear on page 11 of this Document) accept responsibility, both individually and collectively, for the information contained in this Document, including individual and collective responsibility for compliance with the AIM Rules. To the best of the knowledge and belief of the Directors and the Company, who have taken all reasonable care to ensure that such is the case, the information contained in this Document is in accordance with the facts and does not omit anything likely to affect the import of such information. In connection with this Document no person is authorised to give any information or make any representations other than as contained in this Document and, if given or made, such information or representations must not be relied upon as having been so authorised.

AIM is a market designed primarily for emerging or smaller companies to which a higher investment risk tends to be attached than to larger or more established companies. AIM securities are not admitted to the Official List of the United Kingdom Listing Authority. A prospective investor should be aware of the risks of investing in such companies and should make the decision to invest only after careful consideration and, if appropriate, consultation with an independent financial adviser. Each AIM company is required pursuant to the AIM Rules for Companies to have a nominated adviser. The nominated adviser is required to make a declaration to the London Stock Exchange on admission in the form set out in Schedule Two to the AIM Rules for Nominated Advisers. The London Stock Exchange has not itself examined or approved the contents of this Document. Application has been made to the London Stock Exchange for the Enlarged Issued Share Capital to be admitted to trading on AIM. It is expected that Admission will be effective and that dealings in the Ordinary Shares will commence on 14 April 2014.

Haydale Graphene Industries plc

(Incorporated and registered in England & Wales under the Companies Act 2006 with registered number 7228939)

Placing of 3,142,861 new Ordinary Shares each at 210p per share and Admission to trading on AIM

Nominated Adviser
Cairn Financial Advisers LLP



Authorised and regulated by the Financial Conduct Authority

Financial Adviser & Broker
Hume Capital Securities plc



Authorised and regulated by the Financial Conduct Authority

SHARE CAPITAL IMMEDIATELY FOLLOWING ADMISSION

11,247,823 issued and fully paid Ordinary Shares of 2p each

Cairn Financial Advisers LLP and Hume Capital Securities plc, which are regulated in the UK by the FCA, are acting as the Company’s nominated adviser and broker, respectively, in connection with the proposed Admission. Cairn Financial Advisers LLP’s responsibilities as the Company’s nominated adviser under the AIM Rules for Nominated Advisers and Hume Capital Securities plc’s responsibilities as the Company’s broker under the AIM Rules for Companies are owed solely to the London Stock Exchange and are not owed to the Company or to any Director, or to any other person in respect of his decision to acquire Ordinary Shares in reliance on any part of this Document without limiting the statutory rights of any person to whom this Document is issued. No representation or warranty, express or implied, is made by Cairn Financial Advisers LLP or Hume Capital Securities plc as to, and no liability whatsoever is accepted by Cairn Financial Advisers LLP or Hume Capital Securities plc for, the accuracy of any information or opinions contained in this Document or for the omission of any material information from this Document for which the Company and the Directors are solely responsible. Neither Cairn Financial Advisers LLP nor Hume Capital Securities plc will be offering advice and will not otherwise be responsible for providing customer protections to recipients of this Document in respect of any acquisition of Ordinary Shares. Copies of this Document will be available free of charge during normal business hours on any weekday (except Saturdays and public holidays) at the offices of Cairn Financial Advisers LLP, 61 Cheapside, London EC2V 6AX from the date of this Document and shall remain available for a period of one month from Admission.

IMPORTANT INFORMATION

The information below is for general guidance only and it is the responsibility of any person or persons in possession of this Document to inform themselves of, and to observe, all applicable laws and regulations of any relevant jurisdiction. No person has been authorised by the Company to issue any advertisement or to give any information or to make any representation in connection with the contents of this Document and, if issued, given or made, such advertisement, information or representation must not be relied upon as having been authorised by the Company. This Document should not be forwarded or transmitted to or into the Prohibited Territories or to any resident, national, citizen or corporation, partnership or other entity created or organised under the laws thereof or in any other country outside the United Kingdom where such distribution may lead to a breach of any legal or regulatory requirement. The distribution of this Document may be restricted and accordingly persons into whose possession this Document comes are required to inform themselves about and to observe such restrictions.

Prospective investors should inform themselves as to: (a) the legal requirements of their own countries for the purchase, holding, transfer or other disposal of the Ordinary Shares; (b) any foreign exchange restrictions applicable to the purchase, holding, transfer or other disposal of the Ordinary Shares which they might encounter; and (c) the income and other tax consequences which may apply in their own countries as a result of the purchase, holding, transfer or other disposal of the Ordinary Shares. Prospective investors must rely upon their own representatives, including their own legal advisers and accountants, as to legal, tax, investment or any other related matters concerning the Company and an investment therein. Statements made in this Document are based on the law and practice currently in force in the UK and are subject to change. This Document should be read in its entirety. All holders of Ordinary Shares are entitled to the benefit of, and are bound by and are deemed to have notice of, the provisions of the Articles.

The delivery of this Document or any subscriptions or purchases made hereunder and at any time subsequent to the date of this Document shall not, under any circumstances, create an impression that there has been no change in the affairs of the Company since the date of this Document or that the information in this Document is correct.

PROSPECTIVE INVESTORS SHOULD READ THE WHOLE TEXT OF THIS DOCUMENT AND SHOULD BE AWARE THAT AN INVESTMENT IN THE COMPANY IS HIGHLY SPECULATIVE AND INVOLVES A HIGH DEGREE OF RISK. PROSPECTIVE INVESTORS ARE ADVISED TO READ, IN PARTICULAR, PART I “INFORMATION ON THE GROUP AND THE PLACING” AND THE RISK FACTORS SET OUT IN PART II OF THIS DOCUMENT.

The distribution of this Document outside the UK may be restricted by law. No action has been taken by the Company, the holders of the Ordinary Shares, Cairn Financial Advisers LLP or Hume Capital Securities plc that would permit a public offer of Ordinary Shares or possession or distribution of this Document where action for those purposes is required. Persons outside the UK who come into possession of this Document should inform themselves about and observe any restrictions on the holding of Ordinary Shares and/or the distribution of this Document in their particular jurisdiction. Failure to comply with these restrictions may constitute a violation of the securities laws of such jurisdiction.

This Document does not constitute an offer to sell or an invitation to subscribe for, or solicitation of an offer to subscribe or buy, Ordinary Shares to any person in any jurisdiction to whom it is unlawful to make such an offer or solicitation. In particular, this Document is not for distribution (directly or indirectly) in or into the Prohibited Territories. Accordingly, the Ordinary Shares may not, subject to certain exceptions, be offered directly or indirectly in or into the Prohibited Territories. The Ordinary Shares have not been and will not be registered under the United States Securities Act of 1933 (as amended) or under the securities legislation of any state of the Prohibited Territories and they may not be offered or sold directly or indirectly within the Prohibited Territories or to or for the account or benefit of any national, citizen or resident of the Prohibited Territories.

FORWARD-LOOKING STATEMENTS

This Document includes forward-looking statements. These statements relate to, among other things, analyses and other information that are based on forecasts of future results and estimates of amounts not yet determinable. These statements also relate to the Company's future prospects, developments and business strategies.

These forward-looking statements are identified by the use of terms and phrases such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “intend”, “may”, “plan”, “predict”, “project”, “will” or the negative of those variations, or comparable expressions, including references to assumptions. These statements are contained in all sections of this Document. The forward-looking statements in this Document, including statements concerning projections of the Company's future results, operating profits and earnings, are based on current expectations and are subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied by those statements.

Certain risks relating to the Group are specifically described in Part II “Risk Factors”. If one or more of these risks or uncertainties arises, or if underlying assumptions prove incorrect, the Company's actual results may vary materially from those expected, estimated or projected. Given these uncertainties, potential Shareholders should not place over-reliance on forward-looking statements.

These forward-looking statements speak only as at the date of this Document. The Company undertakes no obligation to update forward-looking statements or risk factors other than as required by the AIM Rules or applicable law, whether as a result of new information, future events or otherwise.

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DEFINITIONS

The following words and expressions shall have the following meanings in this document, unless the context otherwise requires:

“the Act”	the Companies Act 2006 (as amended);
“Admission”	the admission of the Existing Ordinary Shares, the Conversion Shares and the Placing Shares to trading on AIM becoming effective in accordance with Rule 6 of the AIM Rules;
“Advisory Panel”	Jon Binner and Michael McMahon, appointed by the Company as technical advisers to the Board;
“AIM”	AIM, a market operated by the London Stock Exchange;
“AIM Rules”	the rules entitled “AIM Rules for Companies” published by the London Stock Exchange from time to time governing the admission to and the operation of AIM;
“Articles”	the articles of association of the Company, as amended from time to time;
“Board” or “Directors”	the directors of the Company as at the date of this document, whose names are set out on page 11;
“Cairn”	Cairn Financial Advisers LLP, Nominated Adviser to the Company;
the “Company”, “Haydale” or “HGI”	Haydale Graphene Industries plc;
“Conversion Shares”	the 90,012 new Ordinary Shares to be issued to the holders of the Convertible Loan Notes upon Admission;
“Convertible Loan Notes”	the aggregate £79,425 nominal amount of Convertible Loan Notes 2014 issued by the Company pursuant to a Convertible Loan Note Instrument dated 16 July 2013;
“CREST”	the computerised settlement system (as defined in the CREST Regulations) operated by Euroclear UK & Ireland to facilitate the transfer of title of shares in uncertificated form;
“CREST Regulations”	the Uncertificated Securities Regulations 2001 (as amended) (SI 2001/3755);
“EIS”	Enterprise Investment Scheme under the provisions of Part 5 of the Income Tax Act 2007 (as amended);
“Enlarged Issued Share Capital”	the Existing Ordinary Shares, the Conversion Shares and the new Ordinary Shares issued pursuant to the Placing;
“Euroclear UK & Ireland”	Euroclear UK & Ireland Limited, a company incorporated under the laws of England and Wales and the operator of CREST;
“EU”	the European Union;
“Existing Ordinary Shares”	the 8,014,950 Ordinary Shares in issue as at the date of this document;
“Existing Share Option Scheme”	the Innovative Carbon Limited EMI Share Option Plan, details of which are set out in paragraph 9 of Part VII of this document;
“Group”	the Company and its subsidiaries;

“HMRC”	HM Revenue & Customs;
“Hume”	Hume Capital Securities plc, financial adviser and broker to the Company and the Placing;
“Locked in Directors”	John Knowles, Ray Gibbs, Tony Belisario, Matthew Wood, Chris Spacie and Roger Smith;
“Locked in Persons”	the locked in Directors and the locked in Shareholders;
“Locked in Shareholders”	David Cheyne, Richard Newton Jones, Philip Sommereux, Andrew Smith, Geraint Davies and John McLaren;
“London Stock Exchange”	London Stock Exchange plc;
“New Share Option Scheme”	the new share option scheme adopted by the company on 4 April 2014, subject to Admission, the rules of which are summarised in paragraph 9 of Part VII of this document;
“Ordinary Shares”	ordinary shares of £0.02 each in the capital of Company;
“Placing”	the conditional placing of the Placing Shares pursuant to the Placing Agreement;
“Placing Agreement”	the conditional agreement dated 8 April 2014 between Cairn, Hume Capital Securities, the Company and the Directors relating to the Placing, further details of which are set out in paragraph 10.3 of Part VII of this Document;
“Placing Price”	210p per Placing Share;
“Placing Shares”	the 3,142,861 new Ordinary Shares to be issued conditional on Admission by the Company pursuant to the Placing;
“Shareholder(s)” or “Member(s)”	(a) holder(s) of Ordinary Shares;
“Share Options”	options granted under the Share Option Scheme;
“Share Option Schemes”	Existing Share Option Scheme and the New Share Option Scheme;
“Success Fee”	a fee payable to Directors of the Company if the Company raises at least 5 million on Admission;
“UK”	United Kingdom of Great Britain and Northern Ireland;
“VCT”	a Venture Capital Trust under the provisions of Part 6 of the Income Tax Act 2007 (as amended);
“\$”	the currency used in the United States of America;
“£”	the currency used in the United Kingdom.

GLOSSARY OF TECHNICAL TERMS

“allotrope”	one or more forms of an elementary substance; for example diamond and graphite are allotropes of carbon
“anisotropic”	having physical properties that are different in measurement along different axes or directions (as opposed to isotropic, which means having uniform physical properties in all directions)
“barrier films”	a film with controlled permeability to gases, water, molecules or volatile compounds
“bottom-up manufacturing”	Bottom Up manufacturing of graphene is a commonly used term describing the CVD preparation of synthetic graphene structures
“CNT”	carbon nanotube
“composite”	a material made by combining 2 or more dissimilar materials to create a product that exhibits characteristics combining the attributes of the constituents; the constituents remain as discrete phases.
“covalently”	a chemical bond that involves the sharing of electron pairs between atoms.
“CVD”	chemical vapour deposition, a process whereby a volatile species is deposited or condensed onto a surface or substrate
“disperse”	to separate and move apart in different directions without order or regularity
“domain”	uniform region within a material
“exfoliation”	the separation of layers of material; typically by chemical, thermal or mechanical mechanisms when preparing graphene from graphite
“FLGs”	few layered graphene
“functionalisation”	functionalisation of nanomaterials provides a means by which the surface chemistry of the materials may be modified
“GNPs” or “graphene nanoplatelets”	short stacks of platelet shaped graphene sheets
“graphene”	graphene is a flat monolayer (a 2D material) of carbon atoms, arranged in a hexagonal pattern (a honeycomb crystal lattice). The term graphene is generally accepted to apply to materials up to ten layers thick. See Part 1 and Part 3 of this document for further information on graphene
“graphite”	an allotrope of carbon with an order structure of atoms in a regular hexagonal 2D array (graphene) weakly bonded with adjacent layers to produce an anisotropic material; can be either naturally occurring or artificially generated by the heat treatment of appropriate carbon precursors
“HDPlas™”	Haydale’s proprietary split plasma process for treating carbon materials
“high aspect ratio nanomaterial” or “HARN”	a material where one or two of the three dimensions of a particle are much smaller than the other dimension(s) and where any of these dimensions are in the nanometer range (10^{-9}m); fibres are an example of a high aspect ratio material

“ISO 9001”	the standard, developed and published by the International Organization for Standardization, that define, establish, and maintain an effective quality assurance system for manufacturing and service industries. ISO 9001 deals with the requirements that organizations wishing to meet the standard must fulfil
“Kilo”	kilogramme or kg
“KW”	kilowatts
“m”	metre, a unit of length
“micrometer”	unit of length, (10^{-6}) one millionth of a meter
“multi-walled nanotubes	concentric cylinders with an internal diameter the order of a nanometer (10^{-9} m)
“nanomaterial”	a material or particle where one of the three dimensions is in the nanometer range (10^{-9} m), but typically less than 100 nanometers
“nanometer”	unit of length, equal to one billionth of a metre (10^{-9} m)
“nanoparticles”	particles between 1 and 100 nanometers in size
“nanotube”	a cylindrical structure, with a diameter the order of a typically under 2 nanometer (10^{-9} m)
“particle”	a particle is defined as a small object that behaves as a whole unit with respect to its transport and properties
“Patent Cooperation Treaty”	a PCT application is a widely-used centralized patent application procedure, administered by the World Intellectual Property Office (WIPO), for the first stage of applying for patents internationally. The PCT stage expires after 30 months, by which time the applicant must elect in which specific territories to pursue the patent application, and initiate and continue the patenting procedures in their individual national patent offices
“patent family”	a “patent family” refers to a group of patent applications and/or granted patents in one or more territories which relate to a common invention. More specifically, they derive from the same “priority” patent application – i.e. the first application filed in relation to the invention and are thus defined by the same “priority” filing date. Please refer to the “blue sheets” of the Company’s firm of patent attorneys for more information about patents and the patenting process. They can be found at: http://mewburn.com/patents
“plasma”	plasma is one of the four fundamental states of matter – the others being solids, liquids and gas
“polymer”	a large molecule composed of repeated subunits (monomers)
“polymeric”	a material which is a polymer
“precursor”	a compound that participates in a chemical reaction and produces another compound
“proprietary”	the ownership by Haydale of know-how and / or pending patent application(s) in respect of the process and product
“RFID”	Radio Frequency Identification

“substrate”	a surface of a material on which a process is conducted and/or a support for deposited materials
“SMEs”	small and medium-sized enterprises
“Split plasma process”	Haydale’s description of its plasma delivery system within a rotating drum where the plasma passes through a central electrode
“Top down manufacturing”	Top down manufacturing of graphene is a term often used to refer to the preparation by mechanical cleaving of sheets or by the liquid exfoliation of a typical graphite structure
“Van der Waals”	Relatively weak forces between molecules resultant from a dipole moment

EXPECTED TIMETABLE OF PRINCIPAL EVENTS

Publication date of this document	8 April 2014
Admission effective and dealings in the Ordinary Shares commence	14 April 2014
CREST accounts credited	14 April 2014
Definitive share certificates dispatched by no later than	21 April 2014
The above dates are indicative only and may be subject to change	

KEY STATISTICS

Placing Price	210p
Number of Existing Ordinary Shares	8,014,950
Number of Conversion Shares to be issued	90,012
Number of new Ordinary Shares issued pursuant to the Placing	3,142,861
Total number of Ordinary Shares in issue immediately following Admission	11,247,823
Placing Shares as a percentage of the Enlarged Issued Share Capital	27.94%
Gross proceeds of the Placing	£6,600,008
Number of Warrants in issue at Admission	277,321
Market capitalisation of the Company at Admission at the Placing Price	£23,620,428
ISIN Code for the Ordinary Shares	GB00BKWQ1135
AIM Symbol	HAYD

DIRECTORS, SECRETARY AND ADVISERS

Directors	<p>John Knowles BSc Eng (Hons) <i>Chairman</i> Anthony Alfredo Belisario (Tony) B Tech (Hons) <i>Deputy Chairman</i> Raymond John Gibbs (Ray) BA (Hons) FCA <i>Chief Executive Officer</i> Dr Christopher John Spacie C.Eng MIMMM <i>Technical Director</i> Matthew Graham Wood (Matt) ACA BA (Hons) <i>Finance Director</i> Graham Dudley Eves MA <i>Non – Executive Director</i> Roger James Humm MBA BSc (Hons) FCA <i>Non – Executive Director</i> Roger Anthony Smith BSc (Hons) <i>Non – Executive Director</i></p>
Company Secretary	Ray Gibbs
all of whose business	Haydale Clos Fferws
address is:	<p>Parc Hendre Capel Hendre Ammanford Carmarthenshire SA18 3BL</p>
Registered Office	<p>Arcadia House Maritime Walk Ocean Village Southampton SO14 3TL</p>
Nominated Adviser	<p>Cairn Financial Advisers LLP 61 Cheapside London EC2V 6AX</p>
Financial Adviser and Broker	<p>Hume Capital Securities plc 1 Carey Lane London EC2V 8AE</p>
Reporting Accountants to the company	<p>BDO LLP 55 Baker Street London W1U 7EU</p>
Solicitors to the Company	<p>Field Fisher Waterhouse LLP 35 Vine Street London EC3N 2AA</p>
Placing Solicitors	<p>Clark Holt Hardwick House Prospect Place Swindon Wiltshire SN1 3LJ</p>
Intellectual Property Solicitors	<p>Mewburn Ellis 33 Gutter Lane London EC2V 8AS</p>

Public Relations	Hermes Financial Public Relations Limited 5 Cornfield Terrace Eastbourne East Sussex BN21 4NN
Technical Public Relations	The Scott Partnership Limited 1 Whiteside Station Road Holmeschapel Cheshire CW4 8AA
Registrars	Share Registrars Limited Suite E, First Floor 9 Lion and Lamb Yard Farnham Surrey GU9 7LL

PART I

INFORMATION ON THE GROUP

Introduction

Haydale has developed a proprietary scalable plasma process to functionalise graphene and other nano materials. Functionalisation is an essential component in the commercialisation of graphene. Haydale plans to commercialise its functionalisation process by providing value added solutions to both raw material producers and industrial corporations.

Graphene is a recently discovered material which, as a single carbon lattice layer, has outstanding thermal, mechanical and electrical properties. Graphene is stated to have potential applications in significant markets such as battery and energy storage, electronic devices including bio-medical sensors, conductive inks and films plus polymer composite fillers and resins. Graphene is formed from carbon atoms and being inherently inert, is difficult to mix with another material. Industry's challenge is to sympathetically functionalise the graphene sheets and other nanomaterials without damaging them in order that they interact with the target material to either enhance dispersion or bonding or both, and to be able to do this on a commercial scale. Haydale believes it has a solution to this problem.

Subsequent to acquiring Haydale Limited in May 2010 the Company continued to develop a proprietary solution to this problem by taking both mined organic fine powdered graphite and synthetically produced graphene and treating with the plasma process to surface functionalise the material. The process is effective in enabling dispersion of nanomaterials and particularly performance enhancing graphene, providing a cost effective solution for the user. In February 2014, the National Physical Laboratory ("NPL") witnessed and positively reported on the process. The Company's proprietary inventions are embodied in its manufacturing machines and the processes performed in them.

The Directors believe that its proprietary process provides Haydale with an opportunity of becoming a key player in the development and commercialisation of graphene, graphene nanoplatelets and other nanomaterials.

The key features of Haydale's split plasma solution are:

- the controlled chemical tailoring of nano materials (functionalisation). The correct level of functionalisation achieves optimum dispersion into a host material to improve performance;
- correct functionalisation opens up significant market opportunities;
- environmentally friendly – Haydale's process uses plasma as opposed to widely used acid based processes and thus results in dry products with no complex waste stream;
- a simplified production process – Haydale has a one stage, cost effective and controllable production process;
- the process can remove impurities with minimal damage to the base materials thus producing a high quality product;
- Haydale's technology is not tied into a single supply of raw materials and, for example, can use organic or synthetic graphenes and other emerging nanoparticles; and
- low energy use – Haydale's plasma reactor uses on average less than two kilowatts per hour of energy.

Haydale's strategic aim is to develop a global presence in nanomaterials by:

- providing solutions to raw materials producers through product enhancement, enabling them to offer value added materials into the market;
- creating demand for Haydale's products and services through the development of value added intermediate products and services such as conductive inks, composite fillers and resins; and

- cost effective product improvement by offering industrial customers flexible material choice and tailored functionalisation to provide the right customised solution for their specific application.

Haydale's business model and growth strategy has the following main elements:

- technical development and processing credibility – Haydale has developed proven technology to functionalise graphene and other nanomaterials. Haydale will continue to invest in new technology to enhance the Group's core offering;
- use of the repeatable, scalable process to provide consistent and controllable functionalisation to enhance product performance. – Haydale is developing a range of scalable customised powders and intermediate products with a focus on chosen target markets such as conductive inks and coatings, polymer composites, sensors, battery and energy storage;
- product commercialisation – Haydale intends to exploit these products commercially through a range of sales channels including distribution and low volume, high value in-house production. Haydale may grant a licence to customers with high volume requirements; and
- bolt on acquisitions of complementary businesses or technologies to provide extended or additional routes to market including strategic alliances and collaborations leading to enhanced commercialisation opportunities.

The Group has assembled a team with expertise and experience in material development and material manufacturing, nanomaterials and the commercialisation of technology.

A total of approximately £4.4 million equity investment and loan stock has been raised since 1 July 2010. The Directors are raising £6.6 million (before expenses) of additional capital for the Company through the Placing.

The Directors believe that Admission and the Placing will provide the Group with both equity finance to support its growth strategy, working capital and a medium of exchange for strategic collaborations and acquisitions, as described in this Document. In addition, Admission will provide the Company with an enhanced corporate profile and will provide for equity based incentives with which to hire, motivate and retain high calibre employees.

Investment case

The Directors believe that the Group's business model has a number of competitive advantages which substantially differentiate it in the nano market place and establish it as an attractive investment opportunity. These include the following:

Market Potential

- Graphene has the potential to be a significant component in a wide variety of end user products around the globe; there are numerous potential end user applications from next-generation flexible electronics, foldable touchscreens, and biodegradable processors to strong lightweight cars and aeroplanes. There is also significant potential in the biomedical and military industries, especially with sensors.
- Haydale has a specific focus on substantial markets being battery and energy harvesting, sensors, conductive and thermal dissipated inks (including coatings and 3D printing) plus fillers and resins for polymer composite systems.
- The market is seeking suppliers with the ability to provide a cost effective, repeatable, scaleable process which offers consistent and controllable functionalisation to enhance product performance. Haydale believes that it has a solution to these market requirements.

Strategic Positioning and Barriers to Entry

- Haydale has an enabling technology which provides it with the ability to utilise a range of commercially available GNPs plus CNTs and other nanoparticles and to tailor them to meet the needs of specific commercial customers.

- Haydale's potential customer base includes both synthetic and organic FLGs and GNPs producers together with CNT manufacturers. Its process can functionalise both raw material types, giving rise to significant added value for the manufacturer.
- Haydale focuses on working with partner businesses to enhance the characteristics of specifically sourced material for applications through the incorporation of nanomaterials, specifically graphene.
- Haydale uses an environmentally friendly plasma process to functionalise materials as opposed to the widely used 'wet' chemistry (acid treatment).
- Significant investment has been made in a purpose built nanomaterial handling and production facility which is accredited with ISO9001.
- Experienced business and technical management team.
- Haydale has developed proprietary technology in the form of its split plasma technology, for which patents are pending.
- The business has a continuous process of technical development to build upon its core intellectual property intended to lead to additional patent applications and proprietary products.
- The Company is well funded, has a focused strategy and with clear growth objectives. Haydale has sold its functionalised products for over one year into research organisations as a means of establishing credibility. The functionalisation process has also been reviewed and reported on by the National Physical Laboratory.
- Haydale has entered into formal and informal collaboration arrangements with materials suppliers with a view to adding value to their products.
- Functionalised materials are now available through certain international distribution channels opening up new markets and customers in a cost effective manner.

Valuation

- The Directors believe that the Company has been valued at an attractive price given its strategic position in a potentially substantial market place, its technology, stage of development and the opportunities available.

VCT and EIS qualifying investment

- The Company has received advanced assurance that some of the Placing Shares will rank as 'eligible shares' for the purposes of EIS and are capable of being a 'qualifying holding' for the purposes of investment by VCTs.

Group structure and history

The Group was formed in April 2010 to acquire Haydale Limited, a research and development business, which was established in 2003 specialising in the novel use of plasma in the treatment of nanoparticles, in particular graphene and CNT's. The Company is based in South Wales and has been funded by private investors.

Since 1 July 2010 the Company has raised approximately £4.4 million of funding from around 100 investors of which £1.8 million has been raised since July 2013. These monies have been used to hire a team with relevant experience and expertise, fund research, develop Haydale's split plasma process, prove scalability, move into new purpose built nanomaterial handling and production facilities and for general working capital purposes. In addition, the Company applied for and received a funding grant of approximately £114,480 from the Welsh Economic Growth Fund to assist in the fit out of its new facility in Ammanford, South Wales.

Since being acquired by the Company in May 2010, Haydale has made significant progress in a number of key areas as follows:

<i>Date</i>	<i>Milestone</i>
May 2010	Haydale's present CEO, Ray Gibbs, joins.
December 2010	Company files priority date application for an enhanced plasma process incorporating novel use of metal balls. The Group had previously carried out extensive research work on carbon based structures and especially CNTs. The result of the work was Haydale's split plasma process, by which it is able to purify and surface engineer carbon based nano materials to meet the needs of a wide range of end users.
February 2011	Haydale offers CNTs and GNPs produced from the plasma treatment of mined graphite powder, sampled and sold through a US based website (www.cheaptubesinc.com). Haydale reviewed its sales channels and the agreement was terminated by mutual consent in May 2013.
November 2011	Initial scale-up proven by commissioning a new reactor (HD100). Haydale launches its HDPlas™ brand.
April 2012	Moved into temporary facilities pending fit out of new purpose built factory and laboratory.
December 2012	Commenced research into conductive GNP based ink.
January 2013	Web based sales facility constructed to address the R&D market.
May 2013	Company's purpose built nanomaterial handling and production facility in South Wales completed at a capital cost of £0.5 million.
June 2013	HDPlas™ graphene based ink officially launched at the Graphene Commercialisation and Applications Exhibition in London on 25 June 2013. Received Welsh Economic Growth Fund grant of £114,480.
November 2013	Haydale announces that it had signed a distribution agreement with AMG Mining AG ("AMG Mining"). AMG Mining to act as exclusive distributor in Germany for Haydale's branded HDPlas™ GNPs. AMG Mining is a major and long established international supplier of graphite based products and is aiming to use Haydale's plasma functionalisation technology to extend its product range and add value to its raw materials.
December 2013	Haydale lists its HDPlas™ range of materials for trade on INSCX™ exchange. INSCX™ is the world marketplace for organisations seeking nanomaterials, nanocommodities, objects and devices. Merchant member Fullerex has been appointed by Haydale as its agent, through which they will instruct trade on the market.
January 2014	Haydale closes fundraising round with an additional £1.85 million. ISO 9001 awarded.
February 2014	Haydale agrees a non-exclusive distribution agreement with US based Graphene Laboratories ("GL") to sell its GNPs. The products will be sold through the GL owned internet site known as 'Graphene Supermarket'. Purchase order raised with specialist plasma manufacturer Tantec A/S for the supply of a reactor for increased capacity and continuing development. A memorandum of understanding was signed with regard to future collaboration for global supply and maintenance contract for reactors. Structured the Board of Directors to meet AIM requirements and for the next phase of the Company's development. The National Physical Laboratory witnessed and positively reported on the Haydale process.

<i>Date</i>	<i>Milestone</i>
March to date 2014	<p>Company converts to public limited company.</p> <p>New employees Dr. Martin Kemp and Dr. Chris Stirling recruited to boost the marketing and technical potential of Haydale. Marie Davis joined to take over project management and all aspects of logistics and supply chain.</p> <p>Company establishes a technical advisory panel.</p>

Background information on graphene

A graphene sheet is approximately 1 atom thick. Put into perspective, 3 million graphene sheets stacked together would be 1mm high. Graphene is the strongest, thinnest, and one of the highest conducting materials known to science. Graphene is tougher than diamond, yet light and elastic. It enables electrons to flow rapidly as compared to silicon, is a transparent conductor, and combines both electrical and optical capabilities. It enables development of high speed consumer electronics, information processing solutions, biosensors, super capacitors that could be used in place of batteries, mechanical parts and composites for cars and aircraft. Dispersed into yarns and fibres it could become an anti-static, fire retardant, fully recyclable carpet, or potentially a Kevlar replacement.

The distinctive electronic, thermal and mechanical properties of graphene make it a potentially disruptive technology across a raft of industries.

Further information on graphene and common methods of production are set out in Part III of this document.

