AstraZeneca

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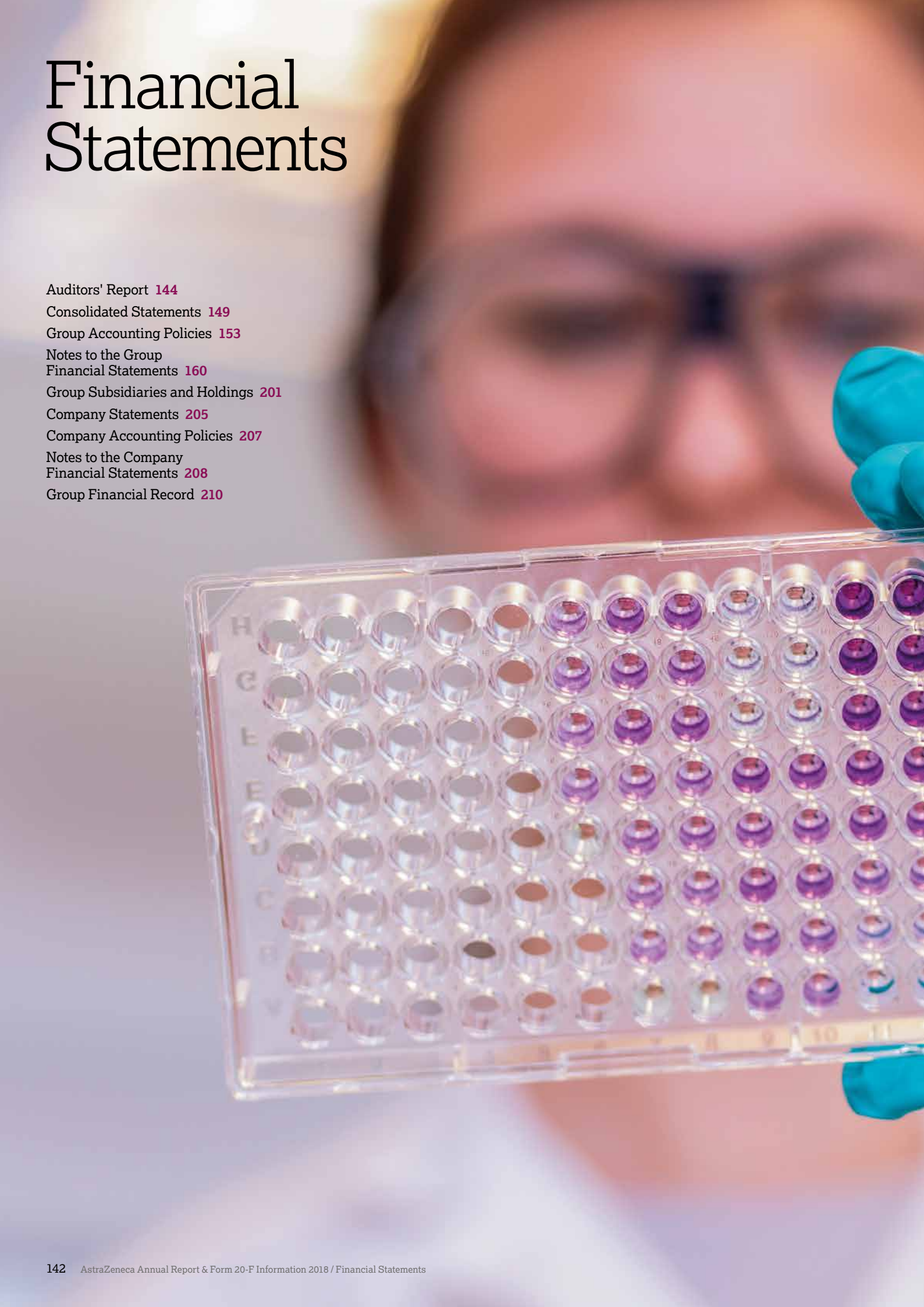
AstraZeneca Annual Report and Form 20-F Information 2018

Financial Statements



Preparation of the Financial Statements and Directors' Responsibilities

The Directors are responsible for preparing this Annual Report and Form 20-F Information and the Group and Parent Company Financial Statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare Group and Parent Company Financial Statements for each financial year. Under that law they are required to prepare the Group Financial Statements in accordance with IFRSs as issued by the IASB and adopted by the EU, and applicable law, and have elected to prepare the Parent Company Financial Statements in accordance with UK Accounting Standards, including FRS 101 'Reduced Disclosure Framework' and applicable law.

