# Haydale Graphene Industries plc ("Haydale", the "Company", or the "Group")

## Half Yearly Report for the six months ended 31 December 2015

Haydale (AIM: HAYD), the Group focused on the commercialisation of graphene and other nano materials using their proprietary plasma process, announces its unaudited interim results for the six months ended 31 December 2015.

## **Operational Highlights**

- Announcement of collaboration agreements with major, world leading resin companies including Huntsman Advanced Materials. The agreements specified a joint development of "graphene" enhanced resins such as Huntsman's market leader epoxy resin ARALDITE<sup>®</sup> in key composite markets, focussing initially on electrical and thermal conductivity;
- Confirmation of granted patent by the European Patent Office of the Haydale Plasma functionalisation process for carbon and other nano particles;
- Delivery, commissioning and installation of a HT60 R&D reactor to UK based, Centre of Process and Innovation ("CPI");
- Grant funded development projects totally over £450,000 secured, including UV visible bruisable composites and hydrogen pressure vessels for hydrogen powered fuel cell vehicles; and
- Successfully secured two collaborative 18 month research projects managed by the National Aerospace Technology Exploitation Programme ("NATEP") for aircraft lightning strike protection utilising graphene enhanced composites, and conductive adhesives. These projects are being managed by Haydale's recently formed Aerospace and Defence division.

### **Financial Highlights**

- Total income up 63% year-on-year to £0.8 million (2014: £0.5 million);
- Significant investment in R&D in period of £0.5 million (2014: £0.4 million), particularly in respect of graphene enhanced resins for the composite markets;
- Total loss after tax for the period of £1.9 million (2014: £1.5 million);
- Completion of significantly oversubscribed placing and open offer raising £6.0 million largely for commercialisation of Haydale's technology in the composites market;
- Investment in capex to increase capacity in the period of £0.5 million (2014: £0.6 million); and
- Cash at period end of £5.0 million (30 June 2014: £2.0 million).

## Post Period End Highlights

 Huntsman announced strong initial results from HCS graphene enhanced ARALDITE<sup>®</sup> resins in thermal management and electrical conductivity. This work is the platform for development of a range of new graphene enhanced Araldite<sup>®</sup> resins which will be targeted at the industrial composites, automotive and aerospace markets. The next stage of development will focus on demonstration of these resins in carbon fibre composites manufactured with a range of typical processes used by Huntsman's end customers;

- Announcement of three new prepreg (resin pre-impregnated woven fabrics) products to be launched in conjunction with SHD Composites Limited. Target markets include aerospace, automotive and sporting goods, together with the \$1.25bn "out of autoclave " carbon fibre curing resin industrial tooling market;
- Tie up with UK supercar company Briggs Automotive Company ("BAC") to develop a graphene enhanced body panel that delivers significant weight saving to the BAC Mono single seat road car;
- Set up and commissioning of composite pipe testing facility at Haydale Composite Solutions ("HCS") to enable the development and approval of graphene enhanced polymer pipes for the oil and gas industry;
- An additional five new R&D grant awards worth over £350,000 to accelerate development of new products enhanced by the incorporation of functionalised graphene and other nano materials;
- Second patent application from the Swansea University pipeline agreement, this time in wearable heated apparel aimed at high performance material for elite sports.

# Commenting on the results Ray Gibbs, CEO of Haydale, said:

"This has been another busy period for the Group. We have been successful in raising funds to commercialise our technology, with a major focus on producing enhanced composite materials, especially in meeting market needs for resins capable of delivering high performance electrical conductivity, improved thermal heat management and light-weighting opportunities. Our acquisition of leading composite consultants, EPL (renamed "HCS"), in November 2014, is now showing significant progress with the recent launch of three new products and impressive enhanced properties of Huntsman's Araldite<sup>®</sup> resins. During the period we have invested significant internal resources in R&D in the advanced composite arena, and especially focussed on improving the Huntsman epoxy resin. We have achieved an impressive 380% increase in thermal conductivity (essential for rapid heating and cooling of composites such as tooling), 70% increase in fracture toughness (impact resistance) and taking the resin from being electrically inert to conductive (used for anti-static requirements on electronic housings). We are looking for our investment in R&D to generate IP and provide anticipated greater commercial benefits in future periods.