Haydale's processes, products and market opportunity

Processes and products

Historically the nanoindustry has struggled to find nanomaterials that easily disperse in composite materials. The Directors believe that Haydale has developed a solution to dispersion issues with its proprietary plasma process that imparts surface functionalisation on nano materials principally GNPs and CNTs. This allows Haydale to tailor the structures with appropriate and compatible chemical groups so they can be more easily dispersed and integrated into an end-product. Through better dispersion, product improvements can be achieved, such as enhancing mechanical strength and improved electrical and thermal conductivity.

Haydale's proprietary inventions are embodied in the Company's manufacturing machines and the processes performed in them. Haydale's split plasma technology development resulted in a patent application in December 2010. Initially, Haydale started treating CNTs that had been produced by industrial companies such as Bayer. It switched its focus to GNPs in November 2010, when the US-based Environmental Protection Agency issued a significant new use rule that advised manufacturers and users of CNTs to treat them as potentially toxic, causing potential users of CNTs to become cautious. The markets have also switched focus to graphene, FLGs and/or GNPs.

Haydale's split plasma technology treats organic mined fine powder graphite producing high quality GNPs using a dry, low-energy process and avoiding the need to use potentially harsh 'wet' chemicals or acids used by many other producers. Haydale's process is very versatile. Other than processing organic and synthetically produced carbon materials, it can handle other nanopowders, thereby widening its solution capability for customers.

Analysis of the processed product shows single, double, triple and multiple layers of exfoliated graphene together with layers of graphene sheets loosely held together by Van de Waals forces and known as GNPs.

The split plasma process works on three core principles:

- First, the process can untangle CNTs exposing more surfaces for interaction. Although still under evaluation the treatment has less immediate exfoliation impact on graphite but the Directors believe it assists the graphene sheets in parting under mechanical shear (such as screen printing or polymer mixing);

- Second, the plasma treatment can remove non-crystalline structures such as amorphous materials, impurities and unwanted metallic residues; and
- Thirdly and crucially it is the final step in the process that is the key to commercialisation. The proprietary process has the ability to expose the carbon nanopowders to various gas and vapour treatments to impart tailored chemical functionalisation onto the outer surface. This brings a level of customisation that is important in terms of providing solutions by processing and catering for customer needs. For example, the Company was asked to functionalise a specific carbon material with a defined percentage of fluorines which was successfully achieved and delivered.

NPL recently witnessed and positively reported on Haydale's process, by conducting X-ray Photoelectron Spectroscopy (XPS) analysis of Haydale plasma processed material in accordance with NPL standard operating procedures.

The technique uses high energy X-ray radiation to liberate photoelectrons from the surface of a target material (in this case CNTs and GNPs); the binding energy and characteristics of the liberated electrons can be used to determine the elements present and likely bonding configurations.

NPL attended Haydale's facility in January 2014 to witness the sample and processing. Samples of GNPs before and after Haydale processing were subsequently analysed at NPL and a report which positively reported on the process which was issued in February 2014.

Haydale's technology can be modified to accommodate graphene sheets, such as FLGs, with a much larger specific surface area than GNPs alone. FLGs have a surface area often greater than 700m²/g, compared to the GNPs, which can have an approximate surface area of 25m²/g.

Since 2012, Haydale has begun processing FLGs which are sourced currently from a different feedstock. This new graphene-based product has fewer graphene layers than GNPs and consequently has a much larger surface area. FLGs have the potential to intercalate more easily between polymer strands. Due to their higher surface area, more carbon atoms are likely to be exposed for chemical bonding. High surface area material may be suited to applications such as sensors and barrier films.

An impressive list of organisations and academic institutions have tested the Company's functionalised materials and commented positively on the results.

Haydale has an active development programme for the enhancement of its processes, with the objective of developing additional proprietary products and intellectual property.

Market opportunity

The Directors believe that there are a wide range of market opportunities for the Company's products and processes. In summary these include:

- limited volume in-house manufacture;
- adding value for GNP and CNT producers;
- incorporation into intermediate products;
- collaborations to develop effectively functionalised products; and
- licensing of processes and proprietary products.

In-house manufacture

The Company intends the Ammanford facility to be a centre of excellence for the production of high quality functionalised graphenes and nanomaterials. The Company intends to add a number of plasma reactors to its existing range which will provide maximum flexibility in meeting customer requirements. The additional capacity will enable ongoing research and development of new materials and applications and work on the next generation reactor aimed at being a technology demonstrator as part of the licensing strategy.

Adding value for GNP and CNT producers

Haydale's processes are capable of increasing the performance of organic graphite materials and are attracting interest from raw material producers such as mining companies looking to enhance the value of their base powders.

The Directors believe there is an opportunity to work with the GNP and CNT producers and integrate Haydale's plasma process instead of any acid or other dispersion treatment takes place. The aim is to reduce the manufacturing time and cost of production. If this is not possible, the commercially available GNPs and CNTs can be used as the feed stock and be treated with Haydale's plasma process to improve the material and tailor them for end user applications.

The Directors believe there is a market requirement for a consistent supply of high quality functionalised GNPs and CNTs and that Haydale is well positioned to meet this growing demand.

The two alternative commercially available sources of GNPs are currently derived from organic mined fine powdered graphite and synthetic graphenes, with the latter typically produced through the application of heat on a form of hydro carbon. The organic supply of GNPs is increasing, for example Michigan based X G Sciences Inc. claims to be capable of producing 80 tonnes per annum. The producers of both organically and synthetically derived GNPs generally use 'wet' chemistry (acids) to remove impurities from their products and functionalise them. Compared to these processes, the Directors believe that Haydale's treatment removes impurities (it requires no post functionalisation washing and drying stage) and improves surface functionalisation needed to ensure homogeneous dispersion into the target materials.

It is likely that commercial agreements will take the form of collaboration and licensing agreements.

Incorporation into intermediate products

Intermediate products offer a "demand pull" route to market for nanomaterials, where the Haydale process can provide an enabling function. For example Haydale has recently marketed conductive inks to provide a product to be used as an intermediary step in a production process, such as screen printing ink onto a flexible substrate to make it conductive.

Haydale will seek to enter into collaborative agreements with composite materials specialists. A project plan is being developed to consider the possibility of using Haydale GNPs as a thermal heat manager for certain resins and polymer systems. The expectation is to offer a resin supplier, proof of concept and create an added value intermediate product. Haydale believes that this will give rise to demand for the GNPs from resin suppliers in response to market requirements for an enhanced, value added system.

Haydale's plan is to develop intermediate products for specific markets which the Directors believe offer the potential for high growth and value. An example might be the Haydale FLGs including supercapacitor development, a relevant area in which Haydale Limited's Business Development Director, Martin Kemp has direct experience.

Collaborations to develop effectively functionalised products

Due to graphene's properties, it is widely accepted that effectively functionalised and dispersed nanoparticles will enhance a broad range of products in a number of sectors. The primary markets Haydale wishes to address in collaboration with industrial partners are:

- Battery and energy harvesting – lithium-ion batteries and supercapacitors;
- Sensors – both biomedical and gas;
- Inks and films – conductive and thermally dissipative inks (including 3D printing and coatings) plus flexible printing electronics, radio frequency and electronic devices; and
- Polymer composites – structural and conductive fillers and resins, for example those used in aerospace and construction industries.

Licensing of processes and proprietary products

Other sectors where the Directors believe there is likely to be demand for its products include, but are not restricted to, those listed below. Companies which operate in any of these sectors are potential Haydale licensees.

- Automotive and Aerospace – mechanical and electronic enhancement;
- Coatings & Paints – including barrier films aimed at water filtration and thin film packaging;
- Communications – RFIDs and other electronic communication improvements;
- Oil – lubricants; and
- Photovoltaics – solar cells.

Public sector investment into research and applications development of graphene

There are a large number of graphene related grant funded opportunities potentially available to the Company working alongside UK and European governmental and other organisations.

Horizon 2020 is the biggest EU Research and Innovation programme ever with an estimated €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. As part of this initiative the EU has announced €1 billion of funding over 10 years under the EU Graphene Flagship Programme investing in future and emerging technologies to fund and coordinate application development activities for graphene commercialisation. Each initiative involves researchers from at least 15 EU Member States and nearly 200 research institutes.

The National Graphene Institute (NGI), Manchester will be home to the UK's research into Graphene. Due for completion in 2015 it will provide the opportunity for researchers and industry to work together on a variety of potential applications for Graphene and other 2D materials. Funding for the NGI has come from the UK Government, with £38 million as part of a £50m allocated for the facility housed in Manchester University. The University has also applied for £23m of European funding. The NGI will work with other UK institutions involved in Graphene research including the University of Cambridge, Imperial College London, Trinity College Ireland and the University of Durham. Haydale has been approached to be a part of the collaborative network and is expecting to see some commercial benefit from the use of its technology in functionalising specific graphene producers attracted to the NGI.

The potential applications of graphene are widely publicised in the media and the benefits that a breakthrough commercial product could bring to a nation's economy are likely to be substantial.

In the Far East where substantial patent activity takes place, graphene initiatives continue, such as South Korea which has announced that it is planning to spend approximately \$40 million over six years helping companies develop graphene used for touch screen panels and organic light emitting diode panels.

The National University of Singapore has announced that it has invested more than S\$40 million setting up a graphene research centre. In addition, in 2011 the National Research Foundation of Singapore awarded grants amounting to S\$60 million for the growth, study and commercialisation of 2D crystals beyond graphene, and the study of new uses graphene.

Haydale continues to apply for and receive grant funding, having successfully been awarded funding from the Welsh Government, European Funding and the Technology Strategy Board (TSB).

Production facilities

Haydale's purpose built production facility at Ammanford, near Swansea, South Wales, was completed at a capital cost of £0.5m in May 2013. Haydale became an ISO9001 accredited company in January 2014.

Figure 1



The 5,000sq ft. facility is leased from Carmarthenshire CC.

The Company treats all raw materials very carefully, operating to approved health and safety guidelines and standards. In particular, a specific air exchange system has been installed in its facility.

The facility has the capacity to house a number of plasma reactors and can accommodate significant expansion. There are currently two reactors in operation with a further machine on order for delivery expected to be in May 2014.

The Directors plan to extend within the current facility to increase the office space to house both new staff already recruited and those planned to be brought in. Additional laboratories will be constructed to focus on specific market sector opportunities.

Haydale's plasma reactors

Haydale's proprietary inventions are embodied in the Company's plasma machines and the processes performed in them. Haydale's first plasma reactor, the HD30 was based on a standard research machine provided by a German plasma manufacturer. Haydale Limited modified the system to accommodate a rotating drum and filter system allowing the redesigned reactor to then handle nanomaterials. A base patent was filed in June 2009. Haydale then procured a scaled up version known as an HD100 in July 2011, which again required significant reworking and alteration in order to perform to requirements. The theoretical production capacity of the larger HD100 is approximately 1,000 kgs per annum, assuming the reactor processes standard oxygen functionalised GNPs. Capacity depends on the material type being processed and the specific functionalisation required.

Since the HD100 unit was first installed, refinements to the process plant have been made. These include revision of the process gas system to enable single or multiple gas feeds, the introduction of vapours and the safe use of extremely reactive chemicals. Improved handling, containment and storage has been designed to minimise process losses, eliminate cross contamination and reduce potential influences of storage contaminants upon the functionalised nanomaterials.

With a view to potential future demand for GNPs and CNTs, Haydale researched the market to establish a commercial relationship with a quality, reliable and highly regarded plasma reactor manufacturer and it has been in discussions with Danish based Tantec A/S which has agreed to supply a unit for delivery in May 2014. Once commissioned, the Directors expect to see an estimated doubling of capacity. Scale-up principles have been mapped for both larger batches and continuous processing. In-house, preliminary cross correlation has been conducted between the current two process machines. In March 2014, Haydale and Tantec A/S signed a Memorandum of Understanding for the ongoing manufacture, supply and maintenance of the new plasma reactors.

The ability to handle known commercially available feedstocks (and research grades) has been gained by understanding each material and pre-treating them appropriately. Such treatments range from extended pumping times to pre-heating to remove residual moisture arising from either raw material manufacturing or when materials are in transit.

Since the arrival of Dr Spacie in February 2013, with his production experience gained at Morgan Crucible plc, and >30 years of experience in the manufacturing industry, he and his new team have made extensive alterations and upgrades to the HD100. These include items such as a redesigned drive mechanism to improve robustness and ease of maintenance together with an enhanced filter system, new drive motors, drive mechanisms and rotary joints. Dr Spacie's team have added a range of disciplines, process controls and scientific documentation resulting in the award of ISO9001 in January 2014.

Critically, the OEM bespoke control system supplied with the machine has been replaced with a unit constructed from industry standard modules for improved reliability and technical support.

Additional improvements to valve systems have been made to accommodate potential novel functionalisation for bespoke customer requirements.

In 2013, the process control parameters were mapped. A technical roadmap has been prepared based upon customer feedback and emerging opportunities.

Haydale's business strategy and model

Haydale aims to work with both raw material producers and applications companies. Haydale is not a producer of the raw material nor an end user. The Company offers the producer the ability to enhance the value of its base product by effectively functionalising the material. The Company can assist the applications market by providing a service in sourcing the most appropriate material (suitably functionalised) to meet the target specification.

Haydale aims to become a preferred solutions provider in the provision of graphene type carbons and other nanostructures that can be dispersed in a target material and provide predetermined material properties to meet client specifications. Haydale has focused on adding value through functionalisation and sourcing the most appropriate nanoparticles including graphene to improve performance.

Whilst Haydale has a patent applied for process, which is an important asset, the Directors believe that the key to a commercially successful business is the ability to find and sell solutions to key customers who are known influencers in their sector. For Haydale, the ability to pick and choose a supplier for an appropriate application is key, knowing that the split plasma process delivers the functionalisation needed to disperse the graphenes and other nanoparticles.

Having developed Haydale's technology and brought together a team capable of delivering it, the Board is now focused on establishing routes to market and also creating shareholder value in other ways, for example through acquisitions.

Routes to market include the following:

- Proof of technical capability through presentations, technical papers and technical promotion via key opinion formers;
- Sales of small quantities of functionalised material to the research and development ("R&D") community;

- Engaging with raw material producers with a view to working on joint projects as a means of demonstrating Haydale's value added functionalisation process;
- Creating dedicated intermediate products to generate demand pull for Haydale's product offerings;
- Targeting key companies in specific sectors with a view to working with them to use Haydale's functionalisation process to add value to their products. Sectors offering significant sales potential which are targeted by Haydale are:
 - Battery and energy harvesting – lithium-ion batteries and supercapacitors;
 - Sensors – biomedical and gas;
 - Inks and films – conductive and thermally dissipative inks (including 3D printing and coatings) plus flexible printing electronics, radio frequency and electronic devices; and
 - Polymer composites – structural and conductive fillers and resins, for example those used in aerospace and construction industries.

Haydale aims to earn revenues from a range of sources:

- Sales of product over the internet;
- Use of trade exchanges;
- Third party distributors;
- Grant funded projects;
- Individually based research and development projects;
- Commercial projects;
- In-house manufacturing;
- Licensing; and
- Strategic collaboration / acquisitions

Sales of product over the internet

Haydale offers a range of products for sale on its own website and now also through Graphene Supermarket. Products for sale include GNPs, multi-walled carbon nanotubes, screen printable conductive inks, and single and double walled carbon nanotubes. During 2012 and 2013 products were sold through a US based website (www.cheaptubesinc.com). This sales channel was terminated in May 2013.

Use of trade exchanges

In December 2013, Haydale announced that it had listed its HDPlas™ range of materials for trade on INSCX exchange. INSCX™ exchange is a self-regulating organisation providing an electronic trade platform specific to the listing of accredited, inspected and validated engineered nanomaterials, nanoenabled commodities and categories of more traditional commodities for physical delivery. Merchant member Fullerex has been appointed by Haydale as its agent through which Haydale instructs trade on the market. The exchange operates a defined system for listing nanomaterials for trade and conducts formal on-site audit of producers to assess capability to supply and offers producers a means to finance upscale.

Third party distributors

Haydale will look to enter into collaborative agreements with manufacturers or distributors of intermediate products such as conductive inks, polymer resins and composites.

In November 2013, Haydale announced that it had signed a distribution agreement with AMG Mining AG, a subsidiary of AMG Advanced Metallurgical Group N.V.

AMG produces silicon-metal and refined natural graphite from sites in Europe, Asia and Africa. Silicon-metal is used in the chemicals, aluminium, electronics and solar industries. High quality graphite is used in lubricants, carbon brushes in electrical motors, seals, bearings, nuclear moderators, in the chemicals industries, and for insulation and energy saving solutions.

The agreement allows AMG to act as exclusive distributor in Germany for the Haydale branded HDPlas™ GNPs. AMG is a major and long established international supplier of graphite based products and is aiming to use Haydale's plasma functionalisation technology to extend its product range and value added materials. Haydale and AMG are proactively discussing the sales and marketing opportunities arising from this initiative and expect sales of research materials to commence in due course.

In February 2014, Haydale agreed a non-exclusive distribution agreement with US based Graphene Laboratories Inc to sell its GNPs under the HDPlas™ brand name through its USA based web site known as Graphene Supermarket.

Grant Funded Projects

These revolve around key providers of funding such as the EU Horizon 2020 and the Technology Strategy Board. To date Haydale has completed two feasibility studies worth over £50,000 and has a new project on sensors starting in April 2014 which is worth up to £168,000 over two years. A strategic aim will be to develop relationships with key research facilities such as the newly formed Catapult Technology and Innovation Centres together with relevant universities for joint research in areas such as composites and energy. A new £2.5 million Technology Strategy Board initiative entitled "Realising the Graphene Revolution" has been announced inviting applications for projects around graphene research. Haydale expects to participate in this initiative.

Individually based research and development projects

Haydale aims to work on a range of R&D projects with raw material producers with a view to adding value to their products through the application of Haydale's technology. Haydale's aim is to work with partners to help them customise FNP and CNTs as components in their products.

Future sales are likely to emanate from R&D work on such projects undertaken at universities or corporate research laboratories.

Commercial projects

Haydale intends to develop market specific offerings and target sales to product manufacturers in those areas. A number of significant corporations have recently approached the Company looking for product improvements and focusing specifically on the properties of graphene to achieve this. Evaluation of materials has commenced with a view to establishing the feasibility of entering a funded project to achieve set product improvements. This should then result in a focused commercial project financed by the industrial partner or co-funded with Haydale.

In-house manufacturing

Whilst Haydale has processing technology and capability it is not the intention to engage in significant in-house manufacture. However, the Directors' believe there are a number of high value, relatively low volume possibilities where licensing would be inappropriate.

Licensing

The Directors believe that licensing is likely to be a key component of the growth of the Group. This will only take place once materials have been evaluated and a project completed and tested for suitability with an end customer. If the application requires significant volumes to be produced, the Directors will seek to license production to an appropriate processor. Royalties are likely to be based on added value and annual volumes. Revenues will also include the proceeds of (or rental of) a reactor.

Strategic collaboration / acquisitions

Haydale has commenced identification of companies whose staff base, IP, knowledge of graphene applications and/or existing routes into target customers could add substantial value to the Group. With the graphene industry still in its infancy, the Directors believe that such acquisitions may be relatively inexpensive, likely to be made principally using the Company's shares as consideration and could offer

transformative opportunities to the Group. As a consequence of Haydale's increased profile and strategic positioning, a number of approaches have been made by potential strategic partners seeking collaborative projects and arrangements.

Intellectual property

Haydale is aware of the importance of the protection of intellectual property rights (IPR), both for the defence and exploitation of its processing activities and for enhancing the commercial value of products, processes and applications it identifies and develops. The registered IPR of Haydale falls into the categories of patents and trademarks.

The Company's core IPRs are two patent families which describe the Company's low pressure plasma methods of making and treating carbon nanomaterials. The inventions are embodied in the Company's manufacturing machines referred to internally as at the HD30 and HD100 and the processes performed in them. A former director of the Company is listed on the patent applications as the inventor or co-inventor of these processes. The Company's technical manager, Martin Williams is also listed as co-inventor of certain patent applications. All inventors have assigned their patent rights to the Company. The state of progress of these patent families at the patent offices suggests favourable patentability prospects. Further, to accelerate prosecution of the European patent application of the later of the two patent families it has been limited to the most important process claims. These particular claims have already had a favourable opinion from the European Patent office (the EPO). It is intended that a divisional application will be filed at the EPO to pursue other claims at more leisure.

The Company also has a Patent Cooperation Treaty ("PCT") patent application relating to conductive polymeric materials and a Great Britain ("GB") priority patent application relating to the methods of preparing zinc compounds to form nanostructures.

The Company's subsidiary Haydale Limited is a co-owner of a patent family with Desso Holdings B.V. relating to processing of waste materials. This patent family is not currently material to the core business of the Company.

The Company and Haydale Limited have a trade mark application each. The Company has applied for the trademark HDPlas and Haydale Limited has applied for the trade mark Haydale.

Part IV of this Document contains a report by Mewburn Ellis, the Company's Intellectual Property Solicitors, on the Group's intellectual property.

Competition and competitive landscape

Globally there are many organisations involved in graphene research and production from SMEs through to large multinationals. In terms of the manufacture of graphenes, competition arises from companies looking to supply GNPs and / or products incorporating GNPs. These products generally arise from two methods of production: bottom up and top down. A number of processes involve the use of plasma as a component in the technology. This is further explained in Part III of this Document.

Currently the take up of commercial applications using graphene are limited by the shortage of properly functionalised materials. The numerous possible applications means that it is potentially a substantial global market, fuelled by public and private sector investment coupled with end user interest seeking competitive advantage through the use of product enhancing materials such as graphene. As many producers are private and overseas companies, it is difficult to ascertain whether any are currently profitable on a standalone basis, however the embryonic stage of the sector is likely to mean that it is loss making as a whole. This may lead to some failures or corporate consolidation but it also means that graphene producers need to drive for sales. The Directors consider that as production of GNPs increases the supply side will start to impact on market prices with an almost inevitable reduction. As there is no standardised material definition, bench-marking prices becomes difficult. Prices vary significantly. The general R&D web based resellers are offering research grade functionalised GNPs at \$2,500 a kilo down to \$450 a kilo for 'industrial' grade GNP powders. Generally, these prices reduce as volume increases.

Certain GNP producers are already offering material at prices under \$100 a kilo for volume supply of functionalised powders. This mirrors the bulk pricing for CNTs. The strategic positioning and value added offering of Haydale should allow the Company to take advantage of price reductions.

In order to grow sales, companies are endeavouring to differentiate themselves from their competitors either by specialising in certain sectors or with a specialised range of products. A prerequisite is that all GNP manufacturers must first be able to produce a consistent quality product that improves the target applications. It is likely that large organisations will seek to collaborate with GNP manufactures who can demonstrate the ability to produce in volume for specific applications. This has been evidenced by the recent announcement of Samsung Ventures making a strategic investment in XG Sciences, Inc.

With the exception of graphene catalysed onto a substrate, the Directors believe that the various production methods may produce a commercially available GNP but that it will still require some form of functionalisation in order to disperse in a target material. Producers now appear to be recognising the need for functionalisation and dispersion as a means of improving their base product as the selling point to the customer. Consequently there are many research and manufacturing organisations continuing to invest in production processes and patenting technologies but many are in prototyping and product development stages.

To meet anticipated market demands, Haydale has developed a platform technology and business model which provides it with a broad range of opportunities. These are more fully set out in the section above entitled “Haydale’s Processes, Products and Market Opportunities”.

Financial information and sales prospects

	<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
Revenue and other income	18,438	133,171	145,742	58,104
Operating loss	(656,797)	(642,029)	(1,056,337)	(580,116)
Loss for the year/period	(582,380)	(608,532)	(992,380)	(568,239)
Cash & bank balances	16,828	149,313	54,464	758,322
Net assets	627,644	1,185,903	992,125	1,588,241

To date, revenues have included web based sales and research projects. In addition, the Group has received and continues to receive research development grants. The Group has taken advantage of commercial revenue opportunities as they have arisen. The business model going forward is as set out in the paragraph headed Haydale’s Business Strategy and Model in Part I of this Document. In the period under review, the Company has raised gross funding of approximately £3.8 million, of which approximately £1.2 million was raised in the 6 months ended 31 December 2013. In January 2014, the Company raised approximately a further £0.6 million (gross) of pre – Admission equity finance.

Board of directors, technical advisory panel, senior management and employees

Directors

The HGI Board consists of experienced commercial directors from a range of industries that include engineering, retail, high technology and the petro chemical industries. Haydale’s contacts at universities assist in providing access to analytical equipment and the use of research students to increase the technical input without adding excess overheads at this early stage.

John Knowles, Chairman (aged 71) BSc Eng (Hons)

John Knowles has significant nanotechnology experience. He was until recently chairman of NanoSight Limited (sold to Spectris plc) and currently is the chairman of the Nanotechnology KTN Advisory Board. He is a member of UK Government’s Nanotechnology Strategy Forum. His 30 years’ experience includes 2 years as MD of a Morgan Crucible subsidiary and chairman/director of several successful technology companies- including Davin Group Ltd, Stratophase Ltd, Michelson Diagnostics Ltd.

Tony Belisario, Deputy Chairman (aged 63) B Tech (Hons)

Tony Belisario is a chartered engineer who has spent most of his working life in management of manufacturing businesses using diverse technologies operating in global markets. In addition, Tony he also managed businesses backed by private equity and has led an MBO. Currently, in addition to being part time deputy chairman of HGI he serves on the Council of Brunel University.

Ray Gibbs, CEO (aged 59) FCA

Ray Gibbs is a Chartered Accountant, and former Deloitte audit and corporate finance partner for 9 years. He has spent the last 18 years in industry as CFO or commercial director of high technology and fast moving consumer goods businesses both in the quoted and private arenas with sales ranging from £500,000 to £500 million. He was a former CFO of Chemring Group Plc.

Dr. Chris Spacie, CTO (aged 56) C.Eng, M.I.M.M.M

Chris Spacie is a materials scientist and Chartered Engineer with over 30 years of experience in commercial R&D, process innovation, plant design and manufacturing. He was formerly technical director of Morganite Electrical Carbon Ltd. a division of Morgan Crucible Plc and is a primary inventor in fields such as fuel cell materials, composites and ballistics.

Matt Wood, Finance Director (aged 40) ACA BA (Hons)

Matt Wood is an experienced professional having worked as a financial and non-executive director with a variety of companies with a background in AIM listed small-cap corporate finance. He will work part time until the business needs a full time finance director. He currently is part time finance director for Sula Iron and Gold plc and is non-executive director for Avarae Global Coins plc and Westminster Group plc.

Graham Eves, NED (aged 68) MA

Graham Eves joined GKN plc in 1967 where he spent 13 years operating across multiple overseas jurisdictions including, for the last 5 years, setting up and running a special operation for GKN plc's head office in Switzerland. He returned to the UK in 1980 to work in venture capital and establish his own international business consultancy. His main activities covered advising a range of German, North American and Japanese automotive component/technology suppliers and he co-founded and was chairman of an automotive technology company, Mechadyne (now part of KolbenschmidtPierburg AG). He was also chairman of PCB manufacturer, Lyncolec Limited, chairman of a special security company and a director of 3PC Investment Trust. Graham is a Non-Executive Director of AB Dynamics and was directly involved in the AIM flotations of AB Dynamics plc, Antonov plc and Transense Technologies plc. He was on the AIM advisory committee of the London Stock Exchange for 6 years and has a Master of Arts degree in Modern and Medieval Languages from the University of Cambridge.

Roger Humm, NED (aged 55) MBA BSc (Hons) FCA

Roger Humm is a commercial and financial director with over 20 years in industry with extensive understanding of technology businesses. Having held positions as a finance director and company secretary in public & private settings, he has accumulated knowledge of capital transactions covering funding, acquisitions, divestments, in- and out-licensing and spin outs. He is currently part time vice president of finance of AIM quoted Ixico plc.

Roger Smith, NED (aged 61) BSc Physics

Roger Smith is a senior vice president of Petrofac Plc where he manages a \$50 million turnover division. He has spent 35 years in the oil and gas industry and has set up and sold 2 successful engineering consulting companies.

Senior management and employees

Martin Williams, Technical Manager (aged 29) BEng. (Hons), MRes, MPhil

Martin Williams is the Technical Manager at Haydale and has been developing plasma processed for powders for Haydale since 2006 and specifically for nanomaterials since 2009. He is the named joint inventor of Haydale's split plasma process. He holds degrees in Mechanical Engineering, Recycling Technology and Materials Science and has significant experience with functionalisation, characterisations

and applications of nanomaterials, especially carbon nanotubes and graphene. His primary role at Haydale is development of the plasma process with a focus on developing functionalisation solutions for use in applications.

Dr. Martin Kemp, Business Development Director (aged 59) FIMMM, MCIM, DipM, C Eng, Eur Ing, Chartered Marketer

Dr Kemp is a Chartered Marketer with 20 years' experience in nanotechnology products and high technology markets. He has a scientific background in materials science followed by experience in business development and strategic corporate marketing with QinetiQ. He has considerable experience in facilitating transfer of high technology into industry, having spent 5 years responsible for activities in Western Europe with DTI GlobalWatch Service, followed by 5 years with the TSB Nanotechnology Knowledge Transfer Network managed by the Centre for Process Innovation. In these roles, he facilitated commercialisation by providing specialist advice, facilitating networking through focus groups and events such as HiPerNano and Nano4Energy, advising on national strategy and developing the supply chain. He joined on the 1 April 2014.

Dr. Chris Stirling, Development Manager (aged 52) Ph.D BSc

Dr Stirling joined Haydale on January 18 2014 as a Development Manager focusing on the energy sector. He has degree (B.Sc.) in Physics and Ph.D. in Corrosion Science and worked as a Post-Doctoral Research Assistant on carbon manufacturing before joining Morgan Crucible plc in 1989. He held various technical roles in their carbon division with a focus on materials, processing and product development. He represented the company at national and international conferences and has organised and trained new graduate recruits. For the last 10 years he was the Technical Support Manager at Morgan Advanced Materials in Swansea working on a range of topics including thermal transfer, energy storage and the electrochemical production of low cost CNTs.

Marie Davies, Project Manager and Supply Chain (aged 46) BA (Hons)

Marie Davies is a professionally qualified project manager with 20 years' experience having worked with multi-national manufacturing and advanced engineering organisations such as Morgan Crucible, GSK and Thales. Her areas of expertise encompass supply chain, sales inventory and operations planning, and management of business change programmes having implemented global ERP deployments. She joined on the 1 April 2014.