Under company law, the Directors must not approve the Financial Statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and Parent Company and of their profit or loss for that period. In preparing each of the Group and Parent Company Financial Statements, the Directors are required to:

- select suitable accounting policies and then apply them consistently
- make judgements and estimates that are reasonable and prudent
- for the Group Financial Statements, state whether they have been prepared in accordance with IFRSs as adopted by the EU
- for the Parent Company Financial Statements, state whether FRS 101 has been followed, subject to any material departures disclosed and explained in the Parent Company Financial Statements
- prepare the Financial Statements on the going concern basis unless it is inappropriate to presume that the Group and the Parent Company will continue in business.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Parent Company's transactions and disclose with reasonable accuracy at any time the financial position of the Parent Company and enable them to ensure that its Financial Statements comply with the Companies Act 2006. They have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities.

Under applicable law and regulations, the Directors are also responsible for preparing a Directors' Report, Strategic Report, Directors' Remuneration Report, Corporate Governance Report and Audit Committee Report that comply with that law and those regulations.

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on our website. Legislation in the UK governing the preparation and dissemination of Financial Statements may differ from legislation in other jurisdictions.

Directors' responsibility statement pursuant to DTR 4

The Directors confirm that to the best of our knowledge:

- The Financial Statements, prepared in accordance with the applicable set of accounting standards, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Company and the undertakings included in the consolidation taken as a whole
- The Directors' Report includes a fair review of the development and performance of the business and the position of the issuer and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face.

On behalf of the Board of Directors on 14 February 2019

Pascal Soriot
Director

Directors' Annual Report on Internal Controls over Financial Reporting

The Directors are responsible for establishing and maintaining adequate internal control over financial reporting. AstraZeneca's internal control over financial reporting is designed to provide reasonable assurance over the reliability of financial reporting and the preparation of consolidated Financial Statements in accordance with generally accepted accounting principles.

Due to its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

The Directors assessed the effectiveness of AstraZeneca's internal control over financial reporting as at 31 December 2018 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control-Integrated Framework (2013). Based on this assessment, the Directors believe that, as at 31 December 2018, the internal control over financial reporting is effective based on those criteria.

PricewaterhouseCoopers LLP, an independent registered public accounting firm, has audited the effectiveness of internal control over financial reporting as at 31 December 2018 and has issued an unqualified report thereon.

Independent Auditors' Report to the Members of AstraZeneca PLC

Report on the audit of the financial statements

Opinion

In our opinion:

- AstraZeneca PLC's Group Financial Statements and Parent Company Financial Statements (the "Financial Statements") give a true and fair view of the state of the Group's and of the Parent Company's affairs as at 31 December 2018 and of the Group's profit and cash flows for the year then ended;
- the Group Financial Statements have been properly prepared in accordance with International Financial Reporting Standards (IFRSs) as adopted by the European Union;
- the Parent Company Financial Statements have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards, comprising FRS 101 "Reduced Disclosure Framework", and applicable law); and
- the Financial Statements have been prepared in accordance with the requirements of the Companies Act 2006 and, as regards the Group Financial Statements, Article 4 of the IAS Regulation.