We are delighted to now have in place a complete supply chain for delivery of graphene enhanced commercial composite products – being a number of unfunctionalised nano-material suppliers, the market leaders in supply of quality epoxy resins (Huntsman), the producer of the intermediate composite products known as prepregs (SHD Composites Limited) all utilising Haydale's patented dispersion technology. Crucial to Haydale is that sales are expected to be generated by each of the supply chain partners' existing routes to market and their respective extensive global customer bases

The next 12 months will be an exciting time for the Group as we anticipate driving material revenues to the Group from the high levels of focussed investment we have made and continue to make."

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# **Chief Executive Officers Report**

## Introduction

I am delighted to present the Group's second set of interim results since the Company's Admission to trading on AIM. There have been a number of key events in the period, not least entering collaborative agreements with key supply chain partners in the composite markets (e.g. Huntsman) and the significantly oversubscribed placing and open offer to raise £6.0 million before expenses ("Funding") that demonstrated the full backing of our shareholder group in our strategy of focussed investment on advanced composite materials and functional inks.

## **Commercial Progress**

## Haydale Composite Solutions ("HCS")

The Funding, to which the Group's Directors and key management contributed £0.4 million, corresponded with our decision to accelerate the deferred consideration payable in respect of the acquisition of HCS. As has been demonstrated by the strong progress made by HCS with Huntsman in particular, we are pleased to have welcomed and fully integrated Gerry Boyce and his team at HCS into the Group. HCS has had an active period, winning new grants and commercial business which provides excellent visibility over future income. Importantly, an increasing proportion of HCS's order book now consists of graphene and nano material enhanced composite projects.

The Directors believe the most important development for the Group was management's decision at the beginning of the period under review to focus on developing graphene and nano enhanced composites with only a small number of potential world leading, "best in class", commercial partners. Graphene has the potential to enhance a large number of applications across a wide variety of markets, so our decision to focus on specific partners in defined sectors was not taken lightly. This strategy culminated in the announcements made in September 2015 and October 2015 of entering into collaborative agreements with Huntsman and Scott Bader, respectively, for the development of graphene enhanced resins. Both partners have the sales force to create the demand pull for enhanced performance resins on a global basis. The potential worldwide market size for graphene enhanced resins is estimated to be \$29.9 billion p.a. by 2017 (Lucintel), of which Transparency Market Research expects the global epoxy market to be

\$10.5bn (2020). Our focus on tooling and adhesive epoxies provides an addressable market of approximately \$4.5bn.

To date, HCS has been the Group's major contributor of revenues. The immediate effect of our focus on internally developing graphene enhanced resins, was to allocate experienced teams from both our Loughborough and Ammanford sites, together with the required equipment and financial resources, which would otherwise have been working on discrete projects for third parties and delivering additional short term revenues to the Group. Not only has this taken fee earning staff onto internally generated longer term investment projects, but we have also dedicated a plasma reactor to supply the functionalised carbon materials for mixing with the relevant resins. We estimate that the use of a dedicated team has meant reduced consulting and related third party revenues in the six months to 31 December 2015 of up to £400,000. This strategy of sacrificing short term revenue in favour of potentially significantly higher longer term higher quality revenues will mean that any intellectual property generated by the work will be owned by the Group and available for future licensing and royalty generation.

As a result of the internal development programme, the Group has gained valuable know how on the variables within the complete masterbatch process that dramatically affect performance outcomes of the resins. We anticipate that these initial findings will be able to be applied across the range of polyester, epoxy and other resins, and has a "read across" into the even larger thermoplastic market.