Technical advisory panel

John Binner, (aged 54) CEng, FIOMMM, FION, FACerS, FECerS

Professor Jon Binner is the new Deputy Head of the Engineering and Physical Sciences College and Professor of Ceramic Science & Engineering in the School of Metallurgy and Materials at the University of Birmingham. He has published about 200 research papers, given over 40 keynote, plenary and invited talks at international conferences and won ~120 research grants totalling over £15.3M. He is the current President of the Institute of Materials, Minerals & Mining (IOM3) and a Fellow of the American and European Ceramic Societies and the Institute of Nanotechnology. The IOM3 awarded him the Holliday Prize in 1995, the Ivor Jenkins Medal in 2007 and the Verulam Medal and Prize in 2011.

Prof. Michael McMahon, (aged 71) MB ChB ChM PhD FRCS

Michael John McMahon is Emeritus Professor of Surgery at the University of Leeds and Consultant Surgeon at the Nuffield Hospital, Leeds. His main area of specialisation is upper gastrointestinal surgery and since 1989 he has worked on the development of equipment and operative techniques for minimally invasive surgery. In addition to co-founding a surgical instrument company he has acted as adviser and consultant to medical device companies in the UK, Europe and the USA. He is a past president of the Association of Laparoscopic Surgeons of Great Britain and Ireland.

Employees

At the date of this document, the Group has 11 employees.

Reasons for placing and admission

The Directors believe that Admission will assist the Group in its development by:

- providing investment to fund growth and accelerate the commercialisation of products;
- raising its profile in the sectors in which it operates;
- increasing access to capital should further finance be required to expand the business of the Group or make acquisitions;
- providing opportunities for the Board to use Ordinary Shares as acquisition capital for targets identified by the Board where the staff base, intellectual property, knowledge of graphene applications and / or existing routes into likely target customers of the Group has the potential to add substantial value; and
- providing a market on which the Ordinary Shares can be traded, which will give increased liquidity and potentially a market valuation for the Company's equity which, in conjunction with the Share Option Schemes, will assist the Group in attracting, retaining and incentivising high calibre employees.

Use of proceeds

The net proceeds of the Placing receivable by the Company are approximately £5.5 million and are expected to be used as follows:

- headcount and infrastructure – expansion and broadening of the engineering, production, technical and business development teams to support additional product development and enhancements to the Company's dispersion and processing capabilities;
- capital expenditure – increase the capacity of graphene and other nanomaterials that the group is able to functionalise, this will require a new reactor and commissioning;
- sales and marketing – the major markets are likely to be overseas and they will need both marketing and technical sales support to develop them.
- collaboration projects – enhancement of existing, and development of new, intellectual property and know-how with external partners; and
- working capital requirements – funding working capital to support anticipated future growth.

Details of the placing

On Admission the Company will have 11,247,823 Ordinary Shares in issue and a market capitalisation of £23.6 million. The placing will raise £6.6 million (before expenses) by the issue of the Placing Shares.

Hume Capital Securities has conditionally agreed, pursuant to the Placing Agreement and as agents for the Company, to use its reasonable endeavours to procure subscribers for the Placing Shares at the Placing Price. The Placing Shares are being placed with institutional and other investors. The new Ordinary Shares issued pursuant to the Placing will represent 27.9 per cent. of the Enlarged Issued Share Capital. The Placing has not been underwritten and is conditional, *inter alia*, on Admission occurring by 14 April 2014 and in any event by no later than 9 May 2014 and on the Placing Agreement not being terminated. Further details of the Placing Agreement are set out in paragraph 10 of Part VII of this Document. The Placing Agreement contains certain warranties from the Company and the Directors and an indemnity from the Company in favour of Cairn and Hume Capital Securities, in relation, *inter alia*, to the accuracy of the information contained in this Document and certain matters relating to the Group.

It is expected that the appropriate stock accounts of Placees will be credited on or around 14 April 2014. In the case of Placees requesting Placing Shares in certificated form, it is expected that certificates in respect of the Placing Shares will be despatched by post within seven days of the date of Admission.

Admission, Settlement and CREST

Application has been made to the London Stock Exchange for the Enlarged Issued Share Capital to be admitted to trading on AIM. It is expected that Admission will become effective, and that dealings in the Enlarged Issued Share Capital will commence, at 8.00 a.m. on 14 April 2014.

The Articles permit the Company to issue Ordinary Shares in uncertificated form in accordance with the CREST Regulations. CREST is a computerised share transfer and settlement system. The system allows shares and other securities to be held in electronic form rather than paper form, although a shareholder can continue dealing based on share certificates and notarial deeds of transfer. For private investors who do not trade frequently, this latter course is likely to be more cost-effective. The Company has applied for the Ordinary Shares to be admitted to CREST with effect from Admission. Accordingly, settlement of transactions in Ordinary Shares held in uncertificated form following Admission will take place within the CREST system.

The ISIN number of the Ordinary Shares is GB00BKWQ1135. The TIDM is HAYD.

Lock in and Orderly Market Arrangements

The Locked in Persons, who together will, on Admission, hold 2,762,000 Ordinary Shares (representing 24.56 per cent. of the Enlarged Issued Share Capital), have entered into Lock-In Agreements as more particularly described in paragraph 10 of Part VII of this document. The Locked in Directors who together will, on Admission, hold 1,149,815 Ordinary Shares representing 10.22 per cent. of the Enlarged Issued Share Capital have each agreed with the Company, Cairn and Hume that they will not (without the prior written consent of each of the Company, Cairn and Hume) dispose of any interest in Ordinary Shares for a period of 12 months following Admission except in certain limited circumstances. Such persons have also agreed for a further 12 months following the expiry of the initial 12 month period to only dispose of an interest in Ordinary Shares through Hume (or the broker for the time being of the Company, if it is not Hume) and in such manner as Hume (or such other broker) may reasonably require with a view to the maintenance of an orderly market in the Ordinary Shares. In addition the Locked-In Shareholders, who together will, on Admission, hold 1,612,185 Ordinary Shares (representing 14.33 per cent. of the Enlarged Issued Share Capital), have entered into Lock-in Agreements as more particularly described in paragraph 10 of Part VII of this Document pursuant to which they have agreed not to dispose of any interest in 50 per cent of their Ordinary Shares for a period of 12 months from Admission save in certain limited circumstances and have also agreed to similar orderly market arrangements in respect of all of their Ordinary Shares.

Dividend policy

Following Admission, when it is commercially prudent to do so and subject to the availability of distributable reserves, the Directors may approve the payment of dividends. However, at present, the Directors consider that it is more prudent to retain cash to fund the expansion of the Group and, as a result, feel it is inappropriate to give an indication of the likely level or timing of any future dividend payment.

VCT and EIS

The Company has received advance assurance from HMRC that the new Ordinary Shares to be issued pursuant to the Placing will rank as “eligible shares” for the purposes of EIS and are capable of being a “qualifying holding” for the purposes of investment by VCTs. However, neither the Company nor the Directors nor any of the Company’s advisers give any warranties or undertakings that such reliefs will continue to be available and not withdrawn at a later date. Despite the advance assurance from HMRC, it is unlikely that all investors who subscribe for shares and who would otherwise qualify for relief will be able to benefit from EIS or VCT qualifying status on their subscription for Ordinary Shares. This is because there is a limit on the number of issued shares that can fall within the reliefs due, affected by a statutory limit on the amount that can be raised within such schemes, in turn affected by previous EIS

share allotments and grant(s) received. The Company and its advisors will have discretion regarding if and to what extent any available EIS/VCT relief will be allocated to otherwise eligible investors. Further information on taxation for UK taxpayers is given in paragraph 15 of Part VII of this Document.

Corporate Governance

The Directors intend to take account of the requirements of the Corporate Governance Code for Small and Mid-Size Quoted Companies of the Quoted Companies Alliance to the extent that they consider it appropriate and having regard to the Company's size, board structure, stage of development and resources.

The Company will hold regular board meetings. The Directors will be responsible for formulating, reviewing and approving the Company's strategy, budget and major items of capital expenditure. The Directors have established an audit committee, a remuneration committee and a nomination committee with formally delegated rules and responsibilities. Each of these committees will meet as and when appropriate save in the case of the remuneration and audit committees which will meet at least twice each year.

The Audit Committee will be comprised of Roger Humm, Graham Eves and John Knowles and will be chaired by Roger Humm. The Audit Committee will, *inter alia*, determine and examine matters relating to the financial affairs of the Company including the terms of engagement of the Company's auditors and, in consultation with the auditors, the scope of the audit. It will receive and review reports from management and the Company's auditors relating to the half yearly and annual accounts and the accounting and the internal control systems in use throughout the Group.

The Remuneration Committee will be comprised of Tony Belisario, Roger Smith and Graham Eves and will be chaired by Tony Belisario. The Remuneration Committee will review and make recommendations in respect of directors' remuneration and benefits packages, including share options and the terms of appointment. The remuneration committee will also make recommendations to the board concerning the allocation of share options to employees under the intended share option schemes.

The Board as a whole will be responsible for board and senior management nominations.

Share dealing code

The Company will, with effect from Admission, adopt a share dealing code for the Directors and certain employees, which is appropriate for a company whose shares are admitted to trading on AIM (particularly relating to dealing during close periods in accordance with Rule 21 of the AIM Rules) and the Company will take all reasonable steps to ensure compliance by the Directors and any relevant employees.

City Code

The City Code applies to the Company. Under the City Code, if an acquisition of Ordinary Shares or interests therein were to increase the aggregate holding of the acquirer and its concert parties to interests in shares carrying 30 per cent. or more of the voting rights in the Company, the acquirer and, depending on circumstances, its concert parties would be required (except with the consent of the Panel) to make a cash offer for the outstanding shares in the Company at a price not less than the highest price paid for interests in shares by the acquirer or its concert parties during the previous 12 months.

This requirement would also be triggered by any acquisition of Ordinary Shares or interests therein by a person holding (together with its concert parties) shares carrying between 30 per cent. and 50 per cent. of the voting rights in the Company if the effect of such acquisition were to increase that person's percentage of the total voting rights in the Company.

Further information on the City Code is set out in paragraph 5 of Part VII of this Document.

Taxation

Your attention is drawn to paragraph 15 of Part VII of this Document. These details are intended only as a general guide to the current tax position under UK taxation law and practice. If an investor is in any doubt as to his or her tax position he or she should immediately consult his or her own independent financial adviser.

Further information and risks

You should read the whole of this Document which provides additional information on the Company and the Placing and not rely on summaries or individual parts only. Your attention is drawn, in particular, to the Risk Factors set out in Part II of this Document and the additional information set out in Part VII of this document.

PART II

RISK FACTORS

In addition to all other information set out in this Document, the following specific risk factors should be considered carefully by potential investors in evaluating whether to make an investment in the Company. The investment described in this Document may not be suitable for all of its recipients. Before making a final decision, investors in any doubt are advised to consult their stockbroker, bank manager, solicitor, accountant or other independent professional adviser authorised pursuant to FSMA if resident in the United Kingdom or, if not, another appropriately authorised independent financial adviser.

You should carefully consider the risks described below and ensure that you have read this Document in its entirety before making a decision to invest in the Company.

Prospective investors should be aware that an investment in the Company is speculative and involves a high degree of risk. In addition to the other information contained in this Document, the Directors believe that the following risk factors are the most significant for potential investors and should be considered carefully in evaluating whether to make an investment in the Company. If any of the risks described in this Document actually occurs, the Company may not be able to conduct its business as currently planned and its financial condition, operating results and cash flows could be seriously harmed. In that case, the market price of the Ordinary Shares could decline and all or part of an investment in the Ordinary Shares could be lost. However, the risks listed do not necessarily comprise all those associated with an investment in the Company. Additional risks and uncertainties not presently known to the Directors, or which the Directors currently deem immaterial, may also have an adverse effect on the Company. In particular, the Company's performance may be affected by changes in market or economic conditions and in legal, regulatory and tax requirements. The risks listed below are not set out in any particular order of priority.

Risks Factors Relating to the Business and Operations of the Group

The Group is reliant on key executives and personnel

The Group's business, development and prospects are dependent upon the continued services and performance of its Directors and other key personnel. The experience of the Group's personnel helps provide the Group with a competitive advantage. The Directors believe that the loss of services of any existing key executives, for any reason, or failure to attract and retain necessary additional personnel, could adversely impact on the business, development, financial condition, results of operations and prospects of the Group.

The Group may not successfully manage its growth

Expansion of the business of the Group may place additional demands on the Group's management, administrative and technological resources and marketing capabilities, and may require additional capital expenditure. If the Group is unable to manage any such expansion effectively, then this may adversely impact the business, development, financial condition, results of operations, prospects, profits, cash flow and reputation of the Group.

As set out in Part I of this Document, the Group intends to carry out certain expansion strategies. The Group's growth and future success will be dependent to some extent on the successful completion of such expansion strategies proposed to be undertaken by the Group and the sufficiency of demand for the Group's products. The execution of the Group's expansion strategies may also place a strain on its managerial, operational and financial reserves. Should the Group fail to implement such expansion strategies or should there be insufficient demand for the Group's products and services, the Group's business operations, financial performance and prospects may be adversely affected.

Acceptance of the Group's products

The success of the Group will depend on the market's acceptance of, and attribution of value to, its split plasma technology developed by the Group based on converting principally raw, mined graphite and other synthetically produced graphenes into high quality functionalised GNPs, using a dry and low-energy process, without using wet chemicals or acids.

The development of a market for the Group's products is and will be affected by many factors, some of which are beyond its control, including the emergence of newer, more successful functionalisation methods, technologies and products and the cost of functionalising of the Group's products. Notwithstanding the technical merits of the processes developed by the Group, there can be no guarantee that its targeted customer base for the processes will ultimately purchase the Group's products. If markets fail to develop or develop more slowly than anticipated, the Group may be unable to recover losses incurred in the development of its process and may never achieve profitability. In addition, the Directors cannot guarantee that the Group will continue to develop, manufacture or market its processes if market conditions do not support the continuation of such products.

The Group's business is subject to operating risks

The functionalisation process is potentially exposed to the risks of fire, breakdown or failure of equipment, power supply or processes, performance below expected levels of output or efficiency, obsolescence, sabotage, labour disputes, lock-outs, potential unavailability of services of its external contractors, natural disasters, industrial accidents and the need to comply with the directives of relevant government authorities. The occurrence of any of these risks could significantly adversely impact the Group's operating results.

Counterparty risk

There is a risk that parties with whom the Group trades or has other business relationships (including partners, customers, suppliers and other parties) may become insolvent. This may be as a result of general economic conditions or factors specific to that company. In the event that a party with whom the Group trades becomes insolvent, this could have an adverse impact on the revenues and profitability of the Group.

Technology and research and development

The Company is reliant upon complex technologies and its ability to continue to advance current proprietary processes and to develop new ones in order to gain a foothold in its target markets and to gain market share. The Company's future is also dependent on it being able to adapt its products in light of technological developments in the fast changing graphene industry. There is no guarantee that the Group will be successful in these regards. The Group may not be able to develop and exploit its technology sufficiently to enable it to develop commercial and marketable products. In addition, the Group may not be able to develop new technology solutions or identify specific market needs that can be addressed by technology solutions developed by the Group.

Inability to source capital equipment

The Group is reliant on being able to source the capital equipment it requires, in particular its supplier of plasma reactors, and to customise this equipment for its needs. The Group has identified and is currently working with a supplier and expects to be able to source further reactors in due course. There is no certainty that the supplier will be able to meet the Group's requirements in this regard.

Requirement for further investment

The Group may require funds for expansion. There can be no guarantee that the necessary funds will be available when required or on acceptable terms. If, for whatever reason, the Group is unable to obtain additional funding, it may need to cut back its growth plans or retrench its operations. If this situation was to arise, it would be likely to have an adverse impact on the Group's business, its development, financial condition, operating results or prospects and share price.

The proceeds of the Placing are expected to be sufficient to implement the Board's strategy in the short to medium term. However, if the Group fails to generate sufficient cash through the sale of its products, it may need to raise additional capital in the future, whether from equity or debt sources, to fund expansion, development and/or the ongoing operating costs of the Group. If the Group is unable to obtain

this financing on terms acceptable to it then it may be forced to curtail its planned development. If additional funds are raised through the issue of new equity or equity-linked securities of the Company other than on a pre-emptive basis to then existing shareholders, the percentage ownership of such shareholders may be substantially diluted.

Health and safety and environmental issues (“HSE”)

The Group’s operations are, and will remain, subject to HSE requirements in the jurisdictions in which the Group conducts its business. Such HSE laws and regulations govern, among other matters, air emissions, wastewater discharges, solid and hazardous waste management and the use, composition, handling, distribution and transportation of hazardous materials. The cost of compliance with these requirements is expected to increase. Although the Directors believe that the Group’s procedures comply with applicable regulations, any failure to comply with HSE laws and regulations could result in the Group incurring costs and/or liabilities, including as a result of regulatory enforcement, personal injury, property damage and claims and litigation resulting from such events, which could adversely affect the Group’s results of operations and financial condition.

Accidents or mishandling involving hazardous substances could cause severe or critical damage or injury to property and human health. Such an event could result in civil lawsuits and / or regulator enforcement proceedings, both of which could lead to significant liabilities. Any damage to persons, equipment or property or other disruption of the Group’s business could result in significant additional costs to replace, repair and insure the Group’s assets, which could negatively affect the Group’s business, prospects, operating results and financial condition.

The Group cannot predict the impact of new or changed HSE laws or regulations or other concerns or changes in the ways that such laws or regulations are administered, interpreted or enforced. To the extent that any of the requirements impose substantial costs or constrain the Group’s ability to expand or change its processes, the Group’s business, prospects, operating results and financial condition may suffer as a result.

Handling graphene safely

Graphene is a relatively new material with a limited number of studies into its effects on biological systems.

The Health and Safety Executive published guidance in 2013 on the use of nanomaterials in the workplace and specifically about the manufacture and manipulation of all manufactured nanomaterials, including CNTs and other biopersistent high aspect ratio nanomaterials (“HARNs”). The report stated that there was emerging evidence indicating that exposure to some kinds of nanomaterials can cause skin inflammation and fibrosis in the lungs but that there was insufficient data to confirm health consequences of long term repeated exposure and more information was required to properly understand the conditions that produce such effects.

The Directors believe that the Group is acting prudently by following the Health and Safety Executive guidelines for the handling of HARNs in its procedures for handling GNPs and CNT’s.

However, there is no guarantee that evidence will not emerge that graphene has a deleterious effect on biological systems, which may limit the potential applications of GNPs, require the Group to expend additional funds on safety measures, and potentially have a material adverse effect on the Group’s business, financial position or prospects.

Uninsured liabilities

The Group may be subject to substantial liability claims due to the technical nature of its business and products or for acts or omissions of its sales representatives, agents or distributors. The Group can give no assurance that the proceeds of insurance applicable to covered risks will be adequate to cover expenses relating to losses or liabilities. Accordingly, the Group may suffer material losses from uninsurable or uninsured risks or insufficient insurance coverage.

Disaster recovery

The Group depends on the performance, reliability and availability of its plant, equipment and information technology systems. Any damage to, or failure of, its equipment and/or systems could result in disruptions to the Group's operations. The Group's disaster recovery plans (which are currently in place for financial systems and are in contract negotiations for other IT systems) may not adequately address every potential event and its insurance policies may not cover any loss in full or in part (including losses resulting from business interruptions) or damage that it suffers fully or at all, which could have a material adverse effect on the Group's business, financial position or prospects.

Litigation and product liability

Legal proceedings, with or without merit, may arise from time to time in the course of the Group's business, including in connection with intellectual property rights. The Directors cannot preclude litigation being brought against the Group and any litigation brought against the Group could have a material adverse effect on the financial condition, results or operations of the Company. The Group's business may be materially adversely affected if the Group and/or its employees or agents are found not to have met the appropriate standard of care or exercised their discretion or authority in a prudent or appropriate manner in accordance with accepted standards.

Since Mr Ian Walters, a former director of the Company, left the business in 2013, the Board has received a number of communications from him containing allegations against the Company relating to whether information published by or on behalf of the Company was factually correct or not. In each case, the Company has responded firmly to these communications either directly or through its lawyers. The Board does not know whether Mr Walters will persist with his lines of questioning. In the event he does, the Company will continue to respond as previously. Whilst the Board does not believe any formal dispute exists with Mr Walters and no legal proceedings are active, pending or threatened by or against him in relation to this or other matters, there is no certainty that a dispute or any such proceedings may not arise in the future.

Taxation

The attention of potential investors is drawn to paragraph 15 of Part VII of this Document headed "United Kingdom Taxation". Any change in the Group's tax status or in taxation legislation or its interpretation could affect the value of the investments held by the Company. Representations in this Document concerning the taxation of the Group and its investors are based upon current tax law and practice which is subject to change.

Internal controls

Future growth and prospects for the Company will depend on its management's ability to manage the business of the Group and to continue to expand and improve operational, financial and management information and quality control systems on a timely basis, whilst at the same time maintaining effective cost controls. Any failure to expand and improve operational, financial and management information and quality control systems in line with the Group's growth could have a material adverse effect on the Group's business, financial condition and results of operations.

The Group's objectives

The Group's objectives may not be fulfilled. The value of an investment in the Group is dependent upon it achieving the aims set out in this Document. There can be no guarantee that it will achieve the level of success that the Directors expect.

Competing technology

There can be no assurance that others have not developed or will not develop similar processing technology, duplicate any of the Group's technology or design around any patent applications held by the Group. Others may hold or receive patents which contain claims having a scope that covers the technology developed by the Group (whether or not patents are issued to the Group). In addition, no assurance can be given that others will not independently develop or otherwise acquire substantially equivalent techniques or otherwise gain access to the Company's unpatented proprietary technology or disclose such technology or that the Company can ultimately protect meaningful rights to such unpatented technology.

Intellectual property

The Group's success will depend in part on its ability to maintain adequate protection of its intellectual property portfolio, covering its manufacturing process, additional processes, products and applications, including in relation to the development of specific functionalisation of graphene and other types of carbon-based nanomaterials for use in particular applications. The intellectual property on which the Group's business is based is a combination of patent applications and confidential know-how. No assurance can be given that any pending patent applications or any future patent applications will result in granted patents, that any patents will be granted on a timely basis, that the scope of any patent protection will exclude competitors or provide competitive advantages to the Group, that any of the Group's patents will be held valid if challenged, or that third parties will not claim rights in, or ownership of, the patents and other proprietary rights held by the Group.

There is a risk that certain objections may be raised by patent offices in relation to the ongoing patent applications which have been filed by the Group. These may result in revised applications or prevent those patent applications from being granted. If the patent applications are not granted, the consequence is that the techniques and processes described in the patent applications would not be protected and would be in the public domain. The Group would then continue to rely on the confidential know-how it has developed in related, ancillary or other processes and techniques it uses, such as the techniques it has developed for the dispersion of GNPs. In addition, the Group would (where possible) pursue new patent applications for such related, ancillary and other processes and techniques it has developed.

Due to the high level of the global patent applications surrounding the production of graphene and its many uses, the Company considers it to be impracticable and probably ineffective to carry out exhaustive freedom to operate searches or mapping exercises. Consequently, applications may have been filed which impinge on or adversely impact the Group's patent applications. Notwithstanding the foregoing, the state of progress at the patent offices' currently suggests favourable patentability prospects.

Once granted, a patent can be challenged both in the relevant patent office and in the courts by third parties. Third parties can bring material and arguments which the patent office granting the patent may not have seen. Therefore, granted patents may be found by a court of law or by the patent office to be invalid or unenforceable or in need of further restriction.

Until the Company's patents are granted, the Company is unable to take action to protect its proprietary processes.

A substantial cost may be incurred if the Group is required to assert its intellectual property rights, including any patents, against third parties. Patent litigation is costly and time consuming and there can be no assurance that the Group will have, or will be able to devote, sufficient resources to pursue such litigation. Potentially unfavourable outcomes in such proceedings could limit the Group's intellectual property rights and activities. There is no assurance that obligations to maintain the Group's know-how would not be breached or otherwise become known in a manner which provides the Group with no recourse.

Any claims made against the Group's intellectual property rights, even without merit, could be time consuming and expensive to defend and could have a materially detrimental effect on the Group's resources. A third party asserting infringement claims against the Group and its customers could require the Group to cease the infringing activity and/or require the Group to enter into licensing and royalty arrangements. In addition, the Group may be required to develop alternative non-infringing solutions that may require significant time and substantial unanticipated resources. There can be no assurance that such claims would not have a material adverse effect on the Group's business, financial condition or results.

No assurance can be given that third parties will not in the future claim rights in or ownership of the patents and other proprietary rights from time to time held by the Group. As further detailed above, substantial costs (both financially and in management time) may be incurred if the Group is required to defend its intellectual property.

Risks factors relating to the markets in which the Group proposes to operate

Demand for graphene may not match expectations

Although there are numerous potential applications for graphene and potentially a large global market, there is no guarantee that graphene will become a widely accepted material for use on a commercial scale and in addition it is possible that new products may supersede graphene. Even if graphene does become widely accepted, industry may be unwilling to disrupt its existing manufacturing processes or take longer to do so than anticipated and the conversion of current interest into wide scale commercial adoption may therefore either fail to materialise or take longer than anticipated. The Group may also be unsuccessful in its effort to realise commercial and financial benefits from this wider acceptance.

Competition risk

The Group may face significant competition from organisations which have developed competing products and which have greater capital resources than those of the Group and this might have an adverse impact on the Group. There is no assurance that the Group will be able to compete successfully in the marketplace in which it seeks to operate. The Directors believe that there is ample room in the market for competition should this arise and that any competition in fact enhances the value of the Company by validating its technology and market appeal.

Although all inventors of Haydale's patent applied for process have assigned their patent rights to the Company, any former directors or employees of the Group (one of whom, Mr Ian Walters, is listed on the patent applications as the inventor or co-inventor of these processes), or future leavers who are no longer bound by their confidentiality and non-compete restrictions could potentially, establish a competing business providing they do not infringe Haydale's process technology where patents are pending and providing they have access to sufficient capital and technical input in order to develop a reactor that is capable of functionalising nanoparticles.

The Directors believe that certain former director/employees may seek to compete directly or indirectly with the Group. For example, one of the Company's former directors, Mr Ian Walters, was recently mentioned in an article in the Engineer Magazine published on 10 March 2014. Whilst the Company is unable to verify the contents of the article, it states that "Ian Walters..... has since [founding Haydale] founded another [company called] Perpetuus Carbon Technologies, near Swansea. Perpetuus.... uses a top-down method to make GNPs. Powdered graphite.....is subjected to treatment with a plasma of high energy ions generated by UV light and a high voltage from a specific arrangement of electrodes."

Whilst Haydale also uses a top-down plasma technology, its proprietary process would appear to differ significantly from that of Perpetuus Carbon Technologies, for example, in that it does not involve the use of UV light. Additionally, since acquiring Haydale in 2010, major changes and improvements have been made to Haydale's equipment, process and procedures. The Directors believe that Haydale currently has first mover advantage in terms of business development including IP filings, commercialising the Group's activities and Admission.

There can however be no assurance that others (including ex-directors and employees) have not developed or will not develop similar processing technology, duplicate any of the Group's technology or design around any patent applications held by the Group and that such competition may have a material adverse impact on the Company's business.

The Company is protected by post termination legal obligations owed by former directors/employees and the law generally and will, if necessary, enforce its legal rights in relation to patents, trade secrets and other confidential information.

Impact of supply and demand of graphene on sales and pricing.

Commercial applications of graphene are currently limited. The Directors believe that, at present, aggregate global manufacturing capacity for graphene exceeds aggregate demand and that this will provide the Group with potential sales opportunities for its products. Furthermore, the Directors believe that in overseas markets, demand for graphene will, in general, exceed local supplies thereby providing export opportunities for the Group. If these market assumptions are incorrect, the Group's sales targets may not be achieved.

Exposure to exchange rate fluctuations

The Group is likely to be exposed to exchange rate fluctuations. Changes in foreign currency exchange rates may affect the Group's pricing of products sold and materials purchased in foreign currencies.

The Directors will, where appropriate, consider using certain derivative financial instruments, including foreign currency forward contracts used to hedge sale commitments denominated in foreign currencies, to reduce the Group's exposure to this risk.

Exposure to economic cycle

Market conditions may affect the value of the Company's share price regardless of operating performance. The Group could be affected by unforeseen events outside of its control including economic and political events and trends, inflation and deflation, terrorist attacks or currency exchange fluctuation. The combined effect of these factors is difficult to predict and an investment in the Company could be affected adversely by changes in economic, political, administrative, taxation or other regulatory factors in any jurisdiction in which the Group may operate. Deterioration in the economic climate could result in a delay or cancellation of clients' projects.

Force majeure events

There is a risk that the markets in which the Group currently operates could be affected by events such as war, civil war, riot or armed conflict, acts of terrorism, floods, explosions or other catastrophes, epidemics or quarantine restrictions, which are outside of the Directors' control and generally not covered by insurance. Such events could have a variety of materially adverse consequences for the Group, including risks and costs related to decline in revenues or reputational damage, and injury or loss of life, as well as litigation related thereto.

Laws and regulations

The Group is subject to the laws of the United Kingdom. Existing and future legislation and regulation could cause additional expense, capital expenditure and restrictions and delays in the activities of the Company, the extent of which cannot be predicted. No assurance can be given that new laws, rules and regulations will not be enacted or existing laws, rules and regulations will not be applied in a manner which could limit or curtail certain of the Group's activities or services. Similar risks could apply in any overseas markets into which the Group may sell its products.

Risks relating to the Ordinary Shares

Investment in AIM Securities

Although the Company is applying for the admission of its Enlarged Issued Share Capital to trading on AIM, there can be no assurance that an active trading market for the Ordinary Shares will develop, or if developed, that it will be maintained. An investment in shares traded on AIM may be less liquid and is perceived to involve a higher degree of risk than an investment in a company whose shares are listed on the Official List. Prospective investors should be aware that the value of the Ordinary Shares may go down as well as up and that the market price of the Ordinary Shares may not reflect the underlying value of the Group. Investors may therefore realise less than, or lose all of, their investment.

AIM Rules for Companies

The AIM Rules for Companies are less onerous than those of the Official List. Neither the FCA nor the London Stock Exchange has examined or approved the contents of this Document. Shareholders and prospective investors (as appropriate) should be aware of the risks of investing in AIM quoted shares and should make the decision to invest only after careful consideration and, if appropriate, consultation with an independent financial adviser.

Volatility of share price

The trading price of the Ordinary Shares may be subject to wide fluctuations in response to a number of events and factors, such as variations in operating results, announcements of innovations or new services by the Group or its competitors, changes in financial estimates and recommendations by securities analysts, the share price performance of other companies that investors may deem comparable to the Group, news reports relating to trends in the Group's markets, large purchases or sales of Ordinary Shares,

liquidity (or absence of liquidity) in the Ordinary Shares, currency fluctuations, legislative or regulatory changes and general economic conditions. These fluctuations may adversely affect the trading price of the Ordinary Shares, regardless of the Group's performance.