We have audited the Financial Statements included within the Annual Report and Form 20-F Information 2018 (the "Annual Report"), which comprise: the Consolidated Statement of Financial Position as at 31 December 2018, the Consolidated Statement of Comprehensive Income for the year ended 31 December 2018, the Consolidated Statement of Cash Flows for the year ended 31 December 2018, the Consolidated Statement of Changes in Equity for the year ended 31 December 2018, the Group Accounting Policies and notes to the Group Financial Statements, the Company Balance Sheet as at 31 December 2018, the Company Statement of Changes in Equity for the year ended 31 December 2018, the Company Accounting Policies and notes to the Company Financial Statements.

Our opinion is consistent with our reporting to the Audit Committee.

Separate opinion in relation to IFRSs as issued by the IASB.

As explained in the Group Accounting Policies, the Group, in addition to applying IFRSs as adopted by the European Union, has also applied IFRSs as issued by the International Accounting Standards Board (IASB).

In our opinion, the Group Financial Statements have been properly prepared in accordance with IFRSs as issued by the IASB.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) ("ISAs (UK)") and applicable law. Our responsibilities under ISAs (UK) are further described in the Auditors' responsibilities for the audit of the Financial Statements section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We remained independent of the Group in accordance with the ethical requirements that are relevant to our audit of the Financial Statements in the UK, which includes the FRC's Ethical Standard, as applicable to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

To the best of our knowledge and belief, we declare that non-audit services prohibited by the FRC's Ethical Standard were not provided to the Group or the Parent Company.

Other than those disclosed in Note 31 to the Financial Statements, we have provided no non-audit services to the Group or the Parent Company in the period from 1 January 2018 to 31 December 2018.

Our audit approach

Overview

Materiality

- Overall Group materiality: $130m (2017: $160m), based on 5% of profit before tax, after adding back (i) intangible asset impairment charges and (ii) fair value movements and the discount unwind on contingent consideration, as disclosed in Notes 9 and 19 respectively.
- Overall Parent Company materiality: $100m (2017: $75m), based on 1% of net assets.

Audit scope

- We identified eleven reporting components which required a full scope audit of their complete financial information, either due to their size or risk characteristics. These components are the principal operating units in the US, UK, Sweden, China, Japan, France, Germany, Russia and Brazil as well as the Parent Company and AstraZeneca Treasury Limited.
- We also identified a further six reporting components which had one or more individual balances that were considered significant to the Group's Financial Statements. For these components our work was solely focussed on balances related to revenue, research and development expense or property, plant and equipment, as appropriate.
- Audit procedures were performed centrally over certain shared service functions for transaction processing, IT and in relation to various Group functions, including taxation, pensions, goodwill, intangible assets and other investments, and litigation matters, as well as the consolidation.
- Taken together, the above procedures accounted for 85% of the Group's revenue and 70% of the Group's absolute profit before tax.

Key audit matters

- Recognition and measurement of accruals for rebates and returns in the US
- Assessment of the recoverability of the carrying value of intangible assets (product, marketing and distribution rights)
- Accounting for externalisation and collaboration arrangements – in-license and out-licensing arrangements and other types of complex development and collaboration agreements
- Recognition and measurement of litigation and contingent liabilities
- Recognition and measurement of uncertain tax provisions

The scope of our audit

As part of designing our audit, we determined materiality and assessed the risks of material misstatement in the Financial Statements.

Capability of the audit in detecting irregularities, including fraud

Based on our understanding of the Group and the industry in which it operates, we identified that the principal risks of non-compliance with laws and regulations related to patent protection, product safety, competition law and environmental matters (see Note 29), and we considered the extent to which non-compliance might have a material effect on the Group Financial Statements. We also considered those laws and regulations that have a direct impact on the financial statements such as the Companies Act 2006 and tax legislation. We evaluated management's incentives and opportunities for fraudulent manipulation of the financial statements (including the risk of override of controls), and determined that the principal risks were related to posting inappropriate journal entries to manipulate financial results and management bias in accounting estimates. The Group engagement team shared this risk assessment with the component auditors referred to in the scoping section of our report below, so that they could include appropriate audit procedures in response to such risks in their work. Audit procedures performed by the Group engagement team and/or component auditors included:

- Discussions with management, internal audit, the Deputy Chief Compliance Officer and the Group's legal counsel, including consideration of known or suspected instances of non-compliance with laws and regulations and fraud;
- Evaluation and testing of the operating effectiveness of management's controls designed to prevent and detect irregularities;
- Assessment of matters reported on the Group's whistleblowing helpline and results of management's investigation of such matters;

- Challenging assumptions made by management in their significant accounting estimates in particular in relation to estimation of rebate and return accruals, impairment of intangible assets, and the recognition and measurement of litigation and contingent liabilities and uncertain tax provisions (see related key audit matters below);
- Identifying and testing journal entries, in particular any journal entries posted with unusual account combinations, journals posted by senior management, journals posted and reviewed by the same individual and consolidation journals.

There are inherent limitations in the audit procedures described above and the further removed non-compliance with laws and regulations is from the events and transactions reflected in the financial statements, the less likely we would become aware of it. Also, the risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error, as fraud may involve deliberate concealment by, for example, forgery or intentional misrepresentations, or through collusion.

Key audit matters

Key audit matters are those matters that, in the auditors' professional judgement, were of most significance in the audit of the Financial Statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by the auditors, including those which had the greatest effect on: the overall audit strategy; the allocation of resources in the audit; and directing the efforts of the engagement team. These matters, and any comments we make on the results of our procedures thereon, were addressed in the context of our audit of the Financial Statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. This is not a complete list of all risks identified by our audit.

Key audit matter	How our audit addressed the key audit matter
Recognition and measurement of accruals for rebates and returns in the US Refer to page 115 (Audit Committee Report), page 154 (Accounting Policies) and Note 19 in the Group Financial Statements. In the US the Group sells to customers under various commercial and government mandated contracts and reimbursement arrangements that include rebates and provide a right of return for certain products, of which the most significant are Medicare Part D, Managed Care and Medicaid. These arrangements lead to material deductions to gross sales in arriving at revenue to recognise the obligations for the Group to provide customers with rebates, discounts, allowances and the right of return, for which unsettled amounts are accrued. The directors have determined an accrual of $4,043m to be necessary at 31 December 2018. Rebate, discount, allowance and return arrangements are complex and establishing an appropriate accrual requires significant estimation on the part of management. Changes in estimates can have a significant financial impact.	We evaluated the design and tested the operating effectiveness of controls over the recognition and measurement of rebates and returns. We determined that we could rely on these controls for the purposes of our audit. We obtained management's calculations for accruals under applicable schemes and assessed the assumptions used by reference to the Group's stated commercial policies, the terms of the applicable contracts, third party data related to patient enrolment in US government funded benefit schemes and historical levels of product returns. We compared the assumptions to contracted prices, historical rebates, discounts, allowances and returns levels (where relevant) and to current payment trends. We also considered the historical accuracy of the Group's estimates in previous years and the effect of any adjustments to prior year's accruals in the current year's results. We formed an independent expectation of the largest elements of the accrual at 31 December 2018 using third party data (where relevant) and compared this expectation to the actual accrual recognised by the Group. Based on the procedures performed, we did not identify any material misstatements in the accruals.
Assessment of the recoverability of the carrying value of intangible assets (product, marketing and distribution rights) Refer to page 115 (Audit Committee Report), page 155 (Accounting Policies) and Note 9 in the Group Financial Statements. The Group has product, marketing and distribution rights and other intangible assets totalling $21,720m, out of a total intangible asset value of $21,959m at 31 December 2018. The carrying values of intangible assets are contingent on future cash flows and there is a risk that the assets will be impaired if cash flows are not in line with expectations. The projections in management's impairment models contain a number of significant estimates including peak year and erosion sales curves, probability of technical and regulatory success factors and discount rates. Changes in these assumptions could lead to an impairment to the carrying value of intangible assets. Our work on intangible assets focussed on assets that were in development (and not being amortised) and launched assets which were individually significant, had lower levels of headroom or where there have been concerns over the recoverability of the carrying value of specific assets in previous periods.	We evaluated the design and tested the operating effectiveness of controls in assessing the carrying value of intangible assets. We determined that we could rely on these controls for the purposes of our audit. For those assets tested we obtained the Group's impairment analyses and: - we tested the accuracy of the impairment models and agreed the cash flow forecasts used in the impairment models to the Board approved Long Range Plan; - we tested the reasonableness of key assumptions including revenue and profit growth or decline, the expected loss of drug exclusivity and the impact of the expiry of patents including comparing certain assumptions to industry and economic forecasts; - for higher risk assets we performed sensitivity analysis focusing on what we consider to be reasonably possible changes in key assumptions; and - we assessed the historical accuracy of forecasts to assess management's forecasting ability. We utilised our in-house valuation experts to assess the valuation techniques used, to independently corroborate the discount rate used by management by reference to market data and to assist with the evaluation of other key assumptions for higher risk assets (primarily probability of technical and regulatory success factors). As a result of our work, we determined that the net impairment charge of $683m recorded for intangible assets was appropriate. We reviewed the disclosures in Note 9 of the Group Financial Statements, including sensitivity analysis based on reasonably possible downsides. We are satisfied that these disclosures are appropriate.