The immediate work on the resins has been with Huntsman Araldite<sup>®</sup> resins, primarily due to their position as the market leader in certain high performance epoxies. We are significantly encouraged by the feedback and analytical work of the Huntsman team, as evidenced by Huntsman's own announcements of the progress made at the worlds' largest composite trade show, JEC, in Paris in early March 2016 where David Hatrick the Huntsman European Technical Director commented:

"We are making good progress in the initial stages of our collaborative development with Haydale and have been impressed with the improvements delivered in thermal and electrical conductivity in particular. This work is the platform for development of a range of new graphene enhanced Araldite® resins which will be targeted at the industrial composites, automotive and aerospace markets. The next stage of development will focus on demonstration of these resins in carbon fibre composites manufactured with a range of typical processes used by our end customers. In parallel, we look forward to extending our relationship further with Haydale to maximise the commercial potential of this exciting new technology."

Our efforts have been to fast track the work and our achievements have been impressive where we have achieved a 380% increase in thermal conductivity (essential for rapid heating and cooling of composites such as tooling), 70% increase in fracture toughness (impact resistance) and taking the resin from being electrically inert to conductive (used for anti-static requirements on electronic housings). We believe that Huntsman will seek to extend our relationship further and aim to maximise the commercial potential of this exciting new technology.

In addition, we have invested in a world class pipe testing facility at HCS's Loughborough facilities that is available for external customers and will be used for long term durability testing of graphene reinforced thermoplastic pipes for the oil and gas industry. Pleasingly, since announcing the pipe testing facility, HCS has received expressions of interest from a number of leading third parties interested in utilising the facility with a view to jointly developing a next generation graphene enhanced polymer pipe.

We should not lose sight of the ongoing day-to-day composite consulting and testing business at HCS, which generated grant and commercial income of £0.6 million in the half year period under review. There are a number of projects coming to fruition offering substantial future collaboration and revenue potential, and which we hope to announce shortly. The traditional business at HCS provides global cross selling opportunities of the advanced materials being developed within the Group.

## <u>Resources</u>

We have made excellent progress on the resin projects as outlined above. As with many small businesses that operate in global marketplaces (we have less than 50 staff world-wide), we continue to manage resource constraints in the short term that has meant focussing on certain key projects offering the highest probability of revenue opportunities and particularly those in the unregulated markets, where early adoption is key. This has been evidenced with our announcement at JEC of a tie up with UK supercar company Briggs Automotive Company ("BAC") where we have developed a graphene enhanced body panel that delivers significant weight saving to the BAC Mono single seat road car. This project, demonstrated the applicability of graphene to the global automotive sector. In this case the panel mass was reduced by approximately 20% with no loss of strength, providing clear implications for vehicle efficiency and performance if applied vehicle-wide. The global automotive industry represents a sector of extensive opportunity for Haydale, and we have opened discussions with a number of major corporations as a direct result of our JEC announcement and demonstration.

The recruitment during the period of former Cytec technical Director, Ebby Shahidi, to head up our Aerospace and Defence division, has paid immediate dividends winning two collaborative research projects awarded and managed by the National Aerospace Technology Exploitation Programme ("NATEP") for aircraft lightning strike protection worth in aggregate £180,000 to the Group over an 18 month period. Importantly, these longer term revenue opportunities in regulated markets, such as aerospace, are being funded largely by a consortium of multinational organisations, whereby Haydale does not expend significant internal resources. However, the benefits to the Group are that we are able to demonstrate our technical capabilities to multi-billion dollar businesses who can see the read across of graphene and other nano enhanced materials to other parts of their own organisations and specifically those which do not require many years of testing and certification. We are confident of securing other near-term projects in these areas with these consortium partners.