The following factors, in addition to other risks described in this document, may have a significant effect on the market price of the Ordinary Shares:

- variations in operating results;
- actual or anticipated changes in the estimates of operating results or changes in stock market analyst recommendations regarding the Ordinary Shares, other comparable companies or the industry generally;
- macro-economic conditions in the countries in which the Group may do business;
- foreign currency exchange fluctuations and the denominations in which the Group may conduct business and holds cash reserves;
- market conditions in the industry, the industries of customers and the economy as a whole;
- actual or expected changes in the Group's growth rates or competitors' growth rates;
- changes in the market valuation of similar companies;
- trading volume of the Ordinary Shares;
- sales of the Ordinary Shares by the Directors or other Shareholders; and
- adoption or modification of regulations, policies, procedures or programs applicable to the Group's business.

In addition, if the stock market in general experiences loss of investor confidence, the trading price of the Ordinary Shares could decline for reasons unrelated to the Group's business, financial condition or operating results. The trading price of the Ordinary Shares might also decline in reaction to events that affect other companies in the industry, even if such events do not directly affect the Group. Each of these factors, among others, could harm the value of the Ordinary Shares.

Future capital raisings may not be successful

If securities or industry analysts do not publish research or publish unfavourable or inaccurate research about the business, the Company's share price and trading volume of the Ordinary Shares could decline. The trading market for the Ordinary Shares will depend, in part, on the research and reports that securities or industry analysts publish about the Group or its business. The Directors may be unable to sustain coverage by well-regarded securities and industry analysts. If either none or only a limited number of securities or industry analysts maintain coverage of the Company, or if these securities or industry analysts are not widely respected within the general investment community, the trading price for the Ordinary Shares could be negatively impacted. In the event that the Group obtains securities or industry analyst coverage, if one or more of the analysts who cover the Company downgrade the Ordinary Shares or publish inaccurate or unfavourable research about the Group's business, the share price would be likely to decline. If one or more of these analysts cease coverage of the Company or fail to publish reports regularly, demand for the Ordinary Shares could decrease, which might cause the share price and trading volume to decline.

EIS & VCT status

The Company is a qualifying company for the purposes of the EIS and new Ordinary Shares issued pursuant to the Placing are expected to be capable of being a "qualifying holding" for the purposes of investment by VCTs, as described in paragraph headed VCT and EIS of Part I of this Document. Although it is intended that the Company will be managed so that this status continues, there is no guarantee that such status will be maintained. Changes in the Company's circumstances may result in such status being withdrawn, in which case investors who had participated in the Placing as an EIS or VCT investment may lose the tax benefits associated with such an investment and any tax relief that has been claimed may be reduced or withdrawn. Despite the advance assurance from HMRC, it is unlikely

that all investors who subscribe for shares and who would otherwise qualify for relief will be able to benefit from EIS or VCT qualifying status on their subscription for shares. This is because there is a limit on the number of issued shares that can fall within the reliefs due, affected by a statutory limit on the amount that can be raised within such schemes, in turn affected by previous EIS share allotments and grant(s) received. The directors estimate approximately 3.5 million of relief being available. The Company and its advisors will have discretion regarding if and to what extent any available EIS/VCT relief will be allocated to otherwise eligible investors.

Future payment of dividends

There can be no assurance as to the level of future dividends (if any). The declaration, payment and amount of any future dividends of the Company are subject to the discretion of the Directors and shareholders of the Company and will depend upon, *inter alia*, the Company's earnings, financial position, cash requirements and availability of profits as well as the provisions of relevant laws and/or generally accepted accounting principles from time to time.

Valuation of shares

The Placing Price has been determined by the Company and may not relate to the Company's net asset value, net worth or any established criteria or value. There can be no guarantee that the Ordinary Shares will be able to achieve higher valuations or, if they do so, that such higher valuations can be maintained.

Market perception

Market perception of the Company may change, potentially affecting the value of investors' holdings and the ability of the Company to raise further funds by the issue of further Ordinary Shares or otherwise.

Suitability

A prospective investor should consider carefully whether an investment in the Company is suitable in the light of his or her personal circumstances and the financial resources available to him or her. An investment in the Company involves a high degree of risk and may not be suitable for all recipients of this Document. Prospective investors are advised to consult a person authorised by the FCA (or, if outside the UK, another appropriate regulatory body) before making their decision.

Disapplication of pre-emption rights

The Directors have been granted authority to allot new Ordinary Shares, including up to 25,000,000 new Ordinary Shares for cash, other than on a pre-emptive basis. As more particularly detailed in paragraph 3 of Part VII. Accordingly, potential investors should consider the risk that, following Admission, Shareholders may be diluted if new Ordinary Shares are issued.

PART III

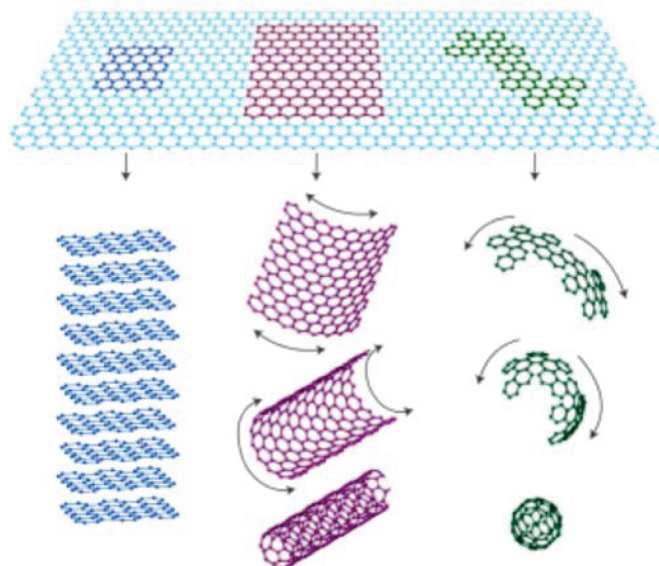
INFORMATION ON GRAPHENE AND THE GRAPHENE MARKET

Based on an unsupported single layer of graphene its properties can be summarised as:

- Thinnest imaginable material
- Largest surface area (c.2,630 m² per gram)
- Strongest material ever measured (theoretical limit)
- Stiffest known material (stiffer than diamond)
- Most stretchable crystal (up to 20 per cent. elasticity)
- Record thermal conductivity (outperforming diamond)
- Completely impermeable to gases
- Conducts electricity in the limit of no electrons

Source: IDTechEx

Graphene is a flat monolayer (a 2D material) of carbon atoms, arranged in a hexagonal pattern (a honeycomb crystal lattice).



Top: graphene

Left to right: graphite, carbon nano-tube and Buckyball (credit: Andre Geim)

Graphene is a natural material – it is the basic building block of graphite. Graphite (used in pencil tips and many industrial applications) can be conceptualised as stacked graphene sheets. While researchers theorised graphene back in the 1940s, it was only in 2004 that a single graphene sheet was isolated using Scotch tape.

Graphene has several remarkable properties. It is the thinnest known material in the world (just one carbon atom thick), and it's also one of the strongest ones – it is much stronger than both diamond and steel of the same thickness. A graphene sheet one metre square in size will be able to support a 4 kg cat. The graphene sheet will weigh only 0.77 milligrams (0.001 per cent.) of the weight of a 1 m² paper sheet, or about the same weight as the cat's whiskers. Graphene is also flexible and transparent and offers interesting optical properties.

Source: Graphene Handbook – Ron Mertens

Graphene has the largest surface area to mass ratio of any material, and is the most stretchable crystal. Unbroken, crystalline graphene is completely impermeable, which means that atoms of the second smallest element, helium, cannot permeate through it. Hydrogen permeability tests are still in progress; however, smaller atomic components, such as protons have been shown to readily pass through.

Source: <http://pubs.rsc.org/en/content/articlelanding/CP/2013/c3cp52318g#!divAbstract>

Due to its high electron mobility, graphene is the best electricity conductor known to man and is the perfect thermal conductor. The possibilities of using it as both an electrical conductor or thermally dissipative additive or material are numerous.

When rolled-up into a carbon nanotube, there are theories that photons of light can become entrapped within the cylindrical structure, thus absorbing the light, giving the perception of an ultra-black two dimensional material that has possibilities as a radar absorbing material.

In order for success on a commercial scale of isolating graphene, it needs to be capable of being produced economically and on an industrial scale.

Despite the enormous potential demand for graphene and considerable investment by certain companies, it is still only available in very small batches although some organisations claim capacity of many tonnes. The industry challenge is to produce high volumes of consistent quality. The most common production process, chemical exfoliation, is believed to be damaging to the material and therefore their properties which is likely to limit its ability to act as a disruptive enabling technology.

Methods of graphene production

Two-dimensional graphene and other two dimensional nanomaterials are currently produced by two methods; bottom up and top down.

Bottom up method

The bottom up approach results in a synthetically produced graphene currently achieved by growing large area polycrystalline films on a metal substrate, commonly copper. This process uses a carbon-containing precursor, often methane injected into a furnace at temperatures over 900 deg C. Prior to the introduction of the hydro-carbon, a metal substrate is inserted into the furnace to catalyse the reaction. The approach widely used to achieve this is a process known as Chemical Vapour Deposition (“CVD”). The graphene on the metal substrate is then transferred to another surface using a variety of techniques. This latter process is proving difficult to carry out in an economic way and as such industry experts are of the opinion that bottom up production is not currently commercially viable. Investment continues to be made in this area as graphene produced in this way is purchased generally by the R&D community for very low volume dedicated research projects.

There are other synthetically produced graphenes, again using a hydro-carbon source in various stages of development that claim to not require the use of a metal substrate. These techniques use for example, magnesium interacted with carbon dioxide while another process introduces alcohol based feedstock into a high temperature chamber to decompose the material creating GNPs as an output. Other methods claim to use palm oils in a similar process to produce GNPs.

Top down method

The top down method produces various forms of graphene in potentially single but more likely multiple layers and generally starts with a bulk graphite precursor. While there a number of techniques to break down the graphene layers, the most common approach is to use solvents. The challenge with this approach is to separate the sheets without significantly damaging them and preventing re-agglomeration.

Typically the liquid phase separation produces graphene nanoplatelets and can leave graphite like material where the process has not been adequately separated. The use of high temperatures and toxic chemicals can leave unwanted residues that will impact on the performance of the material.

Other methods are being considered using a more benign process incorporating a special solvent commonly used in the petrochemical industry, NMP (N-Methyl-2-pyrrolidone). NMP has been designated as toxic and that may cause issues in downstream processing/applications. In essence solvents with a

correct surface tension are used to exfoliate the graphene sheets from the graphitic structures by the use of ultrasonic vibration. Several rounds of filtering to segregate the graphene layers are carried out (often in a centrifuge). The resultant GNPs and single layer sheets have varying flake size but will still require functionalisation to ensure homogeneous dispersion is achieved.

There is a further synthetically produced graphene using silicon carbide as a substrate for a process known as Epitaxial Growth. Currently this production method is laboratory based and generally slow, inherently costly and the process has not yet been proven capable of being scaled up for commercial production. Whilst this method produces a very pure product (i.e. crystalline) it is generally accepted that the process will take some years to develop on a commercial scale.

Haydale's process involves the use of plasma to surface functionalise nanomaterials. Plasma is commonly used to surface coat larger materials, mainly industrial products. Plasma is a highly reactive gas which contains neutral, excited and ionised particles in addition to containing electrons and UV radiation. The nature of the discharge gas determines the surface effect which include cleaning, activating or coating. Plasma is used in conjunction with other technologies for this purpose. Technologies include atmospheric pressure plasma, excimer technology which uses excimer lamps which emit energy in the vacuum ultra violet ("VUV") region of the spectrum and can be used for photochemical surface modification. Specifically, Haydale's technology employs low pressure plasma in a rotating drum to treat nanoparticles as opposed to industrial products.

Market Opportunity

Graphene properties mean that it has the potential to be used in a wide range of applications. These include, conductive inks, barrier films, sensors, energy storage devices, super capacitors, polymer systems, resins and epoxies, plus paints, coatings and even water purification. Leading researchers all point to considerable growth in the use of an applications of nanomaterials including graphene.

A recent report from leading research institution IDTechEX (12 September 2012) indicates that the market for graphene based products, as part of the nanomaterials market, will reach \$100m by 2018 growing to \$575m by 2022. The main markets including RFID, smart packaging, supercapacitors, composites, ITO (Indium Tin Oxide) replacement, sensors, logic and memory, etc. The report concludes that the main market driver so far has been the R&D sector although it recognises that industry is now gearing up to move beyond research activities and a diverse range of other applications are actively being developed.

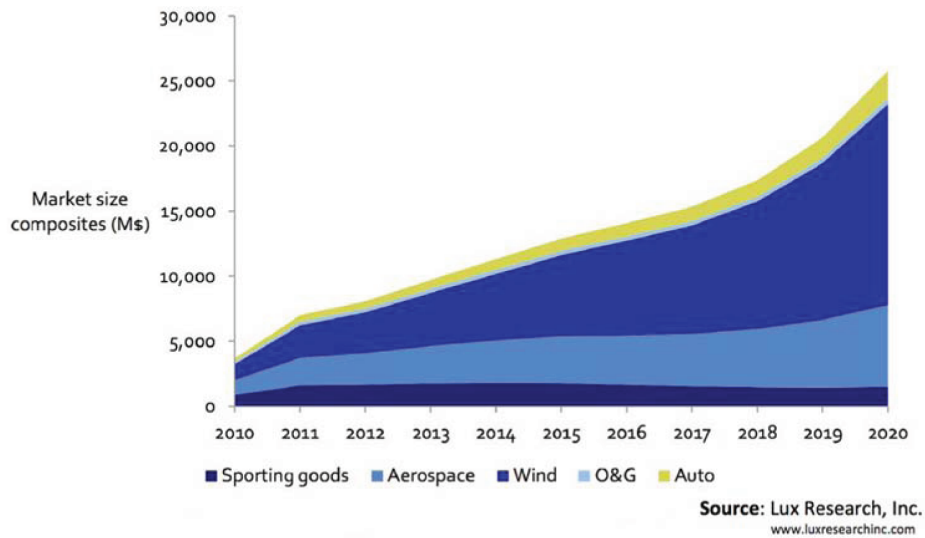
In many cases, the main go-to-market strategy for graphene would be replacing an existing component in an existing product. Depending on the target market, the incumbent or rival materials could be carbon black, carbon fibre, graphite, carbon nanotubes, silver nanowires, ITO, silver flakes, copper nanoparticles, aluminium, silicon, and ZnO/(Zinc Oxide).

The report concludes that the strength of graphene's value proposition is different for each target market. In many cases, graphene should provide performance uplift, giving space for premium pricing. Cost will remain critical as industry will compare against the incumbent material option.

BCC's recent research reports forecast in September 2013 significant sales of graphene products to develop between 2013 and 2018. The market is projected to be worth almost \$195 million by 2018, reaching \$1.3 billion by 2023, with a five year compound annual growth rate (CAGR) of 47.1 per cent. from 2018 to 2023.

A report on the World Market for graphene through to 2017 by Future Markets Inc. predicts that graphene will quickly move from the research laboratory to the marketplace, driven by demand from markets where advanced materials are required. These include the aerospace, automotive, electronics, energy storage, solar, oil service and lubricant sectors.

A Lux Research Document dated 28 September 2011 and entitled “Carbon Fiber and Beyond: The \$26 billion world of Advanced Composites” concludes that Wind and Aerospace lead the demand for Advanced Composite Materials based on carbon fibres, CNTs and graphene, as demonstrated in the graph below;



The combined worldwide market for nanomaterials enhanced components is forecast to move from \$7.0 billion in 2011 to \$25.8 billion in 2020 – an average compound annual growth rate (CAGR) of 16 per cent.

Research shows that the market continues to mature and is forecast to grow significantly in the next 5 years.

PART IV

REPORT ON INTELLECTUAL PROPERTY



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The Directors
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8 April 2014

Dear Sirs

Statement on the Patent and Trade Mark Applications of Haydale Graphene Industries plc and its subsidiary Haydale Limited

Our ref: SXJ/BG6857445

We have prepared this statement for the Directors of Haydale Graphene Industries plc (the **Company**) and also for Cairn Financial Advisers LLP and Hume Capital Securities plc, the Company's Advisers, for inclusion in the Admission Document to be issued by the Company in connection with the Placing and the Company's admission to trading on AIM. This statement has been prepared pursuant to, as appropriate, the "AIM Rules for Companies" issued by the London Stock Exchange covering certain aspects of the Company's intellectual property rights (**IPR**). We are responsible for this statement as part of the Admission Document and declare that we have taken all reasonable care to ensure that the information contained in this statement is, to the best of our knowledge, in accordance with the facts and contains no omission likely to affect its import.

Statement on the Patent and Trade Mark Applications of the Company

Haydale is aware of the importance of the protection of IPR, both for the defence and exploitation of its processing activities and for enhancing the commercial value of products, processes and applications it identifies and develops. The registered IPR which Haydale has applied falls into the categories of patents and trademarks.

European Patent Attorneys European Trade Mark Attorneys European Design Attorneys Chartered Patent Attorneys

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Matthew Smith
Ian Stuart
Rachel White

Consulting Partners

Ian Armitage
Hugh Paget

www.mewburn.com

PATENTS • TRADE MARKS • DESIGNS • COPYRIGHT

The Company's core IPRs are two patent families¹ which describe the Company's low pressure plasma methods of making and treating carbon nanomaterials. The inventions are embodied in the Company's manufacturing machines referred to internally as at the HD30 and HD100 and the processes performed in them. A former director of the Company is listed on the patent applications as the inventor or co-inventor of these inventions. All inventors have assigned their patent rights to the Company. The state of progress of these patent families at the patent offices suggests favourable patentability prospects. To accelerate prosecution of the European patent application of the later of the two patent families it has been limited to the most important process claims. These particular claims had a favourable opinion from the European Patent office (the **EPO**) in the PCT stage. It is intended that a divisional application will be filed at the EPO to pursue other claims at more leisure.

The Company also has a Patent Cooperation Treaty (**PCT**) patent application² relating to conductive polymeric materials and two Great Britain (**GB**) priority patent applications. The first GB priority application relates to methods of preparing zinc compounds to form nanostructures. The second GB priority application relates to methods for characterising particles. With the possible exception of the zinc compounds application, the Company has sole entitlement to the above patent families.

The Company's subsidiary Haydale Limited is a co-owner of a patent family with Desso Holdings B.V. relating to processing of waste materials. This patent family is not currently material to the business of the Company.

The Company and Haydale Limited have a trade mark application each. The Company has applied for the trademark HDPlas. Haydale Limited has applied for the trade mark Haydale.

Patent Searching

We have made patent name searches from time to time in the names of specific companies and individuals known to the Company, to assess any potential relevance of their patents and patent applications (a) to the Company's freedom to use and exploit the Company's technology and/or (b) to the patentability of the Company's IP, including specifically the Company's pending patent applications.

We have not made comprehensive freedom-to-operate searches (i.e. limited only by technical subject-matter) in respect of the Company's processes and products. This limitation of searching is in view of the massive scale of global patenting activity in this technical area in recent years, and especially originating in the Far East, leading to a very high number of pending patent rights of indeterminate eventual scope and validity, which it has been regarded as impractical and ineffective to review.

Intellectual property

The Group's success will depend in part on its ability to maintain adequate protection of its intellectual property portfolio, covering its manufacturing process, additional processes, products and applications, including in relation to the development of specific functionalisation of graphene and other types of carbon-based nanomaterials for use in particular applications. The intellectual property on which the Group's business is based is a combination of patent applications and confidential know-how. No assurance can be given that any pending patent applications or any future patent applications will result in granted patents, that any patents will be granted on a timely basis, that the scope of any patent protection will exclude competitors or provide competitive advantages to the Group, that any of the Group's patents will be held valid if challenged, or that third parties will not claim rights in, or ownership of, the patents and other proprietary rights held by the Group.

- 1 A "patent family" refers to a group of patent applications and/or granted patents in one or more territories which relate to a common invention. More specifically, they derive from the same "priority" patent application – i.e. the first application filed in relation to the invention, and are thus defined by the same "priority" filing date. Please refer to the "blue sheets" of the Company's firm of patent attorneys for more information about patents and the patenting process. They can be found at: <http://mewburn.com/patents>
- 2 A PCT application is a widely-used centralized patent application procedure, administered by the World Intellectual Property Office (**WIPO**), for the first stage of applying for patents internationally. The PCT stage expires after 30 months, by which time the applicant must elect in which specific territories to pursue the patent application, and initiate and continue the patenting procedures in their individual national patent offices

There is a risk that certain objections may be raised by patent offices in relation to the ongoing patent applications which have been filed by the Group. These may result in revised applications or prevent those patent applications from being granted. If the patent applications are not granted, the consequence is that the techniques and processes described in the patent applications would not be protected and would be in the public domain. The Group would then continue to rely on the confidential know-how it has developed in related, ancillary or other processes and techniques it uses, such as the techniques it has developed for the dispersion of GNPs. In addition, the Group would (where possible) pursue new patent applications for such related, ancillary and other processes and techniques it has developed.

Once granted, a patent can be challenged both in the relevant patent office and in the courts by third parties. Third parties can bring material and arguments which the patent office granting the patent may not have seen. Therefore, granted patents may be found by a court of law or by the patent office to be invalid or unenforceable or in need of further restriction.

A substantial cost may be incurred if the Group is required to assert its intellectual property rights, including any patents, against third parties. Patent litigation is costly and time consuming and there can be no assurance that the Group will have, or will be able to devote, sufficient resources to pursue such litigation. Potentially unfavourable outcomes in such proceedings could limit the Group's intellectual property rights and activities. There is no assurance that obligations to maintain the Group's or partners' know-how would not be breached or otherwise become known in a manner which provides the Group with no recourse.

Any claims made against the Group's intellectual property rights, even without merit, could be time consuming and expensive to defend and could have a materially detrimental effect on the Group's resources.

A third party asserting infringement claims against the Group and its customers could require the Group to cease the infringing activity and/or require the Group to enter into licensing and royalty arrangements. In addition, the Group may be required to develop alternative non-infringing solutions that may require significant time and substantial unanticipated resources. There can be no assurance that such claims would not have a material adverse effect on the Group's business, financial condition or results.

No assurance can be given that third parties will not in the future claim rights in or ownership of the patents and other proprietary rights from time to time held by the Group. As further detailed above, substantial costs (both financially and in management time) may be incurred if the Group is required to defend its intellectual property.

Yours faithfully



Patrick Stoner
Partner
for MEWBURN ELLIS LLP
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PART V

HISTORICAL FINANCIAL INFORMATION ON THE GROUP

Section (A) Accountant's report on the historical financial information on the Group



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8 April 2014

Dear Sirs

Haydale Graphene Industries PLC (the “Company”) and its subsidiary undertakings (the “Group”)

Introduction

We report on the financial information set out in section B of Part V. This financial information has been prepared for inclusion in the admission document dated 8 April 2014 of the Company (the “Admission Document”) on the basis of the accounting policies set out in note 2 to the financial information. This report is required by paragraph (a) of Schedule Two of the AIM Rules for Companies and is given for the purpose of complying with that paragraph and for no other purpose.

Responsibilities

The Directors of the Company are responsible for preparing the financial information in accordance with International Financial Reporting Standards as adopted by the European Union.

It is our responsibility to form an opinion on the financial information and to report our opinion to you.

Save for any responsibility arising under paragraph (a) of Schedule Two of the AIM Rules for Companies to any person as and to the extent there provided, to the fullest extent permitted by law we do not assume any responsibility and will not accept any liability to any person other than the addressees of this letter for any loss suffered by any such person as a result of, arising out of, or in connection with this report or our statement, required by and given solely for the purposes of complying with Schedule Two of the AIM Rules for Companies, consenting to its inclusion in the Admission Document.

Basis of opinion

We conducted our work in accordance with Standards for Investment Reporting issued by the Auditing Practices Board in the United Kingdom. Our work included an assessment of evidence relevant to the amounts and disclosures in the financial information. It also included an assessment of significant estimates and judgments made by those responsible for the preparation of the financial information and whether the accounting policies are appropriate to the entity's circumstances, consistently applied and adequately disclosed.

We planned and performed our work so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial information is free from material misstatement whether caused by fraud or other irregularity or error.

Our work has not been carried out in accordance with auditing or other standards and practices generally accepted in the United States of America or other jurisdictions outside the United Kingdom and accordingly should not be relied upon as if it had been carried out in accordance with those standards and practices.

Opinion

In our opinion, the financial information gives, for the purposes of the Admission Document dated 8 April 2014, a true and fair view of the state of affairs of the Group as at 30 June 2011, 30 June 2012, 30 June 2013 and 31 December 2013 and of its losses, cash flows and changes in equity for the periods then ended in accordance with International Financial Reporting Standards as adopted by the European Union.

Declaration

For the purposes of paragraph (a) of Schedule Two of the AIM Rules for Companies we are responsible for this report as part of the Admission Document and declare that we have taken all reasonable care to ensure that the information contained in this report is, to the best of our knowledge, in accordance with the facts and contains no omission likely to affect its import. This declaration is included in the Admission Document in compliance with Schedule Two of the AIM Rules for Companies.

Yours faithfully

BDO LLP
Chartered Accountants

BDO LLP is a limited liability partnership registered in England and Wales (with registered number OC305127)

Section (B) Historical Financial Information on the Group

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

		<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
	<i>Note</i>				
REVENUE	3	18,438	130,823	90,935	6,802
Administrative expenses		(675,235)	(775,200)	(1,202,079)	(638,220)
Other income		—	2,348	54,807	51,302
OPERATING LOSS		(656,797)	(642,029)	(1,056,337)	(580,116)
Finance costs	5	(12,764)	(15,009)	(4,673)	(4,335)
LOSS BEFORE TAXATION	4	(669,561)	(657,038)	(1,061,010)	(584,451)
Taxation	6	87,181	48,506	68,630	16,212
TOTAL COMPREHENSIVE LOSS FOR THE PERIOD/YEAR		<u>(582,380)</u>	<u>(608,532)</u>	<u>(992,380)</u>	<u>(568,239)</u>
Loss per share attributable to owners of the Parent					
Basic (£)	7	(13.22)	(11.22)	(14.20)	(7.44)
Diluted (£)	7	<u>(13.22)</u>	<u>(11.22)</u>	<u>(14.20)</u>	<u>(7.44)</u>

All amounts stated above are attributable to the equity owners of the parent company to the Group.

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

		30 June 2011 £	30 June 2012 £	30 June 2013 £	31 December 2013 £
	Note				
ASSETS					
NON-CURRENT ASSETS					
Property, plant and equipment	8	116,815	426,175	519,122	472,709
Goodwill	9	50,966	50,966	50,966	50,966
Intangible assets	9	659,584	624,584	589,584	572,084
		<u>827,365</u>	<u>1,101,725</u>	<u>1,159,672</u>	<u>1,095,759</u>
CURRENT ASSETS					
Inventories	10	848	24,714	24,289	22,944
Trade receivables	11	11,799	36,499	2,369	—
Other receivables	12	47,031	73,823	84,966	86,074
Corporation tax		63,945	48,506	63,578	79,790
Cash and bank balances	19	16,828	149,313	54,464	758,322
		<u>140,451</u>	<u>332,855</u>	<u>229,666</u>	<u>947,130</u>
TOTAL ASSETS		<u>967,816</u>	<u>1,434,580</u>	<u>1,389,338</u>	<u>2,042,889</u>
EQUITY AND LIABILITIES					
Share capital	13	956	1,272	1,492	1,811
Share premium account	13	1,253,144	2,419,619	3,214,406	4,355,727
Share-based payment reserve	15	—	—	3,595	26,310
Retained profits – deficit	15	(626,456)	(1,234,988)	(2,227,368)	(2,795,607)
TOTAL EQUITY					
ATTRIBUTABLE TO OWNERS					
OF THE PARENT		<u>627,644</u>	<u>1,185,903</u>	<u>992,125</u>	<u>1,588,241</u>
Trade and other payables	16	340,162	243,982	290,193	280,881
Short-term financial liabilities	19	10	—	—	—
Deferred income	17	—	4,695	107,020	91,584
Convertible loan notes	18	—	—	—	82,183
TOTAL LIABILITIES		<u>340,172</u>	<u>248,677</u>	<u>397,213</u>	<u>454,648</u>
TOTAL EQUITY AND LIABILITIES		<u>967,816</u>	<u>1,434,580</u>	<u>1,389,338</u>	<u>2,042,889</u>

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

	<i>Share capital £</i>	<i>Share premium £</i>	<i>Share-based payment reserve £</i>	<i>Retained profits -deficit £</i>	<i>Total £</i>
At 1 July 2010	764	621,237	—	(44,076)	577,925
Total comprehensive loss for the year	—	—	—	(582,380)	(582,380)
Issue of share capital	192	631,907	—	—	632,099
At 30 June 2011	956	1,253,144	—	(626,456)	627,644
Total comprehensive loss for the year	—	—	—	(608,532)	(608,532)
Issue of share capital	316	1,183,484	—	—	1,183,800
Share issue costs	—	(17,009)	—	—	(17,009)
At 30 June 2012	1,272	2,419,619	—	(1,234,988)	1,185,903
Total comprehensive loss for the year	—	—	—	(992,380)	(992,380)
Share-based payment charge	—	—	3,595	—	3,595
Issue of share capital	220	826,130	—	—	826,350
Share issue costs	—	(31,343)	—	—	(31,343)
At 30 June 2013	1,492	3,214,406	3,595	(2,227,368)	992,125
Total comprehensive loss for the period	—	—	—	(568,239)	(568,239)
Share-based payment charge	—	—	22,715	—	22,715
Issue of share capital	319	1,194,656	—	—	1,194,975
Share issue costs	—	(53,335)	—	—	(53,335)
At 31 December 2013	<u>1,811</u>	<u>4,355,727</u>	<u>26,310</u>	<u>(2,795,607)</u>	<u>1,588,241</u>

CONSOLIDATED STATEMENT OF CASH FLOWS

		Year ended 30 June 2011	Year ended 30 June 2012	Year ended 30 June 2013	6 months ended 31 December 2013
	Note	£	£	£	£
Cash flow from operating activities					
Loss before taxation		(669,561)	(657,038)	(1,061,010)	(584,451)
<i>Adjustments for:</i>					
Amortisation of intangible assets		35,000	35,000	35,000	17,500
Depreciation of property, plant and equipment		32,705	48,216	120,406	63,264
Share-based payment charge		—	—	3,595	22,715
Profit on disposal of property, plant and equipment		—	(285)	(307)	(708)
Finance costs		950	3,405	4,673	4,335
Operating cash flow before working capital changes		(600,906)	(570,702)	(897,643)	(477,345)
Decrease/(increase) in inventories		17,652	(23,866)	425	1,345
Decrease/(increase) in trade and other receivables		(46,795)	(51,492)	22,987	1,261
(Decrease)/increase in payables and deferred income		43,013	158,515	34,056	(24,748)
		13,870	83,157	57,468	(22,142)
Income tax received		53,240	63,945	53,558	—
Net cash flow from operating activities		(533,796)	(423,600)	(786,617)	(499,487)
Cash flow used in investing activities					
Purchase of property, plant and equipment		(127,010)	(360,194)	(224,981)	(17,129)
Proceeds from disposal of property, plant and equipment		—	2,903	11,935	986
Acquisition of subsidiary undertakings incl. deferred consideration	21(d)	(2)	(250,000)	—	—
Finance costs		(950)	(3,405)	(4,673)	(1,577)
Net cash flow used in investing activities		(127,962)	(610,696)	(217,719)	(17,720)
Cash flow used in financing activities					
Proceeds from issue of share capital		632,099	1,183,800	826,350	1,194,975
Share issue costs		—	(17,009)	(31,343)	(53,335)
Grants received		—	—	114,480	—
Loan receipts		—	—	—	79,425
Net cash flow from financing activities		632,099	1,166,791	909,487	1,221,065
Net (decrease)/increase in cash and cash equivalents		(29,659)	132,495	(94,849)	703,858
Cash and cash equivalents at beginning of the financial period/year		46,477	16,818	149,313	54,464
Cash and cash equivalents at end of the financial period/year	19	<u>16,818</u>	<u>149,313</u>	<u>54,464</u>	<u>758,322</u>

NOTES TO THE HISTORICAL FINANCIAL INFORMATION

1. General information

The historical financial information of the Group for the years ended 30 June 2011, 2012 and 2013 and the six month period ended 31 December 2013 (together, the “Consolidated Financial Information”).