Key audit matter	How our audit addressed the key audit matter
Accounting for externalisation and collaboration arrangements – in-license and out-licensing arrangements and other types of complex development and collaboration agreements. Refer to page 115 (Audit Committee Report), page 155 (Accounting Policies) and Note 1 in the Group Financial Statements. The Group routinely enters into development and commercialisation arrangements and collaborations with other pharmaceutical companies. These include in-license and out-licensing arrangements and other types of complex agreements. In 2018, the Group recognised externalisation revenue of $1,041m. The nature of these arrangements mean that the accounting for externalisation revenue is often inherently complex and judgemental, unusual by definition and presents a higher level of risk.	We evaluated the design and tested the operating effectiveness of controls in place over significant contracts and collaboration agreements. We determined that we could rely on these controls for the purposes of our audit. For each material externalisation revenue transaction we reviewed the underlying contract and management's accounting analysis to understand both the formal terms of the agreement and its commercial substance. We assessed whether components of the transaction were at fair value and whether the rights transferred under the arrangement qualified for revenue recognition having regard to the remaining performance obligations under the arrangement. Where there were ongoing performance obligations we assessed whether an appropriate proportion of revenue had been deferred, including an appropriate margin for the work yet to be performed. Where there was a related intangible asset we assessed whether an appropriate amount of that intangible asset had been derecognised on transfer of the relevant rights. Based on the procedures performed, we consider management's judgements reasonable and did not identify any material misstatements.
Recognition and measurement of litigation and contingent liabilities Refer to page 116 (Audit Committee Report), page 158 (Accounting Policies) and Notes 20 and 29 in the Group Financial Statements. The pharmaceuticals industry is heavily regulated which increases inherent litigation risk. The Group is engaged in a number of legal actions, including patent litigation, product liability, anti-trust and related litigation. At 31 December 2018, the Group held provisions of $198m in respect of legal claims. These provisions are based on judgements and reflect accounting estimates made by management in determining the likelihood and magnitude of an unfavourable outcome on the claims. Accordingly, unexpected adverse outcomes could significantly impact the Group's reported profit and balance sheet position.	We evaluated the design and tested the operating effectiveness of controls in respect of the recognition and measurement of litigation matters. We determined that we could rely on these controls for the purposes of our audit. We read the summary of litigation matters provided by management and held discussions with the Group's legal counsel. We requested and obtained legal letters from certain of the Group's external legal advisors with respect to the matters included in the summary. Where appropriate we examined correspondence connected with the cases. We considered management's judgements on the level of provisioning to be reasonable. We also evaluated the appropriateness of the disclosures in Note 20 and Note 29 which we considered appropriate.
Recognition and measurement of uncertain tax provisions Refer to page 116 (Audit Committee Report), page 156 (Accounting Policies) and Note 29 in the Group Financial Statements. The Group operates in a complex multinational tax environment and is subject to a range of tax risks during the normal course of business including transaction related tax matters and transfer pricing arrangements. Where the amount of tax payable is uncertain, the Group establishes provisions based on management's judgement and estimates of the probable amount of the future liability. At 31 December 2018, the Group has recorded provisions of $942m in respect of uncertain tax positions.	We evaluated the design and tested the operating effectiveness of controls in respect of the recognition and measurement of uncertain tax provisions. We determined that we could rely on these controls for the purposes of our audit. With the assistance of our local and international tax specialists, we evaluated management's judgements and estimates of tax exposures and contingencies in order to assess the adequacy of the Group's tax provisions. In understanding and evaluating management's judgements, we considered the status of recent and current tax authority audits and enquiries, judgemental positions taken in tax returns and current year estimates and developments in the tax environment. Where appropriate, we also read documentation to understand the positions reached. We noted that the assumptions and judgements that are required to formulate the provisions mean that there is a range of possible outcomes. However, from the evidence obtained, we considered the level of provisioning to be acceptable in the context of the Group Financial Statements taken as a whole. We reviewed the disclosures in Note 29 of the Group Financial Statements. We are satisfied that these disclosures are appropriate.