The ever increasing need to ensure that we have the capability to scale up our operations in order to deliver on the quantities of functionalised nano materials that we anticipate our customers will be requiring in the not too distant future, has meant we have concentrated significant efforts on processing controls surrounding the plasma reactors. Whilst already done in part, this crucial work stream is an essential building block in the continued scale up of the treatment process for all of the gasses we use. In particular, our Technical Director, Dr Chris Spacie, together with his commissioning team, has successfully delivered and installed a HT60 R&D reactor at the UK based Centre for Processing Innovation ("CPI"). The use of the reactor in a purpose built Graphene laboratory at CPI is a super "shop window" for our enabling technology to help the CPI in their quest to overcome innovation challenges and develop next generation products and processes. The team has responsibility for delivering reactors and for ensuring successful installation, monitoring and maintenance of all existing and future units in our planned centres of excellence.

The benefits of grant funded work can be demonstrated at our Ammanford site where two significant projects on bio-medical sensors have significantly increased our knowledge and capability in the use of graphene based carbon conductive inks to improve performance metrics The sensor market is a rapidly growing and accessible market for the Group with significant Far East opportunities under development likely to offer relatively short term as well as sustainable longer term revenue returns.

With a view to fully integrating the Loughborough and Swansea sites, Gerry Boyce has been appointed as the Group's UK managing director, responsible for the operational performance across both sites. Gerry is part of the Executive Committee that executes the Group's approved annual budgets and strategic plan through operational management and control.

## Electronic Inks

We have previously reported the grant award for two bio-medical sensor ink projects. Both are progressing well and should lead to the development of commercial products at the end of the process in

approximately 12-18 months' time. One of the projects is using a screen printed process to develop an intelligent sensor that measures diabetes levels in blood samples, while the second, an EU grant funded project, is for a general pathogen detection unit on a reel to reel system run by Fraunhofer and other consortium partners. This work has established a base level of competence in the Group and allowed us to expand our offering.

We have recently collaborated with a Taiwanese quality ink supplier in East Asia who has, with our materials and their binder, achieved excellent results. Discussions are progressing over a formal collaboration where they use our functionalised materials across a suite of their existing inks and coatings products. This is expected to result in a gradual build-up of "ink" sales through our partner, where we are aiming to seek sales in non-regulated commercial ink markets that offer near term revenues in the Far East. We will have the right to market, sell and distribute these inks in Europe and the USA.

In addition, the Haydale ink has been supplied for evaluation to a Far East customer looking to replace an existing biomedical sensor application; and, we expect volume sales of this material to commence in 2017 subject to regulatory approvals. Similar discussions are taking place with another collaboration partner in a different territory in the region. The aim of both collaborations is to produce a screen printing ink that can compete on quality and price with current market offerings.

We are exploring other applications for sensors and especially in the defence sector where Haydale has been engaged by a Tier 1 defence contractor to evaluate the sensor opportunities that can be delivered by its graphene ink. Potential enhancement to adhesion and energy absorption characteristics are also under evaluation for military markets; potential weight reduction for structures is also attracting interest. We see the sensor market as a significant opportunity where for example, sensors for the automotive market alone was estimated in 2014 by Markets and Markets to be valued at approximately \$20 billion, while BCC Research estimated the global sensor market to be worth \$95bn in 2015. The Group's exclusive collaboration agreement with the Welsh Centre for Printing and Coating (WCPC) has already resulted in a patent applied-for pressure sensor and latterly a wearable heated material patent application which is aimed at the sports apparel market. Both of these areas are growing in size. The pressure sensor market is estimated by Markets and Markets to be worth \$9.5billion by 2020. Following a recent exhibition at the world mobile congress in Barcelona, we received a significant amount of interest in our sensor technology, driven in the main by the huge \$150bn Internet of Things (IOT) opportunity. The IOT is aimed at linking a RFID (a Radio Frequency Identification Device) with a receiver of the information (a sensor). Both devices emanate from a printed conductive ink. We continue to work with WCPC on the IOT opportunity and a range of inks and coatings to meet the market needs for recyclable conductive printed materials.