The principal activity of the Company is that of a holding company as well as the development and enhancement of the Group’s intellectual property portfolio.

The companies within the Group are set out below, all of which are private companies limited by shares:

<i>Subsidiary undertaking</i>	<i>Country of Registration or Incorporation</i>	<i>Principal activity</i>	<i>Proportion of ordinary shares held by Company</i>
Haydale Limited	England & Wales	Manufacturing and development	100%
Nano Hex (Sales) Limited	England & Wales	Sales & distribution	100%
Intelligent Nano Technology Limited	England & Wales	Dormant	100%
Nano Hex Limited (formerly Haydale Graphene Industries Limited (formerly Nano Hex Limited))	England & Wales	Dormant	100%

2. Summary of significant accounting policies

(a) *Basis of preparation*

The Consolidated Financial Information has been prepared under the historical cost convention, in accordance with International Financial Reporting Standards as adopted by the EU (“IFRS”) issued by the International Accounting Standards Board (“IASB”), including related interpretations issued by the international Financial Reporting Interpretations Committee (“IFRIC”) for the first time, and the Group has consequently applied IFRS 1.

The Consolidated Financial Information presents the consolidated result of the Company and its subsidiaries.

The Consolidated Financial Information is presented in Pounds Sterling, which is the presentational currency for the Consolidated Financial Information. The functional currency of each of the group entities is the local currency of each individual entity, namely pounds sterling.

(b) *Standards, amendments and interpretations to published standards not yet effective*

At the date of approval of the Consolidated Financial Information, the following Standards and Interpretations which have not been applied in the Consolidated Financial Information were in issue but not yet effective. The transfer to these new or revised standards and interpretations is not expected to have a material impact on the consolidated financial statements of the Group in future periods.

<i>Standard or Interpretation</i>	<i>Title</i>	<i>Effective from</i>
IFRS 9	Financial Instruments (Hedge Accounting and amendments to IFRS 9, IFRS 7 and IAS 39) issues, implementing additional disclosures (and consequential amendments) resulting from the introduction of the hedge accounting chapter in IFRS 9	Applies when IFRS 9 is applied
IFRS 10	Consolidated financial statements	1 January 2014
IFRS 12	Disclosure of interest in other entities	1 January 2014
IFRS 13	Fair value measurement	1 July 2014

<i>Standard or Interpretation</i>	<i>Title</i>	<i>Effective from</i>
IFRS 10, IFRS 11 and IFRS 12	Transition guidance	1 January 2014
IAS 19	Employee benefits	1 July 2014
IAS 27	Separate financial statements	1 January 2014
IAS 28	Amendments for Investment in associates and joint ventures	1 January 2014
IAS 32	Offsetting of financial assets and financial liabilities	1 January 2014
IAS 36	Amendments for Recoverable Amount Disclosures for Non-Financial Assets	1 January 2014
IFRIC 20	Stripping costs in the production phase of a surface mine	1 January 2014
IFRIC 21	Levies	1 January 2014

(c) ***Critical accounting estimates and judgements***

The preparation of financial information in conformity with IFRS requires the use of certain critical accounting estimates. It also requires the directors of the Group to exercise their judgement in the process of applying the accounting policies which are detailed below. These judgements are continually evaluated by the directors and management and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

The key estimates and underlying assumptions concerning the future and other key sources of estimation uncertainty at the statement of financial position date, that have a significant risk of causing material adjustment to the carrying amounts of assets and liabilities within the next financial period are reviewed on an ongoing basis. Revision to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

Impairment

(i) **Impairment of financial assets**

All financial assets are assessed at the end of each reporting period as to whether there is any objective evidence of impairment as a result of one or more events having an impact on the estimated future cash flows of the asset.

An impairment loss in respect of loans and receivables financial assets is recognised in profit or loss and is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

In a subsequent period, if the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, the previously recognised impairment loss is reversed through profit or loss to the extent that the carrying amount of the asset at the date the impairment is reversed does not exceed what the amortised cost would have been had the impairment not been recognised.

(ii) **Impairment of non-financial assets**

The carrying values of assets, other than those to which IAS 36 – 'Impairment of Assets' does not apply, are reviewed at the end of each reporting period for impairment when there is an indication that the assets might be impaired. Impairment is measured by comparing the carrying values of the assets with their recoverable amounts. The recoverable amount of the assets is the higher of the assets' fair value less costs to sell and their value-in-use, which is measured by reference to discounted future cash flow. An impairment loss is recognised in administrative expenses within the Statement of Comprehensive Income immediately it is identified.

In respect of assets other than goodwill, and when there is a change in the estimates used to determine the recoverable amount, a subsequent increase in the recoverable amount of an asset is treated as a reversal of the previous impairment loss and is recognised to the extent of the carrying amount of the asset that would have been determined (net of amortisation and depreciation) had no impairment loss been recognised. The reversal is recognised in profit or loss immediately.

(d) ***Basis of consolidation***

The Consolidated Financial Information includes the financial information of the Company and its subsidiaries for the three years ended 30 June 2011, 2012 and 2013 and the six month period ended 31 December 2013.

A subsidiary is defined as an entity in which the parent company has, directly or indirectly, the power to exercise control over its financial and operating policies so as to obtain benefits from its activities.

Business combinations are accounted for under the acquisition method.

Under the acquisition method, the results of the subsidiaries acquired or disposed of or are included from the date of acquisition or up to the date of disposal. At the date of acquisition the fair values of the subsidiaries' net assets are determined and these values are reflected in the Consolidated Financial Information. The cost of acquisitions measured at the aggregate of the fair values, at the date of exchange, of assets given, liabilities incurred or assumed, and equity instruments issued by the Group in exchange for control of the acquiree, plus any costs directly attributable to the business combination. Any excess of the purchase consideration of the business combination over the fair value of the identifiable assets and liabilities acquired is recognised as goodwill. Goodwill, if any, is not amortised, but reviewed for impairment at least annually. If the consideration is less than the fair value of assets and liabilities acquired, the difference is recognised directly in the statement of comprehensive income. Acquisition-related costs are expensed as incurred.

Intra-group transactions, balances and unrealised gains on transactions are eliminated; unrealised losses are also eliminated unless cost cannot be recovered. Where necessary, adjustments are made to the financial statements of subsidiaries to ensure consistency of accounting policies with those of the Group.

(e) ***Intangible assets***

Research and development expenditure

Research expenditure is recognised as an expense when it is incurred.

Development expenditure is recognised as an expense except that costs incurred on development projects are capitalised as long-term assets to the extent that such expenditure is expected to generate future economic benefits. Development expenditure is capitalised if, and only if an entity can demonstrate all of the following:

- i) its ability to measure reliably the expenditure attributable to the asset under development;
- ii) the product or process is technically and commercially feasible;
- iii) its future economic benefits are probable;
- iv) its ability to use or sell the developed asset; and
- v) the availability of adequate technical, financial and other resources to complete the asset under development.

Capitalised development expenditure is measured at cost less accumulated amortisation and impairment losses, if any. Development expenditure initially recognised as an expense is not recognised as assets in the subsequent period.

Capitalised development expenditure is amortised on a straight-line basis over a period of not more than 20 years when the products or services are ready for sale or use. In the event that it is no longer probable that the expected future economic benefits will be recovered, the development expenditure is written down to its recoverable amount.

(f) ***Transactions and balances in foreign currencies***

Transactions in foreign currencies are converted into the respective functional currencies on initial recognition, using the exchange rates approximating those ruling at the transaction dates. Monetary assets and liabilities at the end of the reporting period are translated at the rates ruling as of that date. Non-monetary assets and liabilities are translated using exchange rates that existed when the values were determined. All exchange differences are recognised in profit or loss.

(g) ***Financial instruments***

Financial instruments are recognised in the statements of financial position when the Group has become a party to the contractual provisions of the instruments.

Financial instruments are classified as liabilities or equity in accordance with the substance of the contractual arrangement. Interest, dividends, gains and losses relating to a financial instrument classified as a liability are reported as an expense or income. Distributions to holders of financial instruments classified as equity are charged directly to equity.

Financial instruments are offset when the Group has a legally enforceable right to offset and intends to settle either on a net basis or to realise the asset and settle the liability simultaneously.

A financial instrument is recognised initially, at its fair value plus, in the case of a financial instrument not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue of the financial instrument.

The accounting policy for financial instruments recognised in the statements of financial position are disclosed in the individual policy statement associated with each item.

Financial assets are derecognised when the contractual rights to receive cash flows from the financial assets have expired or have been transferred and the Group has transferred substantially all the risks and rewards of ownership.

(i) ***Financial assets***

On initial recognition, financial assets are classified as either financial assets at fair value through profit or loss, held-to-maturity investments, loans and receivables financial assets, or available-for-sale financial assets, as appropriate.

(ii) ***Loans and receivables financial assets***

Trade receivables and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as loans and receivables financial assets. Loans and receivables financial assets are measured at amortised cost using the effective interest method, less any impairment loss. Interest income is recognised by applying the effective interest rate, except for short-term receivables when the recognition of interest would be immaterial.

(iii) ***Financial liabilities***

Financial liabilities are recognised when, and only when, the Group becomes a party to the contractual provisions of the financial instrument.

All financial liabilities are recognised initially at fair value plus directly attributable transaction costs and subsequently measured at amortised cost using the effective interest method other than those categorised as fair value through profit or loss.

A financial liability is derecognised when the obligation under the liability is discharged, cancelled or expires. When an existing financial liability is replaced by another from the same party on substantially different terms, or the terms of an existing liability are

substantially modified, such an exchange or modification is treated as a de-recognition of the original liability and the recognition of a new liability, and the difference in the respective carrying amounts is recognised in the profit or loss.

(iv) *Equity instruments*

Ordinary shares are classified as equity. Incremental costs directly attributable to the issue of new shares or options are shown in equity as a deduction, net of tax, from proceeds.

Dividends on ordinary shares are recognised as liabilities when approved for appropriation.

(v) *Convertible loan notes*

Convertible loan notes are regarded as compound instruments consisting of a liability component and an equity component. The liability component represents the present value of future capital and interest repayments on the loan discounted at the market rate of interest and the equity component is the residual amount after deducting the liability from the proceeds.

(h) ***Property, plant and equipment***

Property, plant and equipment are stated at cost less accumulated depreciation and impairment losses, if any. The cost of an item of property, plant and equipment initially recognised includes its purchase price and any cost that is directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management.

Depreciation is calculated under the straight-line method to write off the depreciable amount of the assets over their estimated useful lives. Depreciation of an asset does not cease when the asset becomes idle or is retired from active use unless the asset is fully depreciated. The principal annual rates used for this purpose are:

Leasehold improvements	10% per annum straight line
Plant and machinery	20-33% per annum straight line
Computer equipment	33% per annum straight line
Furniture and fittings	33% per annum straight line
Motor vehicles	33% per annum straight line

The depreciation method, useful lives and residual values are reviewed, and adjusted if appropriate, at the end of each reporting period to ensure that the amounts, method and periods of depreciation are consistent with previous estimates and the expected pattern of consumption of the future economic benefits embodied in the items of the property, plant and equipment.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when the cost is incurred and it is probable that the future economic benefits associated with the asset will flow to the Group and the cost of the asset can be measured reliably. The carrying amount of parts that are replaced is derecognised. The costs of the day-to-day servicing of property, plant and equipment are recognised in profit or loss as incurred. Cost also comprises the initial estimate of dismantling and removing the asset and restoring the site on which it is located for which the Group is obligated to incur when the asset is acquired, if applicable.

An item of property, plant and equipment is derecognised upon disposal or when no future economic benefits are expected from its use or disposal. The gain or loss on retirement or disposal is determined as the difference between any sales proceeds and the carrying amounts of the asset and is recognised in the income statement within "other income/(expenses)". Any revaluation reserve included in equity is transferred directly to retained profits on retirement or disposal of the asset.

(i) ***Income taxes***

The charge for taxation is based on the loss for the period and takes into account taxation deferred.

Current tax is measured at amounts expected to be paid using the tax rates and laws that have been enacted or substantively enacted by the balance sheet date. Deferred tax balances are recognised in respect of all timing differences that have been originated but not reversed by the balance sheet date, except that the recognition of deferred tax assets is limited to the extent that the Company anticipates making sufficient taxable profits in the future to absorb the reversal of the underlying timing differences.

The Group receives research and development tax credits for the work it performs in the field of nano-technology. Using the SME scheme, these credits generate cash reimbursement in exchange for the sacrifice of applicable losses, such receipts are recognised in income tax within the Statement of Comprehensive Income.

(j) ***Cash and cash equivalents***

Cash and cash equivalents comprise cash in hand, bank balances, deposits with financial institutions and short-term, highly liquid investments that are readily convertible to known amounts of cash, are subject to an insignificant risk of changes in value and have maturities of 3 months or less from inception.

(i) ***Inventories***

Inventories are recorded at the lower of cost and net realisable value. Cost represents materials, direct labour, other direct costs and related production overheads, and is determined on the First-In-First-Out (FIFO) method. Net realisable value is based on estimated selling price, less further costs expected to be incurred to completion and disposal. Provision is made for slow-moving, obsolete and defective inventories where appropriate.

The value of inventories used in the fulfilment of commercial or developmental programmes is included within administrative expenses in the Statement of Comprehensive Income.

(k) ***Employee benefits***

(i) ***Short-term benefits***

Wages, salaries, paid annual leave and sick leave, bonuses and non-monetary benefits are accrued in the period in which the associated services are rendered by employees of the Group.

(ii) ***Defined contribution plans***

The Group's contributions to defined contribution plans are recognised in profit or loss in the period to which they relate. Once the contributions have been paid, the Group has no further liability in respect of the defined contribution plans.

(l) ***Provisions, contingent liabilities and contingent assets***

Provisions are recognised when the Group has a present or constructive obligation as a result of past events, when it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and when a reliable estimate of the amount can be made. Provisions are reviewed at the end of each financial reporting period and adjusted to reflect the current best estimate. Where the effect of the time value of money is material, the provision is the present value of the estimated expenditure required to settle the obligation.

A contingent liability is a possible obligation that arises from past events and whose existence will only be confirmed by the occurrence of one or more uncertain future events not wholly within the control of the Group. It can also be a present obligation arising from past events that is not recognised because it is not probable that outflow of economic resources will be required or the amount of obligation cannot be measured reliably.

A contingent liability is not recognised but is disclosed in the notes to the financial statements. When a change in the probability of an outflow occurs so that the outflow is probable, it will then be recognised as a provision.

A contingent asset is a probable asset that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain events not wholly within the control of the Group. The Group does not recognise contingent assets but discloses their existence where inflows of economic benefits are probable, but not virtually certain.

(m) ***Revenue and other income***

(i) *Goods*

Revenue represents sales to external customers at invoiced amounts less value added tax or local taxes on sales. Revenue is recognised when the risks and rewards of owning the goods has passed to the customer which is generally on delivery.

(ii) *Services*

Revenue is recognised on the percentage of completion method unless the outcome of the contract cannot be reliably determined, in which case contract revenue is only recognised to the extent of contract costs incurred that are recoverable. Foreseeable losses, if any, are provided for in full as and when it can be reasonably ascertained that the contract will result in a loss.

The stage of completion is determined based on the proportion of contract costs incurred compared to total estimated contract costs.

(iii) *Interest income*

Interest income is recognised as other income on an accruals basis based on the effective yield on the investment.

(n) ***Operating segments***

An operating segment is a component of the Group that engages in business activities from which it may earn revenues and incur expenses, including revenues and expenses that relate to transactions with any of the Group's other components. An operating segment's operating results are reviewed regularly by the chief operating decision maker to make decisions about resources to be allocated to the segment and assess its performance, and for which discrete financial information is available.

(o) ***Share-based payment arrangements***

Equity-settled share-based payments to employees and others providing similar services are measured at the fair value of the equity instruments at the grant date. Details regarding the determination of the fair value of equity-settled share-based transactions are set out in note 14 to the Consolidated Financial Information.

The fair value determined at the grant date of the equity-settled share-based payments is expensed on a straight-line basis over the vesting period, based on the Group's estimate of equity instruments that will eventually vest, with a corresponding increase in equity. At the end of each reporting period, the Group revises its estimate of the number of equity instruments expected to vest. The impact of the revision of the original estimates, if any, is recognised in profit or loss such that the cumulative expense reflects the revised estimate, with a corresponding adjustment to other reserves.

(p) ***Leases***

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

Operating lease payments are recognised as an expense on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

As at the end of each reporting period in this Consolidated Financial Information, there were no leases classified under the category of finance leases.

(q) **Government grants**

Government grants are not recognised until there is a reasonable assurance that the Group will comply with the conditions attaching to them and that the grants will be received. Government grants are treated as deferred income and released to the income statement on the later of the achievement of the relevant performance criteria, or their receipt. All income relating to government grants is included as 'other income' within the Statement of Comprehensive Income.

3. Segment analysis

IFRS 8 requires operating segments to be identified on the basis of internal reports about components of the Group that are regularly reviewed by the chief operating decision maker (which takes the form of the board of directors of the Company) as defined in IFRS 8, in order to allocate resources to the segment and to assess its performance.

The directors of the Company consider the principal activity of the Group to be the sale and distribution of specialist research and development materials in the field of nano-technology. Overseas sales relate to the fulfilment of sales generated outside the UK but actioned within the UK.

Geographical information

All revenues of the Group are derived from its principal activity, the sale and distribution of nano-technology products or the delivery of research projects into those same materials. The Group's revenue from external customers and net assets by geographical location are detailed below.

Information about major customers

To date, modest sales have meant that no meaningful analysis can be drawn from the customer profile of the revenues achieved during each period under review.

	<i>UK</i> £	<i>Europe</i> £	<i>North America</i> £	<i>Rest of the World</i> £	<i>Total</i> £
31 December 2013					
Revenue	1,819	1,299	3,309	375	6,802
Non-current assets	1,095,759	—	—	—	1,095,759
Net assets	1,588,241	—	—	—	1,588,241
30 June 2013					
Revenue	40,710	380	48,689	1,156	90,935
Non-current assets	1,159,672	—	—	—	1,159,672
Net assets	992,125	—	—	—	992,125
30 June 2012					
Revenue	4,267	44,384	81,484	688	130,823
Non-current assets	1,101,725	—	—	—	1,101,725
Net assets	1,185,903	—	—	—	1,185,903
30 June 2011					
Revenue	—	9,894	8,544	—	18,438
Non-current assets	827,365	—	—	—	827,365
Net assets	627,644	—	—	—	627,644

4. Loss before taxation

Loss before taxation is arrived at after charging/(crediting):

	<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
Research and development				
– current period's expenditure	283,571	201,939	443,019	161,055
– amortisation of capitalised expenditure	35,000	35,000	35,000	17,500
Depreciation of property, plant and equipment	32,705	48,216	120,406	63,264
Profit on disposal of property, plant and equipment	—	(285)	(307)	(708)
Directors' fees	196,019	179,599	149,918	66,635
Staff costs (including Directors):				
– salaries, allowances and bonuses	283,250	288,197	298,345	131,104
– social security costs	33,041	31,400	32,575	14,689
Rental of office	13,332	19,710	27,923	17,187
	<u>283,571</u>	<u>201,939</u>	<u>443,019</u>	<u>161,055</u>

5. Finance costs

	<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
Interest on deferred consideration for acquisition of Haydale Limited	12,058	11,604	—	—
Other interest payable	706	3,405	4,673	4,335
	<u>12,764</u>	<u>15,009</u>	<u>4,673</u>	<u>4,335</u>

6. Income tax

	<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
Current tax release:				
– for the financial period/year	63,945	48,506	63,578	16,212
– under provision in the previous financial period/year	23,236	—	5,052	—
	<u>87,181</u>	<u>48,506</u>	<u>68,630</u>	<u>16,212</u>

A reconciliation of income tax expense applicable to the loss before taxation at the statutory tax rate to the income tax release at the effective tax rate of the Group is as follows:

	<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
Loss before taxation	<u>(669,561)</u>	<u>(657,038)</u>	<u>(1,061,010)</u>	<u>(584,451)</u>
Tax at the applicable statutory tax rates of 20 per cent. (June 2013, 2012, 2011 – 20 per cent.)	133,912	131,408	212,202	116,890
Tax effects of:				
– non-deductible expenses	(8,807)	(12,127)	(13,664)	(8,687)
– capital allowances and other short term differences not recognised for tax purposes	592	888	25,837	—
– R&D enhancement	41,684	41,382	72,182	16,212
– Surrender for R&D tax credit	(29,719)	(31,780)	(58,467)	(13,101)
– Unrealised tax losses carried forward	(73,717)	(81,265)	(166,631)	(95,102)
– Adjustment to tax credit in respect of previous years	<u>23,236</u>	<u>—</u>	<u>(2,829)</u>	<u>—</u>
Income tax release for the financial period/year	<u>87,181</u>	<u>48,506</u>	<u>68,630</u>	<u>16,212</u>

The Group has tax losses that are available indefinitely for offset against future taxable profits of the companies in which the losses arose as analysed below. Deferred tax assets have not been recognised in respect of these losses as they may not be used to offset taxable profits elsewhere in the Group and they have arisen in subsidiaries that have been loss-making for some time.

The deferred tax not recognised in the Group statement of financial position is as follows:

	<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
Tax losses unrecognised	<u>634,535</u>	<u>1,036,420</u>	<u>1,731,485</u>	<u>2,206,995</u>
Unrecognised deferred tax asset	<u>126,907</u>	<u>207,284</u>	<u>346,297</u>	<u>441,399</u>

7. Loss per share

The calculations of loss per share are based on the following losses and number of shares:

	<i>Year ended 30 June 2011 £</i>	<i>Year ended 30 June 2012 £</i>	<i>Year ended 30 June 2013 £</i>	<i>6 months ended 31 December 2013 £</i>
Loss after tax attributable to owners of the Group	<u>(582,380)</u>	<u>(608,532)</u>	<u>(992,380)</u>	<u>(568,239)</u>
Weighted average number of shares:				
– Basic	44,061	54,241	69,895	76,422
– Diluted	<u>44,061</u>	<u>54,241</u>	<u>69,895</u>	<u>76,422</u>
Loss per share:				
– Basic (£)	(13.22)	(11.22)	(14.20)	(7.44)
– Diluted (£)	<u>(13.22)</u>	<u>(11.22)</u>	<u>(14.20)</u>	<u>(7.44)</u>

The loss attributable to ordinary shareholders and weighted average number of ordinary shares for the purpose of calculating the diluted earnings per ordinary share are identical to those used for basic earnings per share. This is because the exercise of share options would have the effect of reducing the loss per ordinary share and is therefore not dilutive under the terms of IAS 33. At 31 December 2013, there were 1,500 options outstanding (30 June 2013: 1,000 options outstanding) as detailed in note 14. Further to this there are loan notes potentially convertible to 1,096 shares as at 31 December 2013 (30 June 2013: nil) as detailed in note 18.

Further shares were issued after 31 December 2013 as detailed in note 13.

8. Property, plant and equipment

	<i>Leasehold improvements</i> £	<i>Plant and machinery</i> £	<i>Fixtures and fittings</i> £	<i>Motor vehicles</i> £	<i>Total</i> £
Cost					
At 1 July 2010	—	19,500	3,965	—	23,465
Additions	—	119,406	7,604	—	127,010
At 30 June 2011	—	138,906	11,569	—	150,475
Additions	144,091	204,149	5,954	6,000	360,194
Disposals	—	—	—	(3,250)	(3,250)
At 30 June 2012	144,091	343,055	17,523	2,750	507,419
Additions	29,042	167,807	26,132	2,000	224,981
Disposals	—	(10,935)	—	(2,750)	(13,685)
At 30 June 2013	173,133	499,927	43,655	2,000	718,715
Additions	12,366	3,158	1,605	—	17,129
Disposals	—	—	(1,429)	—	(1,429)
At 31 December 2013	185,499	503,085	43,831	2,000	734,415
Accumulated depreciation					
At 1 July 2010	—	—	955	—	955
Charge for the period	—	30,353	2,352	—	32,705
At 30 June 2011	—	30,353	3,307	—	33,660
Charge for the year	4,002	38,217	4,983	1,014	48,216
Disposals	—	—	—	(632)	(632)
At 30 June 2012	4,002	68,570	8,290	382	81,244
Charge for the year	16,442	90,386	12,703	875	120,406
Disposals	—	(911)	—	(1,146)	(2,057)
At 30 June 2013	20,444	158,045	20,993	111	199,593
Charge for the period	8,658	48,199	6,074	333	63,264
Disposals	—	—	(1,151)	—	(1,151)
At 31 December 2013	29,102	206,244	25,916	444	261,706
Net book value					
At 30 June 2011	—	108,553	8,262	—	116,815
At 30 June 2012	140,089	274,485	9,233	2,368	426,175
At 31 June 2013	152,689	341,882	22,662	1,889	519,122
At 31 December 2013	156,397	296,841	17,915	1,556	472,709

9. Intangible assets

	<i>Development expenditure £</i>	<i>Goodwill £</i>	<i>Total £</i>
Cost			
At 1 July 2010	700,000	50,966	750,966
Additions	—	—	—
At 30 June 2011	700,000	50,966	750,966
Additions	—	—	—
At 30 June 2012	700,000	50,966	750,966
Additions	—	—	—
At 30 June 2013	700,000	50,966	750,966
Additions	—	—	—
At 31 December 2013	700,000	50,966	750,966
Accumulated amortisation			
At 1 July 2010	5,416	—	5,416
Charge for the year	35,000	—	35,000
At 30 June 2011	40,416	—	40,416
Charge for the year	35,000	—	35,000
At 30 June 2012	75,416	—	75,416
Charge for the year	35,000	—	35,000
At 30 June 2013	110,416	—	110,416
Charge for the period	17,500	—	17,500
At 31 December 2013	127,916	—	127,916
Net book value			
At 30 June 2011	659,584	50,966	710,550
At 30 June 2012	624,584	50,966	675,550
At 31 June 2013	589,584	50,966	640,550
At 31 December 2013	572,084	50,966	623,050

Goodwill

Goodwill arose on the acquisition of Haydale Ltd on 21 May 2010 (£23,966) and of the trade and assets of Intelligent Nano Technology Ltd (£27,000) on 12 May 2010.

Development costs

Development costs principally comprise expenditure incurred on nano-technology projects where it is anticipated that the costs will be recovered through future commercial activity.

Amortisation

Capitalised development costs are amortised over the estimated useful life of 20 years. The amortisation charge is recognised in administrative expenses.

Goodwill impairment

Goodwill acquired in a business combination is allocated at acquisition to the cash generating units (“CGUs”) that are expected to benefit from that business combination. To date, the Group is operating only one CGU and therefore goodwill is considered as a whole against the future forecast trading outcomes of the Group. An analysis of the pre-tax discount rates used and the goodwill balance as at 31 December 2013 by principal CGU is shown below:

	<i>30 June 2013 %</i>	<i>31 December 2013 %</i>	<i>30 June 2013 %</i>	<i>31 December 2013 %</i>
Haydale Graphene Industries	<u>10%</u>	<u>10%</u>	<u>50,966</u>	<u>50,966</u>

The Group tests goodwill at least annually for impairment or more frequently if there are indications that goodwill might be impaired.

The recoverable amounts of the CGU are determined from value-in-use calculations. The key assumptions for the value-in-use are those regarding the discount rates, the growth rates and expected changes to cash flows during the period for which management have detailed plans. The Directors estimate discount rates using pre-tax rates that reflect current market assessments of the time value of money and the risks specific to the CGU.

Pre-tax discount rates, derived from the Group’s post-tax weighted average cost of capital of 10 per cent. (June 2013: 10 per cent.), and have been used to discount projected cash flows.

The calculation has used the Group’s Board-approved forecast figures for the next five years. The Group’s forecasts assume that the turnover of the Group companies will grow by an average of 250 per cent. per annum across the course of the five year forecasts. The growth rates used are based on management’s view of industry growth forecasts and the expected market share of the Group within those industries. Changes in selling prices and direct costs are based on best estimates of future industry practices given the emerging nature of the Group’s technology in the market. The Group applies sensitivities to the projections to determine whether there is sufficient head-room in positive cash flows to support the carrying value of the underlying assets of the CGU.

Following this review, the Directors have determined that there is no impairment charge which should be recognised against the intangible assets of the Group, nor has any such impairment been required to be recognised in any of the periods covered by this report.