We determined that there were no key audit matters applicable to the Parent Company to communicate in our report.

How we tailored the audit scope

We tailored the scope of our audit to ensure that we performed enough work to be able to give an opinion on the Financial Statements as a whole, taking into account the structure of the Group and the Parent Company, the accounting processes and controls, and the industry in which they operate.

In establishing the overall approach to the Group audit, we determined the type of work that needed to be performed by us, as the Group engagement team, or component auditors within PwC UK and other PwC network firms operating under our instruction. Where the work was performed by component auditors, we determined the level of involvement we needed to have in the audit work in these territories to be able to conclude whether sufficient appropriate audit evidence had been obtained as a basis for our opinion on the Group Financial Statements as a whole.

The Group operates in over 100 countries and the size of operations within each territory varies. We identified eleven reporting components which required a full scope audit for Group reporting. These are the principal operating units in the US, UK, Sweden, China, Japan, France, Germany, Russia and Brazil as well as the Parent Company and AstraZeneca Treasury Limited. We identified these eleven reporting components as those that, in our view, required an audit of their complete financial information, due to their size or risk characteristics.

We also identified a further six reporting components which had one or more individual financial statement line item balances that were considered significant to the Group's Financial Statements. For these components our work solely focussed on balances related to revenue (Canada, a further reporting component in China, Italy, and Spain), research and development expense (further reporting components in the UK and the US) or property, plant and equipment (further reporting component in the US).

Audit procedures were performed centrally over certain shared service functions for transaction processing, IT and in relation to various Group functions, including taxation, pensions, goodwill, intangible assets and other investments, and litigation matters, as well as the consolidation.

Taken together, the above procedures accounted for 85% of the Group's revenue and 70% of the Group's absolute profit before tax.

Materiality

The scope of our audit was influenced by our application of materiality. We set certain quantitative thresholds for materiality. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures on the individual financial statement line items and disclosures and in evaluating the effect of misstatements, both individually and in aggregate on the financial statements as a whole.

Based on our professional judgement, we determined materiality for the financial statements as a whole as follows:

	Group Financial Statements	Parent Company Financial Statements
Overall materiality	$130m (2017: $160m)	$100m (2017: $75m)
How we determined it	5% of profit before tax, after adding back intangible asset impairment charges, fair value movements and discount unwind on contingent consideration as disclosed in Notes 9 and 19 respectively.	1% of net assets
Rationale for benchmark applied	The reported profit of the Group can fluctuate due to intangible asset impairment charges and fair value and discount unwind movements on contingent consideration. These amounts are prone to year on year volatility and are not necessarily reflective of the operating performance of the Group and as such they have been excluded from the benchmark amount.	We have considered the nature of the business in AstraZeneca PLC (being investment holding) and have determined that net assets is an appropriate basis for the calculation of the overall materiality level.