## Intellectual property

We continue to add to our intellectual property base, with both know-how and granted patents. In the period under review, we were delighted to receive confirmation from the European Patent Office ("EPO") of the decision to grant a European Patent to Haydale ("European Patent"). This European Patent is the key process patent underlying the Company's proprietary functionalisation treatment and is one of a number arising from the families of patent applications surrounding the Group's plasma process. The European Patent significantly strengthens Haydale's patent portfolio, where corresponding patents have been granted elsewhere, including China and Australia.

Crucially, the European Patent is not limited to graphene or carbon materials but also covers all nano particles. Whilst Haydale's immediate focus remains on the commercialisation of graphene and other nano carbons, the granting of the European Patent means that the Haydale process can be extended in Europe to a wide range of alternative materials thereby further expanding the opportunities and applications available to the Group using our HDPlas<sup>®</sup> functionalisation process. Furthermore, the receipt of the European Patent allows the Group to grant licences of its plasma process to graphene producers or applications houses throughout Europe.

Our internally funded R&D work on epoxy resin has resulted in a new level of know-how and understanding of crucial elements in the production of resin masterbatch. In particular we now know that the type of materials used, the mix ratios, functionalisation types and levels, coupled with mixing and dispersion techniques are all critical elements in achieving desired performance. It is this knowledge, which is not disclosed, that defines our capability as a leading provider of solutions to the composite and ink industries. Our belief is that once in a masterbatch it would be virtually impossible to "reverse engineer" the formulation.

## **Overseas Expansion**

## <u>Far East</u>

Our initial focus overseas has been the Far East. The demands from potential customers for a local presence and their requirements for a rapid turnaround response led us to set up a sales and marketing office is Seoul, South Korea, during the period, from where we employ a dedicated salesman through our newly created wholly owned subsidiary, Haydale Technologies Korea. The intention is to develop and then manage the key accounts in Korea that we've established over the last 12 months through our regular sales and marketing trips to the region (such as playing a leading role in the organisation of the UK Graphene Pavilion at the 2015 Nano Korea exhibition). Of these key accounts, five are proving to be very active. Repeat orders are becoming more regular, and we understand customers are conducting pilot production trials in order to establish repeatability and consistency of supply before, we anticipate, they move to requiring commercial volumes. Within the region, we are still seeing much use of Carbon Nanotubes (CNTs) in a variety of applications. Our functionalisation process of CNTs remains a major added value driver and enabling technology as the market moves towards using hybrid materials where those treated CNTs are mixed with our functionalised GNPs.

We have learnt that one crucial aspect of the purchasing cycle of our Far Eastern customers is the need to respond quickly with functionalised samples and test data - which is not always possible from the UK due to competing priorities. Accordingly, we are currently assessing the viability of setting up a dedicated inks and functionalisation processing operation to support the Far East sales and marketing efforts, the added advantage of which it would free up the Ammanford site for dedicated service of the UK and European sphere of activities. This assessment has also led to the possibility of several government backed development projects in the region and strengthened our R&D capability which we will market as a paid for service in the region.

## <u>Europe</u>

We continue to enhance our strategic partnerships in Europe where we work with key supply partners, including Graphite Kropfmühl, a subsidiary of AMG Advanced Metallurgical Group N.V. Our intention is to open a European centre of excellence with our plasma reactors in situ close to potential customers, where the need is to have a development partner with sales reach and crucially a supply chain for use across our target markets.

## USA

Our intention, during the current financial year, was to establish a centre of excellence in Buffalo, New York. However, having allocated one of our reactors to the UK resins team during the period, we have yet to install a unit into the USA. We continue to be optimistic on the USA as a major market for development potential, and expect to establish a presence there during the current calendar year. We have concluded that, as we set up a commercial operation in the USA, there will be a need for a dedicated operations and technical director to support the business development initiatives underway. In that regard we have appointed a part time business development consultant who has established a range of strong sales opportunities that will be evaluated. The newly announced SHD prepregs collaboration can, together with a portfolio of new conductive inks, enable us to commence marketing of this product in the USA.