10. Inventories

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>31 December 2013 £</i>
Raw materials	848	9,008	7,979	8,671
Finished goods	—	15,706	16,310	14,273
	<u>848</u>	<u>24,714</u>	<u>24,289</u>	<u>22,944</u>

11. Trade receivables

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>31 December 2013 £</i>
Trade receivables	11,799	36,499	2,369	1,204
Allowance for impairment losses	—	—	—	(1,204)
	<u>11,799</u>	<u>36,499</u>	<u>2,369</u>	<u>—</u>
Impairment losses:				
At period/year beginning	—	—	—	—
Charge for the period/year	—	—	—	1,204
At period/year end	<u>—</u>	<u>—</u>	<u>—</u>	<u>1,204</u>

The Group's normal trade credit term is 30 days. Other credit terms are assessed and approved on a case by case basis.

12. Other receivables, deposits and prepayments

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>31 December 2013 £</i>
Other receivables	39,067	61,849	40,172	43,162
Prepayments and accrued income	7,964	11,974	44,794	42,912
	<u>47,031</u>	<u>73,823</u>	<u>84,966</u>	<u>86,074</u>

13. Share capital and share premium

	<i>Number of shares No.</i>	<i>Share capital £</i>	<i>Share premium £</i>	<i>Total £</i>
At 1 July 2010	38,175	763	771,337	772,100
Issue of £0.02 ordinary shares	9,640	193	481,807	482,000
At 30 June 2011	47,815	956	1,253,144	1,254,100
Issue of £0.02 ordinary shares	15,784	316	1,166,475	1,166,791
At 30 June 2012	63,599	1,272	2,419,619	2,420,891
Issue of £0.02 ordinary shares	11,018	220	794,787	795,007
At 30 June 2013	74,617	1,492	3,214,406	3,215,898
Issue of £0.02 ordinary shares	7,325	147	549,229	549,376
Allotment of £0.02 ordinary shares	8,608	172	592,092	592,264
At 31 December 2013	<u>90,550</u>	<u>1,811</u>	<u>4,355,727</u>	<u>4,357,538</u>

(i) During the year ended 30 June 2011, the Company allotted and issued the following shares:

- During November 2010, 8,640 £0.02 ordinary shares at a price of £50.00 per share
- During December 2010, 1,000 £0.02 ordinary shares at a price of £50.00 per share

(ii) During the year ended 30 June 2012, the Company allotted and issued the following shares:

- During August 2011, 4,025 £0.02 ordinary shares at a price of £75.00 per share
- During September 2011, 420 £0.02 ordinary shares at a price of £75.00 per share
- During October 2011, 733 £0.02 ordinary shares at a price of £75.00 per share
- During March 2012, 2,401 £0.02 ordinary shares at a price of £75.00 per share

- During April 2012, 5,403 £0.02 ordinary shares at a price of £75.00 per share
- During May 2012, 2,802 £0.02 ordinary shares at a price of £75.00 per share

Issue costs amounting to £17,009 have been charged to the share premium account in the year.

(iii) During the year ended 30 June 2013, the Company allotted and issued the following shares:

- During July 2012, 1,334 £0.02 ordinary shares at a price of £75.00 per share
- During October 2012, 808 £0.02 ordinary shares at a price of £75.00 per share
- During November 2012, 3,075 £0.02 ordinary shares at a price of £75.00 per share
- During December 2012, 2,066 £0.02 ordinary shares at a price of £75.00 per share
- During February 2013, 3,401 £0.02 ordinary shares at a price of £75.00 per share
- During June 2013, 334 £0.02 ordinary shares at a price of £75.00 per share

Issue costs amounting to £31,343 have been charged to the share premium account in the year.

(iv) During the period ended 31 December 2013, the Company allotted and issued the following shares:

- During August 2013, 100 £0.02 ordinary shares at a price of £75.00 per share
- During October 2013, 1,802 £0.02 ordinary shares at a price of £75.00 per share
- During November 2013, 1,556 £0.02 ordinary shares at a price of £75.00 per share
- During December 2013, 3,867 £0.02 ordinary shares at a price of £75.00 per share
- During December 2013, allotted 8,608 £0.02 ordinary shares at a price of £75.00 per share

Issue costs amounting to £53,335 have been charged to the share premium account in the period.

(v) Since 31 December 2013, the Company has allotted and issued a further 8,400 £0.02 ordinary shares in January 2014 at a price of £75.00 per share yielding a total consideration of £580,131 after issue costs charged to the share premium account of £49,869.

14. Share-based payment transactions

During the year ended 30 June 2013, the Company introduced an approved EMI share option scheme for the benefit of all employees. The exercise price of the options is equal to the estimated market price of the shares on the date of grant. The options vest either one year or three years from the date of grant. The options are accounted for as equity settled share based payment transactions. Options cannot be exercised at a year end.

The following table illustrates the number and weighted average exercise prices ("WAEP") of, and movements in share options during the year/period:

	<i>Year ended 30 June 2013</i>		<i>Period ended 31 December 2013</i>	
	<i>Number of options No.</i>	<i>Weighted average exercise price Pence</i>	<i>Number of options No.</i>	<i>Weighted average exercise price Pence</i>
Balance at beginning of period/year	—	—	1,000	7,500
Granted	1,000	7,500	500	7,500
Balance at end of period/year	<u>1,000</u>	<u>7,500</u>	<u>1,500</u>	<u>7,500</u>

Date of grant	23 May 2013	30 September 2013
Number granted	1,000	500
Contractual life	10 years	10 years
Vesting conditions	After 3 years subject to earlier vesting events	After 1 year subject to earlier vesting events
Earliest exercise date	23 May 2014	30 September 2016
Exercise price	£75.00	£75.00

None of the granted share options are exercisable as at 31 December 2013.

This estimated fair value was calculated by applying a Black-Scholes option pricing model. In the absence of a liquid market for the share capital of the group the expected volatility of its share price is difficult to calculate. Therefore the directors have considered the expected volatility used by listed entities in similar operating environments to calculate the expected volatility.

The model inputs were:

- Share prices at grant date of £75.00;
- Exercise prices of £75.00;
- Expected volatility of 70 per cent;
- Contractual life of 10 years;
- No dividends are anticipated in the life of model; and
- A risk-free interest rate of 1.75 per cent.

15. Reserves

Equity share capital and share premium

The balance classified as share capital and share premium includes the total net proceeds on issue of the Company's equity share capital, comprising £0.02 ordinary shares. The share premium accounts can only be used for bonus issues, to provide for the premium payable on redemption of debentures or to write off preliminary expenses, or expenses of, or commissions paid on, or discounts allowed on, any issues of shares or debentures of the company.

The share premium account represents the amount received on the issue of ordinary shares in excess of their nominal value and is non-distributable.

Share-based payment reserve

The share-based payment reserve comprises the cumulative expense representing the extent to which the vesting period of share options has expired and management's best estimate of the achievement or otherwise of non-market conditions and the number of equity instruments that will ultimately vest.

16. Trade and other payables

	30 June 2011 £	30 June 2012 £	30 June 2013 £	31 December 2013 £
Trade payables	21,679	197,133	208,455	124,619
Tax and social security	36,213	11,196	47,530	8,629
Accruals and other creditors	282,270	35,653	34,208	147,633
	<u>340,162</u>	<u>243,982</u>	<u>290,193</u>	<u>280,881</u>

17. Deferred income

Deferred income is recognised for both capital and revenue grants from governments and other funding parties, and released as income in accordance with the relevant conditions of the grant concerned.

	<i>30 June 2011</i>	<i>30 June 2012</i>	<i>30 June 2013</i>	<i>31 December 2013</i>
	£	£	£	£
Grants	—	4,695	107,020	91,584

In the year ended 30 June 2013, Haydale Limited received a development grant totalling £114,480 dependent upon the creation of fifteen new full-time positions, from a base of five at the date of award. As at 30 June 2013 and 31 December 2013, a net employment of three such roles had been achieved with the proportionate release of the grant to the income statement. The deferred income balance will be released proportionately upon the creation of the remaining twelve positions within the Group.

18. Convertible loan notes

	<i>30 June 2011</i>	<i>30 June 2012</i>	<i>30 June 2013</i>	<i>31 December 2013</i>
	£	£	£	£
Loan notes	—	—	—	82,183

During the period ended 31 December 2013, the Company issued convertible loan notes at par totalling £79,425. These loan notes are unsecured, accrue interest at a rate of 10 per cent. per annum and have a right of conversion at £75 per £0.02 ordinary share of the Company on or before 30 June 2014, by which date the notes are due for repayment together with interest accrued to that date.

19. Cash and cash equivalents

For the purpose of the statement of cash flows, cash and cash equivalents comprise the following:

	<i>30 June 2011</i>	<i>30 June 2012</i>	<i>30 June 2013</i>	<i>31 December 2013</i>
	£	£	£	£
Cash and bank balances	16,828	149,313	54,464	758,322
Short-term financial liabilities	(10)	—	—	—
	<u>16,818</u>	<u>149,313</u>	<u>54,464</u>	<u>758,322</u>

20. Related party disclosures

Balances and transactions between the Company and its subsidiaries are eliminated on consolidation and are not disclosed in this note. Balances and transactions between the Group and other related parties are disclosed below.

Remuneration of directors and key management personnel

The remuneration of the senior Executive Management Committee members, who are the key management personnel of the Group, is set out below in aggregate for each of the categories specified in IAS 24 'Related Party Disclosures'.

	<i>30 June 2011</i>	<i>30 June 2012</i>	<i>30 June 2013</i>	<i>31 December 2013</i>
	£	£	£	£
Short-term employee benefits and fees	196,019	179,599	149,918	66,635
Share-based payments	—	—	43,580	22,715
Post-retirement benefits	—	—	—	—
	<u>196,019</u>	<u>179,599</u>	<u>193,498</u>	<u>89,350</u>

Other transactions

Other related party transactions during the period are shown in the table below:

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>31 December 2013 £</i>
I D Walters – plant and machinery	35,000	37,000	18,000	—
R Walters – consultancy services	7,540	37,663	24,750	—
D Gibbs – consultancy services	—	752	16,051	6,625
Cotton Graphics Limited – branded clothing	—	—	1,245	—
	<u>42,540</u>	<u>75,415</u>	<u>60,046</u>	<u>6,625</u>

I D Walters was a former director of the Company and Haydale Limited and sold several items of bespoke plant and machinery to Haydale Limited prior to his leaving the Group. R Walters, son of I D Walters, provided consultancy services to Haydale Limited in the periods ended 30 June 2013.

D Gibbs, son of R J Gibbs, a director of the Company, provides consultancy services to Haydale Limited. R J Gibbs is also a director of Cotton Graphics Limited who sold branded clothing to Haydale Limited in the year ended 30 June 2013 on an arms-length basis.

The balances outstanding to the related parties at each period end were as follows:-

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>31 December 2013 £</i>
I D Walters – plant and machinery	20,000	2,000	—	—
R Walters – consultancy services	304	—	—	—
D Gibbs – consultancy services	—	752	—	2,375
Cotton Graphics Limited – branded clothing	—	—	—	—
	<u>20,304</u>	<u>2,752</u>	<u>—</u>	<u>2,375</u>

21. Financial instruments

The Group's activities are exposed to a variety of market risk (including foreign currency risk and interest rate risk), credit risk and liquidity risk. The Group's overall financial risk management policy focuses on the unpredictability of financial markets and seeks to minimise potential adverse effects on the Group's financial performance.

(a) Financial risk management policies

The Group's policies in respect of the major areas of treasury activity are as follows:

(i) Market risk

(i) Foreign currency risk

The Group is exposed to foreign currency risk on transactions and balances that are denominated in currencies other than Pounds Sterling. The currencies giving risk to this risk are primarily the United States Dollar and the Euro. Foreign currency risk is monitored closely on an ongoing basis to ensure that the net exposure is at an acceptable level.

The Group maintains the ability to provide a natural hedge wherever possible by matching the cash inflows (revenue stream) and cash outflows used for purposes such as operational expenditure in the respective currencies.

The carrying amounts of Group's foreign currency denominated monetary assets and liabilities at the end of each reporting period were as follows:

	<i>United States Dollar</i> £	<i>Euro</i> £	<i>Total</i> £
30 June 2011			
Financial assets	5,291	—	5,291
Financial liabilities	—	759	759
30 June 2012			
Financial assets	11,640	1,009	12,649
Financial liabilities	—	46,027	46,027
30 June 2013			
Financial assets	1,207	—	1,207
Financial liabilities	—	18,296	18,296
31 December 2013			
Financial assets	3	—	3
Financial liabilities	—	—	—

Foreign currency sensitivity analysis

The following table details the sensitivity analysis to possible changes in the relative values of foreign currencies to which the Group is exposed as at the end of the respective financial periods, with all other variables held constant:

	<i>31 December 2013</i> <i>Increase/ (decrease)</i> £	<i>30 June 2013</i> <i>Increase/ (decrease)</i> £
Effects on loss after taxation/equity		
United States Dollar:		
– strengthened by 10%	—	(110)
– weakened by 10%	—	121
Euro:		
– strengthened by 10%	—	(1,402)
– weakened by 10%	—	1,544

(ii) Interest rate risk

The Group's exposure to interest rate risk arises mainly from interest-bearing financial assets. The Group's policy is to obtain the most favourable interest rates available, while ensuring no risk to capital. Any surplus funds will be placed with licensed financial institutions to generate interest income.

Interest rate risk sensitivity analysis

A 100 basis points strengthening or weakening of the interest rate as at the end of each financial period would have an immaterial impact on loss after taxation and/or equity. This assumes that all other variables remain constant.

(ii) Credit risk

The Group's exposure to credit risk, or the risk of third parties defaulting, arises mainly from trade and other receivables. The Group manages its exposure to credit risk by the application of credit approvals, credit limits and monitoring procedures on an ongoing basis. For other financial assets (including cash and bank equivalents), the Group minimises credit risk by dealing exclusively with high credit rating financial institutions.

The Group establishes an allowance for impairment that represents its estimate of incurred losses in respect of the trade and other receivables as appropriate. The main components of this allowance are a specific loss component that relates to individually significant exposures, and a collective loss component established for groups of similar assets in respect of losses that have been incurred but not yet identified. Impairment is estimated by management based on prior experience, current market and third party intelligence while considering the current economic environment.

Credit risk concentration profile

To date, modest sales have meant that the credit risk profile of the Group has tended to focus on a handful of customers only. As such, no meaningful analysis can be drawn from the customer profile of the receivables outstanding at each period end under review.

Exposure to credit risk

As the Group does not hold any collateral, the maximum exposure to credit risk is represented by the carrying amount of the financial assets at the end of each financial period.

The exposure of credit risk for trade receivables by geographical region as at each of the three years ended 30 June 2013 and the six month period ended 31 December 2013 is as follows:

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>30 December 2013 £</i>
United Kingdom	—	3,796	1,165	—
United States	5,287	20,045	1,204	1,204
Europe	6,512	12,475	—	—
Rest of the world	—	183	—	—
Allowance for impairment losses	—	—	—	(1,204)
	<u>11,799</u>	<u>36,499</u>	<u>2,369</u>	<u>—</u>

Ageing analysis

The ageing analysis of the Group's trade receivables as at each of the three years ended 30 June 2013 and the six month period ended 31 December 2013 is as follows:

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>30 December 2013 £</i>
Not past due	11,635	18,606	2,369	—
Past due:				
– less than 3 months	—	17,893	—	—
– between 3 and 6 months	164	—	—	—
– more than 6 months	—	—	—	1,204
Gross amount	<u>11,799</u>	<u>36,499</u>	<u>2,369</u>	<u>1,204</u>

At the end of each financial period, trade receivables that are individually impaired were those in significant financial difficulties and have defaulted on payments. These receivables are not secured by any collateral or credit enhancement.

Collective impairment allowances, are determined based on estimated irrecoverable amount from the sale of goods and services, determined by reference to past default experience.

Trade receivables that are past due but not impaired

The Group believes that no impairment allowance is necessary in respect of these trade receivables. They are substantially companies with good collection track record and no recent history of default.

(iii) *Liquidity risk*

Liquidity risk is the risk that Group will not be able to meet its financial obligations as they fall due. The Group exposure to liquidity risk arises primarily from mismatches of the maturity of financial assets and liabilities.

The Group maintains a level of cash and cash equivalents and bank facilities deemed adequate by the management to ensure as far as possible, that it will have sufficient liquidity to meet its liabilities when they fall due.

All of the financial liabilities of the Group are due within one year.

Ageing analysis

The ageing analysis of the Group's non-derivative financial liabilities as at each of the three years ended 30 June 2013 and the six month period ended 31 December 2013 is as follows:

	30 June 2011 £	30 June 2012 £	30 June 2013 £	30 December 2013 £
Due:				
– within 3 months	340,162	248,677	305,629	280,881
– between 3 and 6 months	—	—	—	82,183
– more than 6 months	—	—	91,584	91,584
Gross amount	<u>340,162</u>	<u>248,677</u>	<u>397,213</u>	<u>454,648</u>

(b) *Capital risk management*

The Group defines capital as the total equity of the Group. The Group's objectives when managing capital are to safeguard the Group's ability to continue as a going concern in order to provide returns for shareholders and benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital. In order to maintain or adjust the capital structure, the Company may adjust the amount of dividends paid to shareholders, return capital to shareholders, issue new shares or sell assets to reduce debt. The Company ensures that the distributions to shareholders do not exceed working capital requirements.

(c) *Classification of financial instruments*

	30 June 2011 £	30 June 2012 £	30 June 2013 £	30 December 2013 £
Financial assets				
Trade receivables	11,799	36,499	2,369	—
Other receivables, deposits and prepayments	47,031	73,823	84,966	86,074
Cash and bank balances	<u>16,828</u>	<u>149,313</u>	<u>54,464</u>	<u>758,322</u>
	<u>75,658</u>	<u>259,635</u>	<u>141,799</u>	<u>844,396</u>
Financial liabilities (at amortised cost)				
Trade and other payables	340,162	243,982	290,193	280,881
Bank overdraft	10	—	—	—
Loan notes	—	—	—	82,183
	<u>340,172</u>	<u>243,982</u>	<u>290,193</u>	<u>363,064</u>

(d) *Fair value of financial instruments*

The financial assets and liabilities maturing within the next 12 months approximated their fair values due to the relatively short-term maturity of the financial instruments.

At 30 June 2011, the Group showed deferred consideration in 'trade and other payables' in connection with the acquisition of Haydale Limited at a fair value of £238,396. This balance was settled in full in the year ended 30 June 2012 at £250,000. Other than this amount, the Group has no financial assets or liabilities carried at fair values at the end of each reporting date.

22. Capital commitments

The Group had the following capital commitments in the respective periods:

	<i>30 June 2011 £</i>	<i>30 June 2012 £</i>	<i>30 June 2013 £</i>	<i>30 December 2013 £</i>
Contracted but not provided for	<u>57,150</u>	<u>43,154</u>	<u>—</u>	<u>7,475</u>

23. Operating lease arrangements

The amounts of minimum lease payments under non-cancellable operating leases are as follows:

	<i>30 June 2011 Land and buildings £</i>	<i>30 June 2012 Land and buildings £</i>	<i>30 June 2013 Land and buildings £</i>	<i>31 December 2013 Land and buildings £</i>
Operating leases which expire:				
– within one year	<u>984</u>	<u>19,844</u>	<u>19,844</u>	<u>19,844</u>
Aggregate amounts payable	<u>984</u>	<u>19,844</u>	<u>19,844</u>	<u>19,844</u>

Payments recognised as an expense under these operating leases were as follows:

	<i>30 June 2011 Land and buildings £</i>	<i>30 June 2012 Land and buildings £</i>	<i>30 June 2013 Land and buildings £</i>	<i>31 December 2013 Land and buildings £</i>
Operating lease expense	<u>13,332</u>	<u>19,710</u>	<u>27,923</u>	<u>17,187</u>

24. Reconciliation of UK GAAP to IFRS

The Group had previously published accounts using the Financial Reporting Standard for Smaller Entities under UK GAAP. The reconciliation of loss for the year and net assets as previously reported to the Consolidated Financial Position as presented here, is as follows:-

	<i>30 June 2013 £</i>	<i>30 June 2012 £</i>	<i>30 June 2011 £</i>
Loss for the year under UK GAAP	(993,881)	(613,628)	(587,746)
IFRS adjustments from UK GAAP:			
– Share-based payment charge	(3,595)	—	—
– Goodwill amortisation	<u>5,096</u>	<u>5,096</u>	<u>5,366</u>
Loss for the year under IFRS	<u>(992,380)</u>	<u>(608,532)</u>	<u>(582,380)</u>
Net assets reported under UK GAAP	976,567	1,175,441	622,278
IFRS adjustments from UK GAAP:			
– Goodwill amortisation (cumulative)	<u>15,558</u>	<u>10,462</u>	<u>5,366</u>
Total equity attributable to owners of the parent	<u>992,125</u>	<u>1,185,903</u>	<u>627,644</u>

25. Ultimate controlling party

The Directors do not consider any one shareholder, individually or acting in consort with others, to have ultimate control of the Group.

26. Nature of financial information

The Consolidated Financial Information presented above does not constitute statutory financial statements for the Group for each of the three years ended 30 June 2013 and the six months ended 31 December 2013.

27. Events subsequent to the consolidated statement of financial position

The Group has issued shares since the 31 December 2013 period end, please see note 13 for further information.

On 20 March 2014 the Company changed its name from Innovative Carbon Limited to Haydale Graphene Industries Limited.

On 20 March 2014 the Company effected a bonus issue of 80 new Ordinary Shares for each 1 ordinary share held.

On 20 March 2014 the Company effected a reduction in the share premium of £4,741,680.

On 2 April 2014 the Company re-registered as a public limited company.

PART VI

UNAUDITED PRO FORMA FINANCIAL INFORMATION OF THE GROUP

The following unaudited pro forma statement of net assets of the Group (the “pro forma financial information”) is based on the consolidated net assets of the Group as at 31 December 2013, set out in the financial information on the Group as at that date, and has been prepared to illustrate the effect on the consolidated net assets of Group as if the pre-IPO fund raising, the conversion of the convertible loan notes into Ordinary Shares and the Placing were completed on 31 December 2013.

The pro forma financial information has been prepared for illustrative purposes only and, because of its nature, addresses a hypothetical situation and does not, therefore, represent the Group’s actual financial position or results.

The pro forma financial information has been prepared on the basis of the accounting policies adopted in the Historical Financial Information of the Group set out in section B of Part V under International Financial Reporting Standards as adopted by the European Union, and on the basis set out in the notes set out below.

	<i>The Group’s consolidated net assets at 31 December 2013 (note 1) £</i>	<i>Pre- IPO fund raising (note 2) £</i>	<i>Conversion of the convertible loan notes (note 3) £</i>	<i>The Placing (note 4) £</i>	<i>Pro forma net assets of the Group (note 5) £</i>
ASSETS					
NON-CURRENT ASSETS					
Property, plant and equipment	472,709	—	—	—	472,709
Goodwill	50,966	—	—	—	50,966
Intangible assets	572,084	—	—	—	572,084
	<u>1,095,759</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>1,095,759</u>
CURRENT ASSETS					
Inventories	22,944	—	—	—	22,944
Other receivables	86,074	—	—	—	86,074
Corporation tax	79,790	—	—	—	79,790
Cash and bank balances	758,322	580,131	—	5,516,492	6,854,945
	<u>947,130</u>	<u>580,131</u>	<u>—</u>	<u>5,516,492</u>	<u>7,043,753</u>
TOTAL ASSETS	<u>2,042,889</u>	<u>580,131</u>	<u>—</u>	<u>5,516,492</u>	<u>8,139,512</u>
Trade and other payables	280,881	—	—	—	280,881
Deferred income	91,584	—	—	—	91,584
Convertible loan notes	82,183	—	(82,183)	—	—
TOTAL LIABILITIES	<u>454,648</u>	<u>—</u>	<u>(82,183)</u>	<u>—</u>	<u>372,465</u>
NET ASSETS	<u>1,588,241</u>	<u>580,131</u>	<u>(82,183)</u>	<u>—</u>	<u>7,767,047</u>

Notes:

1. The consolidated net assets of the Group as at 31 December 2013 have been extracted without material adjustment from the Historical Financial Information of the Group set out in section B of Part V.
2. Adjustment to reflect the net proceeds of £580,131 that HGI has raised post 31 December 2013 as disclosed in note 13(v) to Section B of Part V.
3. Adjustment to reflect the conversion of convertible loan notes into Ordinary Shares of HGI which is due to take place upon Admission.
4. Adjustment to reflect the net proceeds of £5,516,492 (gross proceeds of £6,600,008 less estimated expenses of £1,083,516) from the Placing.
5. No account has been taken of the financial performance of the Group since 31 December 2013 nor of any other event save as disclosed above.

PART VII

ADDITIONAL INFORMATION

1. Incorporation and status of the Company

- 1.1 The Company was incorporated in England and Wales on 20 April 2010 as a private limited company under the Act, with number 07228939 and under the name Innovative Carbon Limited. On 20 March 2014, the Company changed its name to Haydale Graphene Industries Limited. The Company was re-registered as a public limited company on 2 April 2014 and on that date became Haydale Graphene Industries plc.
- 1.2 The principal legislation under which the Company operates is the Act and the regulations made thereunder. The liability of the Members is limited.
- 1.3 The Company's registered office is, Arcadia House, Maritime Walk, Ocean Village, Southampton SO14 3TL, its principal place of business is Clos Fferws, Parc Hendre, Capel Hendre, Ammanford, Carmarthenshire, SA18 3BL and its telephone number is 0845 5760128. The Company's web-site, at which the information required by Rule 26 of the AIM Rules can be found is www.haydale.com.
- 1.4 The Company's main activities are that of research and development and acting as the holding company of the group.

2. Subsidiaries

The Company has the following subsidiary undertakings. The Company owns 100 per cent. of the issued shares of each subsidiary undertaking.

<i>Name</i>	<i>Principal activity</i>	<i>Country of incorporation</i>
Haydale Limited	Research and development, manufacture and sale of surface functionalised graphene products	UK
Nano Hex (Sales) Limited	Sales and distribution	UK
Nano Hex Limited (formerly Haydale Graphene Industries Limited (formerly Nano Hex Limited))	Dormant	UK
Intelligent Nano Technology Limited (formerly Appletide Limited)	Dormant	UK

3. Share Capital of the Company

- 3.1 The issued fully paid up share capital of the Company as at the date of this Document and as it is expected to be immediately following Admission is as follows:

	<i>Issued share capital £</i>	<i>Number of Ordinary Shares</i>
<i>Prior to the Placing and Admission</i>	160,299	8,014,950
<i>Immediately following the Placing and Admission</i>	224,956	11,247,823

- 3.2 On incorporation, the initial share capital of the Company was £100 divided into 100 ordinary shares of £1.00 each held by the subscribers and each share was fully paid or was credited as fully paid.
- 3.3 The following is a summary of the changes of the issued share capital of the Company since incorporation:
 - 3.3.1 On 21 April 2010, by written resolutions passed by the shareholders of the Company, the share capital of the Company was subdivided into 5,000 Ordinary Shares.

- 3.3.2 Between 11 May 2010 and 30 June 2010 the Company allotted a further 27,875 Ordinary Shares to existing shareholders.
- 3.3.3 On 21 May 2010 the Company allotted a further 5,300 Ordinary Shares to Mr. Ian Walters in connection with the sale to the Company of his shares in Haydale Limited which the Company acquired on that date.
- 3.3.4 Between 15 November 2010 and 14 February 2014 the Company allotted a further 60,775 Ordinary Shares to existing shareholders and new investors. Following these allotments a total of 98,950 Ordinary Shares were in issue.
- 3.4 By an Instrument dated 16 July 2013, the Company created up to £2,000,000 of Convertible Loan Notes 2014. Between 17 July 2013 and 7 October 2013, the Company issued an aggregate of £79,425 of such Convertible Loan Notes exercisable at a conversion rate of 1 new Ordinary Share for each £0.926 of principal of Convertible Loan Notes amount and accrued interest. As at the date of this document, all of such holders have exercised rights of conversion in respect of the principal amount of such Notes outstanding together with all accrued but unpaid interest thereon, conditional upon Admission. Accordingly, upon Admission, a further 90,012 Ordinary Shares in aggregate will be issued and allotted to such Noteholders.
- 3.5 By a resolution of the shareholders of the Company passed on 20 March 2014 resolutions were passed:
- 3.5.1 authorising the Directors to effect a bonus issue to shareholders by capitalising £158,320 of the Company's share premium account and issuing new Ordinary Shares by way of bonus to each shareholder on a *pro rata* basis and on the basis of 80 new Ordinary Shares for every 1 existing Ordinary Share held;
- 3.5.2 to reduce the remaining balance standing to the credit of the Company's share premium account by £4,741,680, with the amount so reduced being credited to a reserve.;
- 3.5.3 granting authority to the Directors to allot relevant securities (as defined in section 560 of the Act) of up to an aggregate nominal amount of £500,000;
- 3.5.4 granting authority to the Directors to allot Ordinary Shares as if the pre-emption provisions of section 561(1) of the Act did not apply, provided that such power of the directors was limited to: (a) pre-emptive issues or offers, including rights issues and open offers, but with flexibility to deal with fractional entitlements and overseas regulatory problems; and (b) conditional upon Admission occurring, allotments of equity securities for cash with a nominal value of up to £500,000.
- 3.6 On 20 March 2014, an 80:1 bonus issue was effected whereby each existing shareholder was allotted 80 Ordinary Shares for each 1 ordinary share held in the capital of the Company as at 20 March 2014. Following the bonus issue the share capital of the Company was 8,014,950 Ordinary Shares.
- 3.7 The provisions of section 561 (1) of the 2006 Act (which confer on shareholders rights of pre-emption in respect of the allotment of equity securities which are paid up in cash) apply to the unissued share capital of the Company except to the extent disapplied by the resolution referred to in sub-paragraph 3.5.4 above.
- 3.8 Other than on exercise of the share options and warrants as described in this document, the Company has no present intention to issue any further Ordinary Shares in the Company.
- 3.9 The Company does not have in issue any securities not representing share capital other than £79,425 nominal value convertible loan notes which will convert into an aggregate of 90,012 Ordinary Shares at Admission.
- 3.10 No Ordinary Shares of the Company are currently in issue with a fixed date on which entitlement to a dividend arises and there are no arrangements in force whereby future dividends are waived or agreed to be waived.
- 3.11 Save as disclosed in this paragraph 3 of Part VII of this document, there has been no issue of share or loan capital of the Company in the three years immediately preceding the date of this Document.

- 3.12 No commissions, discounts, brokerages or other special terms have been granted by the Company or any other member of the Group in connection with the issue or sale of any share or loan capital of the Company or any other member of the Group in the three years immediately preceding the date of this Document save as disclosed in paragraph 10 of Part VII of this Document and save for an aggregate of £48,131 of commissions on share issues incurred to Graham Eves (trading as EVESCO International Business Services), an aggregate of £52,059 of commissions on share issues incurred to Hume and an aggregate of £29,355 of commissions on share issues incurred to Mitchell Hopkinson in connection with their respective efforts in the last 12 months in assisting the Company in raising the equity finance and the share issues and allotments referred to in paragraph 3 of Part VII of this Document.
- 3.13 Save as disclosed in this document, on Admission no share or loan capital of the Company or any other member of the Group will be under option or has been agreed conditionally or unconditionally to be put under option.
- 3.14 None of the Ordinary Shares have been sold or are available in whole or in part to the public in conjunction with Admission other than pursuant to the Placing.
- 3.15 The Ordinary Shares are in registered form and, on Admission, may be held in accordance with the Company's Articles in certificated form or in uncertificated form through CREST.
- 3.16 The Ordinary Shares will, on Admission, rank *pari passu* in all respects and will rank in full for all dividends and other distributions thereafter declared, made or paid on Ordinary Shares.

4. Memorandum and Articles of Association

In accordance with Section 31 of the 2006 Act and the Articles the objects of the Company are unrestricted. The following is a summary of the Articles. This summary is qualified in its entirety by the information appearing in the Articles:

4.1 Objects

The Company has unrestricted objects.

4.2 Shares

4.2.1 Share capital

The Company has a single class of share capital which is divided into ordinary shares of 2p each.

4.2.2 Share rights

Subject to the provisions of the 2006 Act and without prejudice to any special rights attached to any existing shares or class of shares, the Company may issue shares with such rights or restrictions as the Company may by ordinary resolution determine or, subject to any such determination, as the board shall determine.

4.2.3 Dividends

The Company may, by ordinary resolution, declare dividends to be paid to shareholders, but the amount of such dividends may not exceed the amount recommended by the directors. If the directors believe the dividends are justified by the profits of the Company available for distribution, they may pay interim dividends.

If the share capital is divided into different classes, the board may pay interim dividends on shares which confer deferred or non-preferred rights with regard to dividend as well as on shares which confer preferential rights with regard to dividend, but no interim dividend shall be paid on shares carrying deferred or non-preferred rights if, at the time of payment, any preferential dividend is in arrear. The board may also pay at intervals settled by it any dividend payable at a fixed rate if it appears to the board that the profits available for distribution justify the payment. Provided the directors act in good faith they shall not

incur any liability to the holders of shares conferring preferred rights for any loss they may suffer by the lawful payment of interim dividends on any shares having deferred or non-preferred rights.

Unless the share rights otherwise provide, all dividends shall be declared and paid according to the amounts paid up on the shares on which the dividend is paid during any portion or portions of the period in respect of which the dividend is paid. Any dividend unclaimed for twelve years from the date on which it became due for payment shall, of the directors so resolve, be forfeited and cease to remain owing by the Company. The directors may, if authorised by ordinary resolution, offer to any holders of shares the right to elect to receive, in lieu of dividend, an allotment of new Ordinary Shares credited as fully paid.

4.2.4 *Voting rights*

At a general meeting of the Company, subject to any special rights or restrictions attached to any class of shares:

- (a) on a show of hands every member present in person has one vote, every duly appointed proxy present has one vote (unless he has been appointed by more than one member and has been instructed by one or more members to vote for a resolution and by one or more other members to vote against it, in which case he has one vote for and one vote against the resolution) and any person duly appointed to act as the authorised representative of a corporate member (or each of them if more than one) has one vote; and
- (b) on a poll every member has one vote for every share held by him.

No shareholder will be entitled to vote at a general meeting or any separate meeting of the holders of any class of shares in the Company in respect of any share held by him unless all moneys presently owed to the Company have been paid.

4.2.5 *Variation of Rights*

Whenever the share capital of the Company is divided into different classes of shares, the special rights attached to any class may (unless otherwise provided by the terms of issue of the shares of that class) be varied or abrogated, whether or not the Company is being wound up, either with the written consent of the holders of three quarters in nominal value of the issued shares of the class or with the sanction of a special resolution passed at a separate meeting of the holders of the shares of the class. At every such separate meeting the necessary quorum is two individuals, being two persons together holding at least one-third in nominal value of the issued shares of the class present either in person (including by corporate representative) or by proxy, except that at an adjourned meeting the quorum is any holder of shares of the class present either in person (including by corporate representative) or by proxy.

Unless expressly provided by the special rights attached to any class of shares those rights:

- (a) will be deemed to be varied by the reduction of a capital paid up on that class of shares (otherwise than by a purchase or redemption by the Company of its own shares) and by the allotment of other shares ranking in priority for payment of a dividend or in respect of capital or which confer on the holders voting rights more favourable than those conferred by that class of shares; but
- (b) will not be deemed to be varied by the creation or issue of further shares ranking equally with or behind that class of shares or the purchase or redemption by the Company of any of its own shares.

4.2.6 *Directors' power to allot*

Subject as provided by the 2006 Act in relation to authority, pre-emption rights or otherwise and by resolution of the Company in general meeting, the directors may allot (with or without conferring a right of renunciation), grant options over or otherwise dispose of shares in the Company on such terms and conditions and at such times as they see fit.

4.2.7 *Transfer of shares*

The directors have the specific powers to elect, without further consultation with the holders of any shares, that any single or all classes of shares of the Company become capable of being traded in uncertificated form in accordance with the Uncertificated Securities Regulations 2001.

Subject to the Articles, any member may transfer all or any of his certificated shares in writing by an instrument of transfer in any usual form or in any other form which the directors may approve.

The directors may refuse to register any transfer of a certificated share unless it is in respect of only one class of share, is in favour of not more than four transferees and it is lodged (duly stamped) at the registered office of the Company or at such other place as the directors may appoint accompanied by the relevant share certificate(s) and such other evidence as the directors may reasonably require to show the right of the transferor to make the transfer. In the case of a transfer of shares in certificated form by a recognised clearing house or a nominee of a recognised clearing house or of a recognised investment exchange, the lodgement of share certificates will only be necessary if and to the extent that certificates have been issued in respect of the shares in question.

The directors may, in their absolute discretion, refuse to register any transfer of a share which is not fully paid or on which the Company has a lien except when such refusal in relation to a share in uncertificated form would distort the market and prevent dealings from taking place on an open and proper basis.

4.2.8 *Restrictions where notice under section 793 of the 2006 Act is not complied with*

Section 793 of the 2006 Act confers on public companies the power to require information from members as to interests in voting shares. If at any time the directors are satisfied that any member, or any other person appearing to be interested in shares held by such member, has been duly served with a notice under Section 793 of the 2006 Act and is in default for a period of 14 days in supplying to the Company the information thereby required, or, in purported compliance with such a notice, has made a statement which is false or inadequate in a material particular, then the directors may, in their absolute discretion at any time thereafter by notice to such member direct that:

- a) in respect the shares in relation to which the default occurred (the “default shares”) the member shall not be entitled to be present or vote at any shareholders’ meeting either in person (including by corporate representative) or by proxy or exercise any other right conferred by membership in relation to meetings of the Company;
- b) where the default shares represent 0.25 per cent. or more of the total number of shares of a relevant class (less any shares of that class held in treasury by the Company) that:
 - (i) except in a liquidation of the Company, no payment shall be made of any sums due from the Company on the default shares, whether in respect of capital or dividend or otherwise, and the Company shall not meet any liability to pay interest on any such payment when it is finally paid to the member;
 - (ii) no other distribution shall be made on the default shares; and
 - (iii) no transfer of any of the shares held by such member shall be registered unless:
 - A. the member is not himself in default as regards supplying the information requested and the transfer when presented for registration is accompanied by a certificate by the member in such form as the directors may in their absolute discretion require to the effect that after due and careful enquiry the member is satisfied that no person in default as regards supplying such information is interested in any of the shares the subject of the transfer; or

- B. registration is required by regulation 27 of the Uncertificated Securities Regulations 2001; or
- C. it is a transfer of shares to an offeror by way or in pursuance of acceptance of a takeover offer (as defined in Section 974 of the 2006 Act); or
- D. the directors are satisfied that the transfer is made pursuant to a sale of the whole of the beneficial ownership of the shares the subject of the transfer to a party unconnected with the member and with other persons appearing to be interested in such shares; or
- E. the transfer results from a sale made through a recognised investment exchange as defined in the Financial Services and Markets Act 2000, as amended, or any other stock exchange outside the United Kingdom on which the Company's shares are normally traded.

4.3 **Directors**

4.3.1 *Appointment and replacement of directors*

The minimum number of directors is two but there is no maximum number. Directors may be appointed by the Company by ordinary resolution or by the directors. At every annual general meeting ("AGM"), any director appointed by the directors since the last AGM and any other director who was not appointed or re-appointed at one of the preceding two AGMs shall retire from office. Subject to the 2006 Act, the directors may appoint one or more directors to hold executive office or employment on such terms as they may determine and may revoke or vary any such appointment or employment. The Company may by ordinary resolution of which special notice has been given remove any director from office and elect another person in place of a director so removed.

A director ceases to be a director as soon as: (i) he ceases to be a director by virtue of any provision of the 2006 Act or the Articles or he is prohibited or disqualified by law from being a Director; or (ii) a bankruptcy order is made against him or he makes any arrangement or composition with his creditors generally or applies to the court for an interim order under Section 253 of the Insolvency Act 1986 in connection with a voluntary arrangement under that Act; or (iii) a registered medical practitioner who is treating him gives a written opinion to the Company stating that he has become mentally or physically incapable of acting as a director and may remain so for more than three months; or (iv) he resigns; or (v) having been appointed for a fixed term, that term expires; or (vi) he is absent for the greater of six consecutive months and six consecutive meetings from meetings of the directors and the directors resolve that he ceases to be a director; or (vii) he is removed from office by notice in writing by all of the other directors.

4.3.2 *Powers of the directors*

The business of the Company will be managed by the directors who may exercise all the powers of the Company, subject to the provisions of the 2006 Act, the Articles and any special resolution of the Company.

4.3.3 *Directors' fees*

Remuneration of directors who do not hold executive office for their services (excluding amounts payable under any other provision of the Articles) are determined by the directors except that they may not exceed £250,000 per annum in aggregate or such higher amount as may be determined by ordinary resolution of shareholders. Any appointment of a director to any executive office or employment may be made on such terms as to remuneration as the directors determine. Any director who does not hold executive office and who serves on any committee of the directors, by request of the directors goes or resides abroad for any purpose of the Company or otherwise performs services which in the opinion of the directors are outside the scope of the ordinary duties of a director, may be paid extra remuneration by way of salary, commission, fees or otherwise as the directors may determine.

4.3.4 *Permitted interests*

Provided that he has disclosed to the directors the nature and extent of any material interest of his, a director notwithstanding his office:

- a) may be a party to, or otherwise interested in, any transaction or arrangement with the Company or in which the Company is otherwise interested;
- b) may act by himself or his firm in a professional capacity for the Company (otherwise than as auditor) and he or his firm shall be entitled to remuneration for professional services as if he were not a director;
- c) may be a director or other officer of, or employed by, or a party to any transaction or arrangement with, or otherwise interested in, any body corporate promoted by the Company or in which the Company is otherwise interested.

4.3.5 *Notification of interests*

For the purposes of paragraph 4.3.4 above:

- a) a general notice given to the directors that a director is to be regarded as having an interest of the nature and extent specified in the notice in any transaction or arrangement in which a specified person or class of persons is interested shall be deemed to be a disclosure that the director has an interest in any such transaction of the nature and extent so specified; and
- b) an interest of which a director has no knowledge and of which it is unreasonable to expect him to have knowledge shall not be treated as an interest of his;
- c) an interest arising solely from a director being a director or other officer of, or employed by, any subsidiary undertaking of the Company is not a material interest;
- d) a director need not disclose an interest if it cannot be reasonably regarded as likely to give rise to a conflict of interest; and
- e) a director need not disclose an interest if, or to the extent that, the other directors are already aware of it (and for this purpose the other directors are treated as aware of anything of which they ought reasonably to be aware).

4.3.6 *Authorisation of conflicts of interest*

The directors have power to authorise (an “Authorisation”) any matter which would or might constitute or give rise to any breach of the duty of a director under Section 175 of the 2006 Act to avoid a situation in which he has, or can have, a direct or indirect interest that conflicts, or possibly may conflict, with the interests of the Company (including, without limitation, in relation to the exploitation of any property, information or opportunity, whether or not the Company could take advantage of it). Any Authorisation may be given subject to such terms and conditions as the directors determine at their absolute discretion and the directors may revoke or vary any Authorisation at any time.

4.3.7 *Directors’ power to vote*

A director shall not vote on any resolution of the directors concerning an Authorisation relating to himself or, save as otherwise provided by the Articles or as permitted by the terms of an Authorisation, concerning any other matter in which he has an interest which together with any interest of any person connected with him is to his knowledge a material interest (other than by virtue of his interests in shares or debentures or other securities of or otherwise in or through the Company), except in certain limited circumstances.

4.3.8 *Exercise by Company of voting rights*

The directors may exercise the voting power conferred by the shares in any body corporate held or owned by the Company in such manner in all respects as they think fit (including the exercise thereof in favour of any resolution appointing any director as a director of such body corporate, or voting or providing for the payment of remuneration to the directors of such body corporate).

4.3.9 *Borrowing powers*

The directors may exercise all the powers of the Company to borrow money, guarantee, indemnify, mortgage or charge its undertaking, property, assets (present and future) and uncalled capital and issue debenture and other securities.

The directors must restrict the borrowings of the Company and exercise all voting and other rights or powers of control exercisable by the Company in relation to its subsidiaries (if any) so as to secure (but as regards subsidiaries, only so far as by the exercise of such rights or powers of control the board can secure) that the aggregate amount outstanding in respect of borrowings by the Company and its subsidiaries (if any) (the “Group”) shall not, without an ordinary resolution of the Company, exceed a sum equal to four times the aggregate of the amount paid up or credited as or deemed to be paid up on the Company’s issued share capital and the total amount standing to the credit of the reserves of the Group (after adding thereto or deducting therefrom any balance standing to the credit or debit of the profit and loss account of the Group) as shown in the latest audited balance sheet of the Group (after certain customary adjustments).

4.3.10 *Directors’ liabilities*

Subject to the 2006 Act or any other provision of law, a director or former director of the Company or an associated company may be indemnified (including by funding any expenditure incurred or to be incurred by him) out of the Company’s assets against:

- a) any cost, charge, loss, damage and liability incurred by him in connection with any negligence, default, breach of duty, breach of trust or otherwise in relation to the Company or an associated company;
- b) any cost, charge, loss, damage and liability incurred by him in connection with the activities of the Company or an associated company in its capacity as a trustee of an occupational pension scheme (as defined in Section 235(6) of the Act); and
- c) any other liability incurred by him as an officer of the Company or an associated company.

Every director (and every director of any associated company of the Company) shall be entitled to:

- a) have funds provided to him by the Company to meet expenditure incurred or to be incurred by him in defending himself in any proceedings (whether civil or criminal) or in connection with an application for relief (as defined in Section 205(5) of the 2006 Act) or in an investigation, or against action proposed to be taken, by a regulatory authority; or
- b) receive assistance from the Company as will enable him to avoid incurring such expenditure, where such proceedings, application, investigation or action are in connection with any alleged negligence, default, breach of duty or breach of trust by him in relation to the Company or any associated company of the Company.

A director will be obliged to repay any funds provided to him no later than:

- a) in the event he is convicted in such proceedings, the date when the conviction becomes final; or
- b) in the event of judgment being given against him in such proceedings, the date when the judgment becomes final; or

- c) in the event of the court refusing to grant him such relief, the date when the refusal becomes final; or
- d) in the event he becomes liable for any sum payable to a regulatory authority by way of penalty in respect of non-compliance with any requirement of a regulatory nature howsoever arising, the date on which any appeal relating to such sum becomes final (within the meaning of Section 205(3) of the 2006 Act).

4.3.11 *Insurance*

The directors may purchase and maintain insurance for any persons who are, or were at any time, directors against any liability incurred by him in respect of any act or omission in the actual or purported execution or discharge of his duties or in the exercise or purported exercise of his powers or otherwise in relation to his duties, powers or offices in relation to the Company.

4.4 **General Meetings**

- 4.4.1 An AGM shall be held in each period of six months beginning with the day following its accounting reference date. Subject to that, the board may call general meetings whenever it thinks fit and must do so on receipt of a requisition of members pursuant to the 2006 Act.
- 4.4.2 An AGM shall be called by notice of at least 21 clear days. All other general meetings shall be called by notice of at least 14 clear days.
- 4.4.3 A notice of meeting shall be given to each member of the Company (other than any who, under the Articles or any restrictions imposed on any shares, is not entitled to receive notice), to the directors and to the Company's auditors. Notices convening general meetings shall specify the time, date and place of the meeting and the general nature of the business to be dealt with, and if any resolutions are intended to be proposed as a special resolution, specify that intention.
- 4.4.4 No business shall be transacted at any general meeting unless a quorum is present. Two individuals, being two members present in person (including by corporate representative) or by proxy and entitled to attend and vote shall be a quorum. The absence of a quorum does not prevent appointment of a chairman in accordance with the Articles, which shall not be treated as part of the business of the meeting.
- 4.4.5 Each director shall be entitled to attend and speak at a general meeting and at a separate meeting of the holders of a class of shares, whether or not he is a member.
- 4.4.6 A resolution put to the vote of a general meeting shall be decided on a show of hands unless, before or on the declaration of the result of a vote on the show of hands or on the withdrawal of any other demand for a poll, a poll is duly demanded. Subject to the provisions of the 2006 Act, a poll may be demanded by the chairman of the meeting; by at least five members having the right to vote on the resolution; by any member or members representing not less than one-tenth of the total voting rights of all members having the right to vote on the resolution; or by any member or members holding shares conferring a right to vote on the resolution being shares on which an aggregate sum has been paid up equal to not less than one-tenth of the total sum paid up on all the shares conferring that right. Shares and voting rights attached to shares held in treasury by the Company are excluded for the purpose of these calculations.
- 4.4.7 A member is entitled to appoint another person as his proxy to exercise all or any of his rights to attend and speak and vote at a general meeting. A member may appoint more than one proxy in relation to a general meeting, provided that each proxy is appointed to exercise the rights attaching to different shares held by that member. A corporation which is a member of the Company may, by resolution of its directors or other governing body, authorise a person or persons to act as its representative(s) at a meeting of the Company.

4.4.8 *Communications with Members*

Anything sent or supplied by or to the Company under the Articles may be sent or supplied in any way in which the 2006 Act provides for documents or information to be sent or supplied by or to the Company for the purposes of the Act. The Company may send or supply documents or information to members, for the purposes of the 2006 Act or under the Articles, by making them available on a website in accordance with the 2006 Act.

5. **Mandatory bids, squeeze-out and sell-out rules relating to the Ordinary Shares**

5.1 ***Mandatory bid***

The City Code applies to the Company. Under the City Code, if an acquisition of Ordinary Shares were to increase the aggregate holding of the acquiror and its concert parties to shares carrying 30 per cent. or more of the voting rights in the Company, the acquiror and, depending on the circumstances, its concert parties, would be required (except with the consent of the Panel on Takeovers and Mergers) to make a cash offer for the outstanding shares in the Company at a price not less than the highest price paid for the Ordinary Shares by the acquiror or its concert parties during the previous 12 months. This requirement would also be triggered by any acquisition of shares by a person holding (together with its concert parties) shares carrying between 30 and 50 per cent. of the voting rights in the Company if the effect of such acquisition were to increase that person's percentage of the voting rights.

5.2 ***Squeeze-out***

Under the Act, if an offeror were to acquire 90 per cent. of the Ordinary Shares within four months of making its offer, it could then compulsorily acquire the remaining 10 per cent. It would do so by sending a notice to outstanding Shareholders telling them that it will compulsorily acquire their shares and then, six weeks later, it would execute a transfer of the outstanding shares in its favour and pay the consideration to the Company, which would hold the consideration on trust for outstanding Shareholders. The consideration offered to the Shareholders whose shares are compulsorily acquired under the Act must, in general, be the same as the consideration that was available under the takeover offer.

5.3 ***Sell-out***

The Act also gives minority Shareholders in the Company a right to be bought out in certain circumstances by an offeror who had made a takeover offer. If a takeover offer related to all the Ordinary Shares and at any time before the end of the period within which the offer could be accepted the offeror held or had agreed to acquire not less than 90 per cent. of the Ordinary Shares, any holder of shares to which the offer relates who has not accepted the offer can by a written communication to the offeror require it to acquire those shares. The offeror would be required to give any Shareholder notice of his right to be bought out within one month of that right arising. The offeror may impose a time limit on the rights of minority Shareholders to be bought out, but that period cannot end less than three months after the end of the acceptance period. If a Shareholder exercises its rights, the offeror is bound to acquire those shares on the terms of the offer or on such other terms as may be agreed.

6. Directors' and Other Interests

- 6.1 The interests (within the meaning of sections 820 to 825 of the Act) of the Directors and the persons connected with them (within the meaning of sections 252 to 255 of the Act) in the share capital of the Company as at the date of this Document and as they are expected to be immediately following completion of the Placing and Admission are as follows:

<i>Name</i>	<i>Number of Existing Ordinary Shares</i>	<i>% of Existing Ordinary Shares</i>	<i>Number of Ordinary Shares immediately following Admission</i>	<i>% of Enlarged Issued Share Capital</i>
John Knowles ¹	70,308	0.877%	70,308	0.63%
Christopher Spacie ²	21,708	0.270%	21,708	0.19%
Ray Gibbs	432,054	5.391%	432,054	3.84%
Anthony Belisario	349,029	4.355%	354,692	3.15%
Roger Smith	264,627	3.302%	275,955	2.45%
Matthew Wood	0	0%	3,571	0.03%

1. Includes 10,854 Ordinary Shares held by his son, Hugh Knowles

2. Includes 10,854 Ordinary Shares held by his wife Susan Spacie

- 6.2 In addition to the interests of the Directors set out in paragraph 6.1 above, the Directors are aware of the following interests (within the meaning of Part 22 of the Act) in the Ordinary Shares which, immediately following Admission, would amount to three per cent. or more of the Enlarged Issued Share Capital:

<i>Name</i>	<i>Number of Ordinary Shares following Admission</i>	<i>% of Enlarged Issued Share Capital</i>
Ian Walters	834,300	7.42%
David Cheyne	381,920	3.40%
Richard Newton Jones	346,275	3.08%

Each of such persons (other than Mr. Ian Walters, a founder of Haydale and a former director of the Company) has agreed to a restriction on the sale of such shares as further detailed in paragraph 10 of this Part VII.

- 6.3 So far as the Directors are aware, save as disclosed in paragraphs 6.1 and 6.2 above, there are no persons who, immediately following the Placing, will, directly or indirectly, be interested in three per cent. or more of the capital of the Company or who, directly or indirectly, jointly or severally, exercise or could exercise control over the Company.
- 6.4 The persons including the Directors, referred to in paragraphs 6.1 and 6.2 above, do not have voting rights in respect of the share capital of the Company (issued or to be issued) which differ from any other shareholder of the Company.

7. Directors' Agreements and Letters of Appointment

- 7.1 John Knowles has agreed to act as a non-executive Chairman of the Company pursuant to a letter of appointment dated 8 April 2014. Mr. Knowles will receive an annual fee of £40,000. The appointment may be terminated by either party giving three months' written notice. In addition, Mr Knowles is contractually entitled to a Success Fee of £25,000.
- 7.2 Ray Gibbs has agreed to act as Chief Executive Officer of the Company pursuant to a service agreement dated 8 April 2014. Mr Gibbs will receive an annual salary of £120,000 pursuant to his agreement. Mr Gibbs is entitled to be awarded a bonus at the discretion of the Board and to the following benefits, namely, life assurance at a level equal to three times his salary, private medical

insurance and pension contributions of up to 5 per cent. of salary provided Mr Gibbs makes matching contributions. The agreement may be terminated by either party giving 12 months' written notice. Ray Gibbs is contractually entitled to a Success Fee of £125,000.

- 7.3 Matthew Wood has agreed to act as part-time finance director of the Company pursuant to a service agreement dated 8 April 2014. By such agreement, Mr Wood will receive an annual salary of £36,000 per annum. The agreement may be terminated by either party giving three months' written notice to the other, notice not to be given prior to the expiry of three months from Admission. In addition, CMS Corporate Consultants Limited ("CMS"), a company connected with Mr Wood, has agreed to provide financial and accounting consultancy services to the Company pursuant to a consultancy agreement dated 8 April 2014. Under such agreement, the Company has agreed to pay to CMS a monthly fee of £2,000 plus VAT. The agreement may be terminated by either party giving three months' written notice to the other, notice not to be given prior to the expiry of three months from Admission.
- 7.4 Christopher Spacie has agreed to act as Technical Director of the Company pursuant to a letter of appointment dated 8 April 2014. Mr Space will receive an annual salary of £85,000 pursuant to his agreement. Mr Spacie is also entitled to be awarded a bonus at the discretion of the Board and to the following benefits, namely, life assurance at a level equal to three times his salary, private medical insurance and pension contributions of up to 5 per cent. of salary provided Mr Spacie makes matching contributions. The agreement may be terminated by either party giving 6 months' written notice. Mr Spacie is contractually entitled to a Success Fee of £25,000.
- 7.5 Anthony Belisario has agreed to act as a non-executive director of the Company pursuant to a letter of appointment dated 8 April 2014. Mr. Belisario will receive an annual fee of £24,000 plus an additional fee, in the event of an appointment to the audit or remuneration committee, in the amount of £3,000 per annum per committee and, in the event of an appointment to a nomination committee, an additional daily fee of £1,000 (up to a maximum of £3,000 per annum) for each day on which such committee meets. Mr Belisario is contractually entitled to a Success Fee of £25,000.
- 7.6 Graham Eves has agreed to act as a non-executive director of the Company pursuant to a letter of appointment dated 8 April 2014. Mr. Eves will receive an annual fee of £24,000 plus an additional fee, in the event of an appointment to the audit or remuneration committee, in the amount of £3,000 per annum per committee and, in the event of an appointment to the nomination committee, an additional daily fee of £1,000 (up to a maximum of £3,000 per annum) for each day on which such committee meets. Mr Eves has separately received commissions from the Company in respect his services relating to previous fundraisings for the Company as further described in paragraph 3.12 of this Part VII. Mr Eves will receive additional commission in respect of any funds raised by him on Admission.
- 7.7 Roger Humm has agreed to act as a non-executive director of the Company pursuant to a letter of appointment dated 8 April 2014. Mr. Humm will receive an annual fee of £24,000 plus an additional fee, in the event of an appointment to the audit or remuneration committee, in the amount of £3,000 per annum per committee and, in the event of an appointment to a nomination committee, an additional daily fee of £1,000 (up to a maximum of £3,000 per annum) for each day on which such committee meets. Mr Humm is contractually entitled to a Success Fee of £15,000.
- 7.8 Roger Smith has agreed to act as a non-executive director of the Company pursuant to a letter of appointment dated 8 April 2014. Mr. Smith will receive an annual fee of £24,000 plus an additional fee, in the event of an appointment to the audit or remuneration committee, in the amount of £3,000 per annum per committee and, in the event of an appointment to a nomination committee, an additional daily fee of £1,000 (up to a maximum of £3,000 per annum) for each day on which such committee meets. Mr Smith is contractually entitled to a Success Fee of £25,000.
- 7.9 David Cheyne and Richard Newton Jones, former directors of the Company who resigned on 31 January 2014, have each received from the Company an ex gratia fee of £10,000 upon their retirement from the board of the Company in recognition of their services and the fact that no remuneration was received by them during their period of office.

- 7.10 The aggregate remuneration paid or payable by any company in the Group (including benefits in kind) to the Directors during the year ended 30 June 2013 was £149,918. The aggregate estimated remuneration paid or payable to the Directors by any company in the Group for the current financial year under the arrangements in force is expected to amount to £300,000 and in addition Success Fees and back pay are expected to amount to approximately £220,000.
- 7.11 Save as disclosed above, there are no existing or proposed service contracts between any Director and the Company or any other company in the Group and there are no existing or proposed service contracts between any Director and the Company or any company in the Group which provide for benefits upon termination of employment.