## **Financial Results**

Total income in the period, which comprised both commercial revenues from third parties and grants, was up more than 60% on the same period last year at £0.8 million. The Group's forward order book at the period end stood at over £1.5 million, providing excellent visibility on future income.

During the period, we recognised part of the sale proceeds of the sale of a HT60 reactor to the CPI. The balance of that sale, approximately £0.1m will be recognised over the remainder of the 2016 calendar year. Further reactor sales are expected during calendar 2016, not least the sale of a HT60 and a HT200 to our recently announced supply partner, Graphite Kropfmühl, for €0.6 million in aggregate.

We invested heavily in our own development projects in the period where R&D expenditure, all expensed during the period, amounted to £0.5 million. We also increased our head count from 33 to 44 during 2015. Expenditure on capital equipment, namely additional reactor capacity, pipe testing capabilities and also expansion of the Ammanford site during the six month period was £0.5 million. Loss after taxation for the period was £1.9 million, up from £1.5 million in the prior period, reflecting the additional internal development costs and the costs of expansion. Cash at the period end was £5.0 million.

The oversubscribed placing and open offer to raise £6.0 million before expenses during the period demonstrated the high levels of commitment and support from our shareholders. The funds raised have largely been allocated to internal investment projects on resins, increasing our processing capacity and on overseas expansion, particularly in the Far East. Whilst revenues from these investment areas are not expected in the immediate future, we are anticipating material commercial income to be generated in the next financial year, in particular from the sales of our graphene enhanced prepregs and ultimately significant sales of graphene enhanced resins.

## Outlook

The Group has a clear strategy through to profitability, with a focus on composite materials in unregulated markets using key established routes to market. We now have a composite supply chain, being a number of raw material producers, the surface functionalisation provider, the resin supplier, and a producer of rapid turnaround prepregs where all can prime the market with value added products.

The innovative resin work our team are conducting has confirmed our earlier technical assertion that the immediate future for graphene is as an enabling material for use either in isolation or in combination with a second nano particulate, thus creating a hybrid product. By establishing centres of excellence in territories close to the supply chain and the addressable markets, we can develop our plasma technology and the unique mixing/curing know-how that we believe places us in a unique position to deliver these high performance advanced materials into billion dollar markets.

The strengthening of our intellectual property portfolio through additional know-how and granted patents provides us with the opportunity to sell or licence our reactor technology to our global marketplace safe in the knowledge that we are protected and a key target for the remainder of 2016 is the sale or licencing of our reactor technology.

Ray Gibbs Chief Executive Officer 22 March 2016

# CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

# For the six months ended 31 December 2015

	Notes	Unaudited Six months ended 31 Dec 2015 £'000	Unaudited Six months ended 31 Dec 2014 £'000	Audited Year ended 30 Jun 2015 £'000
REVENUE		325	388	644
Other income		459	94	831
TOTAL INCOME		784	482	1,475
Administrative expenses				
Research and development expenditure		(496)	(435)	(559)
Share based payment expense		(174)	(105)	(258)
Other administrative expenses		(2,121)	(1,509)	(3,663)
		(2,791)	(2,049)	(4,480)
LOSS FROM OPERATIONS		(2,007)	(1,567)	(3,005)
Finance costs		(7)	(7)	(24)
LOSS BEFORE TAXATION		(2,014)	(1,574)	(3,029)
Taxation		97	43	140
LOSS AND TOTAL COMPREHENSIVE LOSS ATTRIBUTABLE TO OWNERS OF THE PARENT		(1,917)	(1,531)	(2,889)
Loss per share attributable to owners of the Company				
Basic (£) Diluted (£)	2 2	(0.16) (0.16)	(0.14) (0.14)	(0.25) (0.25)