8. Additional Information on the Directors

- 8.1 In addition to directorships of the Company, the Directors hold or have held the following directorships or have been partners in the following partnerships within the five years prior to the date of this document:

<i>Director</i>	<i>Current Directorships/Partnerships</i>	<i>Past Directorships/Partnerships</i>
Anthony Belisario	None	Babcock Porchester Limited Belisario Consulting Limited Brunel University Enterprises Limited
Graham Eves	Expatinfodesk International Limited Expatinfodesk USA Limited AB Dynamics Plc	Groundwell Logistics (Swindon) Holdings Limited
Ray Gibbs	Cotton Graphics Limited Elysian Fuels 21 LLP Haydale Limited Intelligent Nano Technology Limited Nano Hex Limited Nano Hex (Sales) Limited	Sports Floors Limited
Roger Humm	AssayMetrics Limited (in liquidation) Oxford Instruments Pension Trustee Limited Roger Humm Limited	Alpha Radio Limited Bridlington Radio Limited Durham FM Limited G-Volution plc Minster Sound Radio Limited Minster Sound Radio (York) Limited Mix 96 Limited Mix 107 FM Limited NanoSight Limited Northallerton FM Limited Quadrant Media Limited Radio Investments Limited Radio Services Limited Renaissance Radio Limited Spire FM Limited Spirit FM Limited Spirit of Oxfordshire Radio Limited Stray FM Limited Sun FM Limited The Local Radio Company Limited TLRC Enterprises Limited Trinity FM Limited Two Boroughs Radio Limited

<i>Director</i>	<i>Current Directorships/Partnerships</i>	<i>Past Directorships/Partnerships</i>
		UKRD Group Limited West Country Radio Holdings Limited Wessex Broadcasting Limited Yorkshire Coast Radio Limited
John Knowles	None	Covesion Limited Endomagnetics Limited Greengage Lighting Limited Michelson Diagnostics Limited Nanosight Limited Stratophase Limited
Roger Smith	Plant Asset Management Limited Wentworth Estates Management Limited	None
Christopher Spacie	Advanced Materials Engineering Consultants Limited Haydale Limited	Morganite Electrical Carbon Limited
Matthew Wood	A B T Associates Limited Avarae Global Coins Plc (Isle of Man) CMS Advisory (Legal) Limited CMS Corporate Consultants Limited CMS Finance Limited CMS Corporate Services Limited CMS Advisory Group Limited CMS Capital Limited Dynamis Limited European Financial Planning Consultants Limited Elevated Entertainment Systems Limited Green Holdings plc (Guernsey) Historic Heritage Trading Limited Shutford Grounds Farm (Partnership) Sula Iron & Gold plc Westminster Group Plc	Alps Corporate Advisers Limited Creon Resources (Asia) PTE Limited (Singapore) Hermes Pacific Financial Limited Hermes Pacific Investments plc Locarno Capital Limited Meon Drinks plc Providence Financial Solutions Limited Providence Wealth Limited STM Fidecs Limited (Isle of Man) STM Group plc (Isle of Man) STMGEI Limited (BVI) Verdes Management plc Wickham Holdings Limited (in liquidation)

8.2 Save as disclosed below none of the Directors has:

- (a) any unspent convictions in relation to indictable offences;
- (b) had any bankruptcy order made against him or entered into any voluntary arrangements;
- (c) been a director of a company which has been placed in receivership, compulsory liquidation, administration, been subject to a voluntary arrangement or any composition or arrangement with its creditors generally or any class of its creditors whilst he was a director of that company or within the 12 months after he ceased to be a director of that company;

- (d) been a partner in any partnership which has been placed in compulsory liquidation, administration or been the subject of a partnership voluntary arrangement whilst he was a partner in that partnership or within the 12 months after he ceased to be a partner in that partnership;
 - (e) been the owner of any assets or a partner in any partnership which has been placed in receivership whilst he was a partner in that partnership or within the 12 months after he ceased to be a partner in that partnership;
 - (f) been publicly criticised by any statutory or regulatory authority (including recognised professional bodies); or
 - (g) been disqualified by a court from acting as a director of any company or from acting in the management or conduct of the affairs of a Company.
- 8.3 Matt Wood was a director of Wickham Holdings Limited which went into creditors voluntary liquidation. Mr Wood was appointed to the board of Wickham on 16 November 2011 to assist Wickham achieve a listing on the public markets. However, the parties could not agree terms and Mr Wood via a reverse merger resigned on 16 November 2012. On 4 March 2013 a creditor submitted a petition to the High Court for the company to be wound up and on 3 May 2013 the High Court ordered that the company be wound up. The liquidator gave notice to Companies House on 30 December 2013 that the winding up of the company was complete.
- 8.4 John Knowles was a director of Davin Optical Components Limited resigning on 30 June 1998. A liquidator was appointed on 7 May 1999 pursuant to a creditors' voluntary liquidation and was finally dissolved on 1 May 2000.
- 8.5 John Knowles was a director of Northhurst Technologies plc. On 8 August 2001 notice of appointment of an administrative receiver was filed at Companies House. The company was finally dissolved on 27 April 2004.
- 8.6 John Knowles was a director of EU Data Information Ltd. A liquidator was appointed on 11 September 2001 pursuant to a creditors' voluntary liquidation and was finally dissolved on 4 November 2006.
- 8.7 Ray Gibbs was a director of Weston Antennas Limited, which went into administrative receivership on 15 July 2003. Mr Gibbs was appointed on 21 March 2002 having been recruited by the private equity owners of Weston to assist in the turnaround of the loss-making business. When the Company was unable to secure the necessary rescue funding, the business closed and the private equity owners placed it into administrative receivership. The Company was finally dissolved on 15 August 2006.
- 8.8 Roger Humm is a director of AssayMetrics Limited (appointed 11 December 2009). A liquidator was appointed on 6 August 2013 pursuant to a creditors' voluntary liquidation. The company is currently in liquidation.
- 8.9 Save as disclosed in this document, no Director is or has been interested in any transaction which is or was unusual in its nature or conditions or significant to the business of the Group and which was effected by the Group and remains in any respect outstanding or unperformed.
- 8.10 No loans made or guarantees granted or provided by the Group to or for the benefit of any Director are outstanding.

9. Share Option Arrangements

9.1 *Share option schemes and new management incentive*

The Company currently has in place the Innovative Carbon Limited EMI Share Option plan which was adopted on 23 May 2013. Options were granted to three individuals under that scheme, details of which are provided below. It is not intended to grant any further options under this (old) scheme although options already granted will remain in place, subject to adjustment as a result of a

reorganisation of share capital described below. New options to be granted on or after Admission will be granted under the New Share Option scheme set up by the Company, described in more detail below.

9.2 *Details of the Existing Share Option Scheme*

Details of options granted and normal exercise dates are summarised in the table below. These options are normally exercisable either one or three years from the date of grant, if the option holder remains an employee to that date. The rules permit an earlier exercise in certain circumstances such as death, change of control, and certain other occasions subject to board discretion. However, in normal circumstances, it is not expected that the vesting or exercise of such options will be accelerated.

In the event of any capitalisation issue (other than an issue of shares pursuant to the exercise of a right given to shareholders of the Company to receive shares in lieu of dividend) or any rights issue or any other pre-emptive offer to shareholders or any consolidation, sub-division or reduction of capital effecting the share capital of the Company (a “Variation of Capital”), the number of Ordinary Shares that may be acquired and the exercise price shall be adjusted in such manner as the Board shall determine with the intent that the value of that option following the Variation of Capital remains, so far as possible, the same as its value before the Variation of Capital. As a result of the share reorganisation taking place as part of the Admission, the number of shares under those original options and the exercise price payable to acquire each share under option will be amended as follows:

<i>Name</i>	<i>Date of grant of Option</i>	<i>Number of options over Ordinary shares (before share reorganisation)</i>	<i>Number of options over Ordinary shares (after share reorganisation)</i>	<i>Exercise Price (after adjustment for share reorganisation)</i>	<i>Date from which Option can normally first be exercised</i>
Ray Gibbs	23 May 2013	500	40,500	92.5926p	23 May 2014
Martin Williams	23 May 2013	500	40,500	92.5926p	23 May 2014
Christopher Spacie	30 September 2013	500	40,500	92.5926p	30 September 2016

Each of the above options will normally lapse on the earlier of 12 months after death, leaving employment in certain circumstances, 10 years after the date of grant.

9.3 *New Share Option Scheme*

The Company has adopted the New Share Option Scheme.

The Directors believe that the success of the Group will depend to a high degree on the management team and senior executives being appropriately motivated and rewarded and additional options are expected to be granted under a New Share Option Scheme.

Rules of the New Share Option Schemes

9.3.1 As part of its strategy for executive and key employee remuneration, the Company has established, the New Share Option Scheme under which Share Options may be granted to officers and employees of the Company or members of the Group. The board shall be responsible for administering the rules of the New Share Option Scheme and may recommend that options are granted under the New Share Option Scheme from time to time.

9.3.2 Under the rules of the New Share Option Scheme, the Company may grant EMI Options and/or Unapproved Options. A Share Option takes the form of an individual agreement between the Company and the employee and is entered into subject to the rules of the New Share Option Scheme. The New Share Option Scheme includes the ability for other persons who are authorised for the purposes of the New Share Option Scheme to grant options to employees to purchase Ordinary Shares subject to the rules of the New Share Option Scheme.

9.3.3 The new scheme sets a limit of 10 per cent. of issued share capital in issue at the time of grant that can be used by the Company for Share Options, although this limit is not affected by the options granted in May and September 2013 as shown in paragraph 9.2 above.

- 9.3.4 The new options can typically be exercised between the third anniversary and the fifth anniversary of grant, provided the option holder remains an employee of the company or group member. In certain circumstances, the options can be exercised outside this two year period, including certain leavers, the death of the employee concerned, or change of control of the Company. There are no individual or company performance targets to be met in order to be able to exercise the options. In this regard the rules of the New Share Option Scheme do not comply with the Association of British Insurers guidelines on policies and practices in respect of executive remuneration.
- 9.3.5 Share Options may be granted at any time during the period of 42 days from Admission or within 42 days after the date of announcement of the Company's annual or half yearly results. The Board may also resolve to grant Share Options at other times in exceptional circumstances which justify them doing so. Options may not be granted when prohibited by law or in breach of the AIM Rules for Companies. Share Options may not be granted after the tenth anniversary of the date of adoption of the New Share Option Scheme.
- 9.3.6 It is intended that Share Options shall not be granted with an exercise price per Ordinary Share which is at a discount to the prevailing market value of an Ordinary Share at the time of grant.
- 9.3.7 Share Options are not pensionable. At the Company's request, exercise of a Share Option can be made conditional upon the optionholder paying to his or her employer an amount equal to the amount of any income taxes and, to the extent permissible, national insurance and social security contributions for which the employer is obliged to account on the exercise of the Share Option.
- 9.3.8 A total of 562,394 Share Options, representing 5 per cent. of the Enlarged Issued Share Capital, have been granted under the new Share Option Scheme prior to Admission. All of the above options are exercisable at a price of 210p per Ordinary Share.
- 9.3.9 There is a limit on the value of shares that can be granted and held by any one individual as an EMI option of £250,000, and a company limit of £3 million on the total value of shares that are held under unexercised options, in each case using the value measured at the date of grant. To the extent the above options cannot be within EMI, or exceed the EMI limits, they will continue in place as unapproved share options for tax purposes.
- 9.3.10 The additional principal terms of the New Share Option Scheme are summarised below.
- (a) *Eligibility*
- EMI Options may be granted to any employee of the group selected by the board who works either at least 25 hours per week or commits 75 per cent. of his working time to the business of the Company or the business of the Group and who does not already beneficially own either directly or indirectly through his associates more than 30 per cent. of the Ordinary Shares of the Company. Employees selected for the grant of an unapproved option do not have to satisfy these eligibility requirements. EMI Options may only be granted when the Company is a qualifying company for the purposes of paragraph 8, Schedule 5 of the ITEPA 2003.
- (b) *Individual Limit on Participation*
- An individual employee's participation in EMI Options is limited. The aggregate market value of the shares placed under EMI Options together with any share option scheme approved by HMRC under Chapter 8 of Part I and Schedule 4 of ITEPA 2003, valued at the date of the grant of the EMI Options which are held by that employee in any three year period cannot exceed £250,000. This limit on individual participation does not apply for unapproved options.

(c) *Company Limit*

The maximum value of unexercised qualifying EMI Options (valued as at the date of grant) that may exist under the Share Option Scheme is restricted to £3 million.

(d) *Non transferability of Share Options*

Share Options are non-transferable, except on death to the personal representatives of the employee. A Share Option shall lapse immediately if it is purportedly transferred or assigned.

(e) *Voting, Dividend and Other Rights*

An option-holder has no voting or dividend rights in the Company before the exercise of a Share Option.

(f) *Variation of share capital*

For these purposes “variation” of share capital includes any capitalisation, rights issue, subdivision, consolidation or reduction or any other variation in the ordinary share capital of the Company occurring after the date of grant. Upon a variation of the ordinary share capital of the Company, the directors may adjust either the number of Ordinary Shares an employee is entitled to acquire under the Share Option agreement or adjust the exercise price in a manner they consider fair and reasonable.

(g) *Change of Control*

In the event of a change of control, an EMI Option granted to an employee may be exchanged for qualifying options pursuant to paragraph 42 of Schedule 5 of the ITEPA 2003. The board also has discretion to permit early exercise of Share Options in the case of a change of control of the Company, conditional upon such change of control taking place.

10. Material Contracts

The following contracts, not being contracts entered into in the ordinary course of business, have been entered into by the Company within the two years immediately preceding the date of this Document and are, or may be, material:

- 10.1 A nominated adviser agreement dated 8 April 2014 between the Company, the Directors and Cairn pursuant to which the Company has appointed Cairn to act as nominated adviser to the Company in connection with Admission and for the purposes of the AIM Rules. The Company has agreed to pay Cairn a fee of £25,000 per annum for its services as nominated adviser under the agreement, together with all reasonable expenses and VAT. The agreement contains certain undertakings and indemnities given by the Company in respect of, *inter alia*, compliance with all applicable laws and regulations. The agreement has a minimum term of 12 months and thereafter is subject to termination on the giving of 3 months’ notice such notice not to be given prior to the expiry of the initial term. Either party may nevertheless terminate the agreement with immediate effect if the other party is in material breach of its obligations under the agreement.
- 10.2 A broker agreement dated 8 April 2014 between the Company and Hume pursuant to which the Company has appointed Hume to act as broker to the Company for the purposes of the AIM Rules. The Company has agreed to pay Hume a fee of £25,000 per annum for its services as broker under the agreement together with all reasonable expenses and VAT. The Agreement contains certain undertakings and indemnities given by the Company in respect of, *inter alia*, compliance with all applicable laws and regulations. The agreement is for an initial term of 12 months and thereafter subject to termination on the giving of 3 months’ notice.
- 10.3 The Placing Agreement pursuant to which, conditional upon, *inter alia*, Admission taking place on or before 14 April 2014 (or such later date as the Company, Cairn and Hume may agree, being not later than 9 May 2014), Hume has agreed to use its reasonable endeavours to procure Placees for the Placing Shares at the Placing Price. The Placing Agreement contains indemnities from the Company and warranties from the Company and the Directors in favour of Cairn and Hume

together with provisions which enable Cairn and Hume to terminate the Placing Agreement in certain circumstances prior to Admission including circumstances where any of the warranties are found to be untrue or inaccurate in any material respect. The Company has agreed to pay to Cairn a corporate finance fee of £100,000 and to Hume a corporate finance fee of £25,000 and a commission of 5 per cent. of the aggregate value, at the Placing Price of the total Placing Shares (out of which sum Hume has agreed to pay a sub commission of £22,250 to Graham Eves (trading as EVESCO International Business Services)).

- 10.4 Lock-in Agreements entered into between each of the Locked in Directors, the Company, Cairn and Hume each dated 8 April 2014 pursuant to which the Locked-in Directors have agreed not to dispose of any interest in Ordinary Shares for the period of 12 months following Admission, except pursuant to acceptance of a general, partial or tender offer made to acquire the whole or part of the issued share capital of the Company, an intervening court order or in the event of the death of the shareholder. The Locked-in Directors have also agreed for a further period of 12 months to only dispose of an interest in Ordinary Shares following consultation with Cairn and Hume and provided such disposal is effected through the Company's broker and in such manner as the broker may reasonably require with a view to maintenance of an orderly market in the Ordinary Shares.
- 10.5 Lock-in Agreements entered into between each of the Locked in Shareholders, the Company, Cairn and Hume each dated 8 April 2014 pursuant to which the Locked-in Shareholders have agreed not to dispose of any interest in fifty per cent. (50 per cent.) of the Ordinary Shares held by them for the period of 12 months following Admission, except pursuant to acceptance of a general, partial or tender offer made to acquire the whole or part of the issued share capital of the Company, an intervening court order or in the event of the death of the shareholder. The Locked-in Shareholders have also agreed for a further period of 12 months to only dispose of an interest in Ordinary Shares following consultation with Cairn and Hume and provided such disposal is effected through the Company's broker and in such manner as the broker may reasonably require with a view to maintenance of an orderly market in the Ordinary Shares.
- 10.6 A warrant instrument dated 8 April 2014 pursuant to which the Company has granted warrants to Cairn over 112,478 Ordinary Shares of the Company, representing 1 per cent. of the Enlarged Issued Share Capital. The warrants are exercisable in whole or part at any time up to and including the fifth anniversary of Admission at the Placing Price. These warrants are not transferable save in limited circumstances.
- 10.7 A warrant instrument dated 8 April 2014 pursuant to which the Company has granted warrants to CMS Corporate Consultants Limited over 15,952 Ordinary Shares of the Company representing 0.14 per cent. of the Enlarged Share Capital. The warrants are exercisable in whole or part at any time up to and including the fifth anniversary of Admission at the Placing Price. These warrants are not transferable save in limited circumstances.
- 10.8 A warrant instrument dated 8 April 2014 pursuant to which the Company has granted warrants to Hume over 94,286 Ordinary Shares of the Company representing 0.84 per cent. of the Enlarged Share Capital. The warrants are exercisable in whole or part at any time up to and including the fifth anniversary of Admission at the Placing Price. These warrants are not transferable save in limited circumstances.
- 10.9 A warrant instrument dated 8 April 2014 pursuant to which the Company has granted warrants to Hume over 54,605 Ordinary Shares of the Company representing 0.48 per cent. of the Enlarged Share Capital. The warrants have been granted in respect of the services of Hume in relation to the issue of shares referred to in paragraph 3.3.4 of this Part VII and are exercisable in whole or in part at any time up to and including 31 January 2019 at an exercise price of £0.93 per Ordinary Share. These warrants are not transferable save in limited circumstances.

11. Litigation

There are no governmental, legal or arbitration proceedings active, pending or threatened against, or being brought by, any member of the Group which are having, or may have or have had during the 12 months preceding the date of this document a significant effect on the Groups' financial position or profitability. See also the litigation and product liability risk factor in Part II of this Document.

12. Working capital

The Directors are of the opinion, having made due and careful enquiry, that following Admission the Group will have sufficient working capital for its present requirements, that is for at least the 12 month period following Admission.

13. Related party Transactions

- 13.1 Save as set out in Part V of this Document, there are no related party transactions that the Group has entered into during this period covered by the historic financial information set out in Part V and up to the date of this Document.

14. Intellectual Property

- 14.1 Save as disclosed in Parts I and IV of this Document and this paragraph 14, there are no patents or other intellectual property rights, licences or particular contracts which are or may be of fundamental importance to the Group's business.
- 14.2 Haydale Limited has registered the following domain names:

Conductiveink.co.uk	Hdplas.co.uk	Nano-hex.co.uk
Conductive-inks.com	Hdplas.com	Nano-hex.com
Grapheneink.co.uk	Icigroup.com	Innovative-carbon.co.uk
Haydale.co.uk	Graphenenano-platelets.com	Innovativecarbon.co.uk
Haydale.com	graphenenano-platelets.co.uk	Innovative-carbon.com
Haydale.eu	graphenenanoplatelets.co.uk	Haydalegrapheneindustries.com
Haydale.net	Grapheneshop.co.uk	Haydalegrapheneindustries.co.uk
Haydale.org.uk	Icigroup.co.uk	

15. Taxation

- 15.1 The following paragraphs are intended as a general guide only for shareholders who are resident and ordinarily resident in the United Kingdom for tax purposes, holding Ordinary Shares as investments and not as securities to be realised in the course of a trade, and are based on current legislation and UK HMRC practice. Any prospective purchaser of Ordinary Shares who is in any doubt about his tax position or who is subject to taxation in a jurisdiction other than the UK, should consult his own professional adviser immediately.

15.2 *Tax residence of the Company*

The Company is considered to be resident for tax purposes in the UK. Accordingly, the information provided in this section reflects the taxation treatment appropriate to an investment in a UK tax resident company.

15.3 *Taxation of dividends*

The taxation of dividends paid by the Company and received by an investor resident for tax purposes in the UK is summarised below.

15.3.1 *Individuals*

A UK resident individual shareholder in receipt of dividends is treated as receiving income of an amount equal to the sum of the dividend and its associated tax credit. The tax credit currently equates to 10 per cent. of the gross dividend, being the combined amount of the dividend and the tax credit (the tax credit therefore representing one-ninth of the net dividend). The gross dividend is subject to income tax as the top slice of the individual's income and is taxed at the individual's marginal rate of income tax. The tax credit is available to set against the resulting liability (if any) to income tax. An individual liable to income tax at the basic rate will be liable to tax on the gross dividend at a rate of 10 per cent. ("the dividend ordinary rate" which is a special rate of tax set for basic rate taxpayers in receipt of dividend income). Accordingly, the tax credit will satisfy the income tax liability of such an individual. Similarly, individuals liable at the starting rate for savers, currently set at 10 per cent., will have no

further liability as a result of the available tax credit. An individual liable to income tax at the higher rate will pay tax on the gross dividend at a rate of 32.5 per cent. ("the dividend upper rate" which is a special rate of tax set for higher rate taxpayers in receipt of dividend income). After taking into account the tax credit of 10 per cent. a higher rate taxpayer will be liable to additional income tax of 22.5 per cent. of the gross dividend, which equates to 25 per cent. of the actual or net dividend. An individual liable to income tax at the additional rate will pay tax on the gross dividend at a rate of 37.5 per cent. ("the dividend additional rate" which is a special rate of tax set for additional rate taxpayers in receipt of dividend income). After taking into account the tax credit of 10 per cent., an additional rate taxpayer will be liable to additional income tax of 27.5 per cent. of the gross dividend, which equates to 30.6 per cent. of the actual or net dividend.

15.3.2 *Trustees*

UK resident trustees of a discretionary trust in receipt of dividends are liable to income tax at a rate of 37.5 per cent. ("the dividend trust rate") of the gross dividend. After giving effect to the tax credit of 10 per cent. the trustees will be liable to additional income tax of 27.5 per cent. of the gross dividend, which equates to 30.6 per cent. of the actual or net dividend.

15.3.3 *Companies*

Although a UK resident corporate shareholder is potentially liable to corporation tax on its dividend income, it is anticipated that the general exemption for dividends will be available to exempt from corporation tax corporate investors in receipt of dividends from the Company.

15.4 ***Withholding tax and tax credit in UK***

The Company is not required to withhold tax when paying a dividend. Liability to tax on dividends will depend upon the individual circumstances of a Shareholder. Other UK resident Shareholders who are not liable to UK tax on dividends, including pension funds and charities, are not entitled to claim repayment of the tax credit. Shareholders who are resident outside the UK for tax purposes will not generally be able to claim repayment of any part of the tax credit attaching to dividends received from the Company, although this will depend on the existence and terms of any double taxation convention between the UK and the country in which such shareholder is resident. A Shareholder resident outside the UK may also be subject to taxation on dividend income under local law. A Shareholder who is resident outside the UK for tax purposes should consult his own tax adviser concerning his tax position on dividends received from the Company.

15.5 ***Taxation of Chargeable Gains***

A sale or other disposal of the Ordinary Shares may, subject to any available reliefs and exemptions, give rise to a chargeable gain (or allowable loss) for the purposes of UK taxation of chargeable gains.

15.5.1 *Individuals and Trustees*

Chargeable gains realised on a disposal of Ordinary Shares by an individual or trustee resident and ordinarily resident in the UK will be subject to capital gains tax which is normally charged at a rate of 28 per cent. for those individuals whose total income and gains exceed the income tax basic rate limit, and at a rate of 18 per cent. where total income and gains fall below the basic rate limit. A flat rate of 28 per cent. applies for trustees and personal representatives.

An individual shareholder who disposes of Ordinary Shares while only temporarily not resident in the UK for tax purposes, may, under anti-avoidance legislation, still be liable to UK tax on his or her return to the UK. A period of non-residence of less than 5 whole tax years prior to the year in which the shareholder returns to the UK will be treated as a temporary period for these purposes.

15.5.2 *Companies*

UK resident corporate shareholders are usually subject to corporation tax on their chargeable gains. Gains realised by such companies, as reduced by available indexation relief, are subject to corporation tax at the company's relevant rate. The full rate of corporation tax is currently 23 per cent. which will reduce to 21 per cent. from 1 April 2014 and 20 per cent. from 1 April 2015. Indexation relief is deductible in computing any gain arising on a disposal of, or out of, the holding and is computed by reference to the movement in the Retail Price Index over the period of ownership applied to the cost of the holding, or that part of the holding disposed of.

15.5.3 *Non residents*

Shareholders who are not resident or ordinarily resident in the UK and who are not affected by the rules relating to temporary non residence will, save in limited circumstances, not be liable to UK taxation on chargeable gains realised on the disposal of their Ordinary Shares. Such shareholders may be subject to foreign taxation on any gain realised under the local law of their country of residence and should consult their own tax adviser concerning their tax liabilities on such gains.

15.6 *Inheritance Tax*

The Ordinary Shares are considered, potentially, to qualify for business property relief for the purposes of inheritance tax. Shares in an unquoted company (other than an investment company or one which carries on a business consisting wholly or mainly of dealing in securities, stocks, shares, land and buildings) potentially attract full relief (as business property) from inheritance tax where the shares have been held for 2 years prior to the chargeable transfer for inheritance tax purposes.

15.7 *Enterprise Investment Scheme and Venture Capital Trust*

Some of the Placing Shares should be eligible for relief under the Enterprise Investment Scheme (the “**Scheme**”) and for investment by VCTs as the Company has obtained advance assurance from HMRC that it is a Qualifying Company for the purposes of the EIS and investment by VCTs. The advance assurance, in accordance with customary HMRC practice, relates to the qualifying status of the Company only and is based on the facts supplied to HMRC. Subsequent conditions placed on the Company may affect its qualifying status. Although the Company currently expects to satisfy the relevant conditions for the EIS and VCTs neither the Directors nor the Company gives any warranty or undertaking that relief will be available in respect of any investment in Placing Shares pursuant to this document, nor do they warrant or undertake that the Company will conduct its activities in a way that qualifies for or preserves its status. Despite the advance assurance from HMRC, it is unlikely that all investors who subscribe for Placing Shares and who would otherwise qualify for relief will be able to benefit from EIS or VCT qualifying status on their subscription for shares. This is because there is a limit on the number of issued shares that can fall within the reliefs due, affected by a statutory limit on the amount that can be raised within such schemes, in turn affected by previous EIS share allotments and grant(s) received. The Company and its advisors will have discretion regarding if and to what extent any available EIS/VCT relief will be allocated to otherwise eligible investors.

15.8 *Stamp Duty and Stamp Duty Reserve Tax (“SDRT”)*

Transfers of Ordinary Shares may give rise to liabilities to stamp duty or SDRT. The paragraphs below summarise the current position and are intended as a general guide only to stamp duty and SDRT. Special rules apply to agreements made by brokers, dealers and market makers in the ordinary course of their business and to certain categories of person (such as depositaries and clearance services) who may be liable to stamp duty or SDRT at a higher rate. No liability to stamp duty or SDRT will generally arise on the allotment and issue of new Ordinary Shares by the Company, or on transactions where the consideration is less than £1,000.

15.8.1 *Transfers outside CREST*

An instrument (generally a stock transfer form) transferring Ordinary Shares outside CREST will be liable to *ad valorem* stamp duty broadly at a rate of 0.5 per cent. of the actual consideration paid. Stamp duty is normally paid by the purchaser. An unconditional agreement to transfer such shares, if not completed by a duly stamped stock transfer form, within 2 months of the day on which the agreement is made or becomes unconditional, will be subject to SDRT (payable by the purchaser and generally at a rate of 0.5 per cent. of the consideration paid). If within 6 years of the date of the agreement an instrument of transfer is executed pursuant to the agreement and stamp duty is paid on the instrument any liability to SDRT will be cancelled or repaid.

15.8.2 *Transfers within CREST*

Paperless transfers of Ordinary Shares within CREST will be charged to SDRT (rather than stamp duty) at a rate of 0.5 per cent. of the consideration paid. SDRT is payable by the purchaser. CREST is obliged to collect SDRT on relevant transactions settled within the system.

16. General

- 16.1 Save for the Placing and as disclosed in this document, there has been no significant change in the financial or trading position of the Company or the Group since 31 December 2013, the date to which the latest financial information has been prepared.
- 16.2 The Historical Financial Information in section B of Part V does not constitute statutory accounts. For the three years and six months ended 31 December 2013, the Group has taken advantage of an audit exemption under section 477 of the Companies Act 2006 relating to small companies. BDO LLP, whose registered address is 55 Baker Street, London, W1U 7EU have provided an accountant's report on the Historical Financial Information in section B of Part V and have conducted their work in accordance with Standards for Investment Reporting issued by the Auditing Practices Board.
- 16.3 BDO has given and has not withdrawn its written consent to the inclusion of its report dated 8 April in Section A of Part V of this Document and the form and context in which it appears and has authorised the contents of that report for the purposes of Schedule Two of the AIM Rules for Companies.
- 16.4 Cairn is registered in England and Wales under number OC351689 and its registered office is at 61 Cheapside, London EC2V 6AX. Cairn is regulated by the Financial Conduct Authority and is acting in the capacity of nominated adviser to the Company.
- 16.5 Cairn has given and has not withdrawn its written consent to the issue of this Document with the inclusion of its name and references to it in the form and context in which they appear.
- 16.6 Hume is registered in England and Wales under number 06920660 and its registered office is at 1 Carey Lane, London EC2V 8AE. Hume is regulated by the Financial Conduct Authority and is acting in the capacity of broker to the Company.
- 16.7 Hume has given and has not withdrawn its written consent to the issue of this Document with the inclusion of its name and references to it in the form and context in which they appear.
- 16.8 Mewburn Ellis is registered in England and Wales under number 06920660 and its registered office is at 33 Gutter Lane, London EC2V 8AS. Mewburn Ellis is acting in the capacity of patent agents and attorneys to the Company.
- 16.9 Mewburn Ellis has given and has not withdrawn its written consent to the inclusion of its report dated 8 April 2014 in Part IV of this Document and the form and context in which it appears and has authorised the contents of that report for the purposes of Schedule Two of the AIM Rules for Companies.

- 16.10 National Physical Laboratory of Hampton Road, Teddington, Middlesex, TW11 0LW, UK has given and has not withdrawn its written consent to the issue of this document with the inclusion of its name and references to it in the form and context in which they appear.
- 16.11 Save as disclosed in this Part VII of this Document, no person (excluding professional advisers otherwise disclosed in this Document and trade suppliers) has:
- 16.11.1 received, directly or indirectly, from the Company within the 12 months preceding the date of application for Admission; or
 - 16.11.2 entered into contractual arrangements (not otherwise disclosed in this document) to receive, directly or indirectly, from the Company on or after Admission;
any of the following:
 - (a) fees totalling £10,000 or more;
 - (b) securities in the Company with a value of £10,000 or more calculated by reference to the expected price of an Ordinary Share at Admission; or
 - (c) any other benefit with a value of £10,000 or more at the date of Admission.
- 16.12 The total costs and expenses relating to the Placing and Admission (which includes £220,000 of success fees) payable by the Company are estimated to be £1,083,516 (excluding VAT).
- 16.13 The accounting reference date of the Company is 30 June.
- 16.14 Save as set out in this document the Group, there are no principal investments in progress or principal future investments on which the Board has made a firm commitment. There are no mandatory takeover bids outstanding in respect of the Company and none has been made either in the last financial year or the current financial year of the Company.
- 16.15 No public takeover bids have been made by third parties in respect of the Company's issued share capital in the current financial year nor in the last financial year.
- 16.16 The Company and the Directors are not aware of any arrangements, the operation of which may at a subsequent date result in a change of control of the Company
- 16.17 Insofar as the directors are aware, the percentage of Ordinary Shares not in public hands (as that expression is defined in the AIM Rules for Companies) on Admission is expected to be approximately 24.46 per cent.

17. Availability of Document

Copies of this document will be available for inspection normal business hours on any day (except Saturdays, Sundays and UK public holidays) at the registered office of the Company and on the Company's web-site at www.haydale.com from the date of this document until the date which is one month after Admission.

8 April 2014