## CONSOLIDATED STATEMENT OF FINANCIAL POSITION

# As at 31 December 2015

	Unaudited 31 Dec 2015 £'000	Unaudited 31 Dec 2014 £'000	Audited 30 Jun 2015 £'000
ASSETS			
Non-current assets			
Intangible assets	1,443	1,518	1,460
Property, plant and equipment	1,782	1,227	1,576
Investments	117	0	117
	3,342	2,745	3,153
Current assets			
Inventories	503	185	283
Trade receivables	62	443	257
Other receivables	335	250	277
Corporation tax	218	109	129
Cash and bank balances	5,020	3,951	2,049
	6,138	4,938	2,995
TOTAL ASSETS	9,480	7,683	6,148
LIABILITIES			
Non-current liabilities			
Bank loans – due after one year	184	338	270
Current liabilities			
Bank loans – due within one year	168	162	162
Trade and other payables	719	855	619
Deferred income	87	29	26
Corporation tax	1	7	8
Provision for contingent consideration	117	793	770
	1,092	1,846	1,585
TOTAL LIABILITIES	1,276	2,184	1,855
TOTAL NET ASSETS	8,204	5,499	4,293
EQUITY			
Capital and reserves attributable to equity holders of the parent			
Share capital	305	229	229
Share premium account	11,859	6,255	6,254
Share-based payment reserve	484	176	329
Retained (deficits) / profits Revaluation Reserve	(4,436)	(1,161)	(2,519)
Revaluation Reserve	(8)		
TOTAL EQUITY	8,204	5,499	4,293

## CONSOLIDATED STATEMENT OF CASH FLOWS

# For the six months ended 31 December 2015

	Unaudited Six months ended 31 Dec 2015 £'000	Unaudited Six months ended 31 Dec 2014 £'000	Audited Year ended 30 Jun 2015 £'000
<b>Cash flow from operating activities</b> Loss before taxation <i>Adjustments for:-</i>	(2,014)	(1,574)	(3,029)
Amortisation of intangible assets Depreciation of property, plant and equipment Share-based payment charge Loss on disposal of property, plant and equipment Finance costs	17 173 174 - 7	18 116 105 - 7	64 288 258 19 24
Operating cash flow before working capital changes	(1,643)	(1,328)	(2,376)
(Increase) / decrease in inventories Decrease / (increase) in trade and other receivables (Decrease) / increase in payables and deferred income	(120) 137 (499)	(167) 17	(98) (126) (210)
Cash used in operations	(482)	(150)	(434)
Income tax (paid) / received		(3)	76
Net cash flow from operating activities	(2,125)	(1,481)	(2,734)
<b>Cash flow used in investing activities</b> Purchase of property, plant and equipment Acquisition of subsidiary Finance costs	(477) - (7)	(618) (244) (8)	(1,182) (244) (24)
Net cash flow in investing activities	(484)	(870)	(1,450)
<b>Cash flow used in financing activities</b> Proceeds from issue of share capital Share issue costs	6,038 (377)	125	124
New bank loans raised Repayments of borrowings	(81)	500	500 (68)
Net cash flow from financing activities	5,580	625	556
<b>Net increase / (decrease) in cash and cash equivalents</b> Cash and cash equivalents at beginning of the financial period	2,971 2,049	(1,726) 5,677	(3,628) 5,677
Cash and cash equivalents at end of the financial period	5,020	3,951	2,049

### CONSOLIDATED STATEMENT OF CHANGES IN EQUITY (UNAUDITED)

	Share capital £'000	Share premium £'000	Share- based payment reserve £'000	Retained profits £'000	Revaluation Reserve £'000	Total £'000
At 1 July 2014	225	6,134	71	370	-	6,800
Total comprehensive loss for the period	-	-	-	(1,531)	-	(1,531)
Recognition of share-based payments	-	-	105	-	-	105
Issue of ordinary share capital	4	120				124
At 31 December 2014	229	6,254	176	(1,161)	-	5,498
Total comprehensive loss for the period	-	-	-	(1,358)	-	(1,358)
Recognition of share-based payments			153			153
At 30 June 2015	229	6,254	329	(2,519)	-	4,293
Total comprehensive loss for the period	-	-	-	(1,917)	-	(1,917)
Recognition of share-based payments	-	-	174	-	-	174
Issue of ordinary share capital	75	5,925	-	-	-	6,000
Options Exercised	1	57	(19)			39
Transaction costs in respect of share issues	-	(377)	-	-	-	(377)
Currency Reserve	-	-	-	-	(8)	(8)
At 31 December 2015	305	11,859	484	(4,436)	(8)	8,204

## 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  $\pounds 0.02$  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.

### Share premium account

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.

### **Retained profits**

The retained profits reserve comprises the cumulative effect of all other net gains, losses and transactions with owners (e.g. dividends) not recognised elsewhere.

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

### For the six months ended 31 December 2015

### 1. Accounting policies

### **Basis of preparation**

The interim financial statements, which are unaudited, have been prepared on the basis of the accounting policies expected to apply for the financial year to 30 June 2016 and in accordance with recognition and measurement principles of International Financial Reporting Standards (IFRSs) as endorsed by the European Union. The accounting policies applied in the preparation of these interim financial statements are consistent with those used in the financial statements for the year ended 30 June 2015.

The interim financial statements do not include all of the information required for full annual financial statements and do not comply with all of the disclosures in IAS34 'Interim Financial Reporting'. Accordingly while the interim financial statements have been prepared in accordance with IFRS they cannot be construed as being in full compliance with IFRS.

The financial information for the year ended 30 June 2015 does not constitute the full statutory accounts for that period. The Annual Report and Accounts for 30 June 2015 have been filed with the Registrar of Companies. The Independent Auditors' Report on the Annual Report and Accounts for 2014 was unqualified and did not include references to any matters which the auditors drew attention to by way of emphasis without qualifying their report and did not contain statements under Section 498(2) or 498(3) of the Companies Act 2006.

### Going concern

The consolidated financial statements are prepared on a going concern basis which the Directors believe continues to be appropriate. The Group meets its day-to-day working capital requirements through existing cash resources which at 31 December 2015, amounted to  $\pounds 5.02$  million. The Directors have prepared cash flow projections for the period ending no less than 12 months from the date of their approval of these financial statements. On the basis of those projections, the Directors believe that the Group will be able to continue to trade for the foreseeable future.

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

### For the six months ended 31 December 2015

### 2. Loss per share

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

	Unaudited Six months ended 31 Dec 2015 £'000	Unaudited Six months ended 31 Dec 2014 £'000	Audited Year ended 30 Jun 2015 £'000
Loss after tax attributable to owners of the			
Haydale Graphene Industries Plc	(1,917)	(1,531)	(2,889)
Weighted average number of shares:			
- Basic	12,207,125	11,307,194	11,376,248
- Diluted	12,207,125	11,307,194	11,376,248
Loss per share:			
- Basic (£)	(0.16)	(0.14)	(0.25)
- Diluted (£)	(0.16)	(0.14)	(0.25)

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.

### 3. Approval

The 31 December 2015 interim financial statements were approved by a duly appointed and authorised committee of the Board of Directors on 21 March 2015.

### 4. Forward looking statements

This announcement contains unaudited information and forward-looking statements that are based on current expectations or beliefs, as well as assumptions about future events. These forward-looking statements can be identified by the fact that they do not relate only to historical or current facts and undue reliance should not be placed on any such statements because they speak only as at the date of this document and are subject to known and unknown risks and uncertainties and can be affected by other factors that could cause actual results, and Haydale's plans and objectives, to differ materially from those expressed or implied in the forward-looking statement. Haydale undertakes no obligation to revise or update any forward-looking statement contained within this announcement, regardless of whether those statements are affected as a result of new information, future events or otherwise, save as required by law and regulations.