For each component in the scope of our Group audit, we allocated a materiality that is less than our overall Group materiality. The range of materiality allocated across components was between $10m and $105m.

We agreed with the Audit Committee that we would report to them misstatements identified during our audit above $7m for both the Group Financial Statements and the Parent Company Financial Statements (2017: $7m) as well as misstatements below those amounts that, in our view, warranted reporting for qualitative reasons.

Going concern

In accordance with ISAs (UK) we report as follows:

Reporting obligation	Outcome
We are required to report if we have anything material to add or draw attention to in respect of the directors' statement in the Financial Statements about whether the directors considered it appropriate to adopt the going concern basis of accounting in preparing the Financial Statements and the directors' identification of any material uncertainties to the Group's and the Parent Company's ability to continue as a going concern over a period of at least twelve months from the date of approval of the Financial Statements.	We have nothing material to add or to draw attention to. As not all future events or conditions can be predicted, this statement is not a guarantee as to the Group's and the Parent Company's ability to continue as a going concern. For example, the terms on which the United Kingdom may withdraw from the European Union, which is currently due to occur on 29 March 2019, are not clear, and it is difficult to evaluate all of the potential implications.
We are required to report if the directors' statement relating to Going Concern in accordance with Listing Rule 9.8.6R(3) is materially inconsistent with our knowledge obtained in the audit.	We have nothing to report.

Reporting on other information

The other information comprises all of the information in the Annual Report other than the financial statements and our auditors' report thereon. The directors are responsible for the other information. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or, except to the extent otherwise explicitly stated in this report, any form of assurance thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If we identify an apparent material inconsistency or material misstatement, we are required to perform procedures to conclude whether there is a material misstatement of the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report based on these responsibilities.

With respect to the Strategic Report and Directors' Report we also considered whether the disclosures required by the UK Companies Act 2006 have been included.

Based on the responsibilities described above and our work undertaken in the course of the audit, the Companies Act 2006 (CA06), ISAs (UK) and the Listing Rules of the Financial Conduct Authority (FCA) require us also to report certain opinions and matters as described below (required by ISAs (UK) unless otherwise stated).

Independent Auditors' Report to the Members of AstraZeneca PLC *continued*

Strategic Report and Directors' Report

In our opinion, based on the work undertaken in the course of the audit, the information given in the Strategic Report and Directors' Report for the year ended 31 December 2018 is consistent with the financial statements and has been prepared in accordance with applicable legal requirements (CA06).

In light of the knowledge and understanding of the Group and Parent Company and their environment obtained in the course of the audit, we did not identify any material misstatements in the Strategic Report and Directors' Report (CA06).

The directors' assessment of the prospects of the Group and of the principal risks that would threaten the solvency or liquidity of the Group

We have nothing material to add or draw attention to regarding:

- The directors' confirmation on page 70 of the Annual Report that they have carried out a robust assessment of the principal risks facing the Group, including those that would threaten its business model, future performance, solvency or liquidity.
- The disclosures in the Annual Report that describe those risks and explain how they are being managed or mitigated.
- The directors' explanation on page 71 of the Annual Report as to how they have assessed the prospects of the Group, over what period they have done so and why they consider that period to be appropriate, and their statement as to whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

We have nothing to report having performed a review of the directors' statement that they have carried out a robust assessment of the principal risks facing the Group and statement in relation to the longer-term viability of the Group. Our review was substantially less in scope than an audit and only consisted of making inquiries and considering the directors' process supporting their statements; checking that the statements are in alignment with the relevant provisions of the UK Corporate Governance Code (the "Code"); and considering whether the statements are consistent with the knowledge and understanding of the Group and Parent Company and their environment obtained in the course of the audit (Listing Rules).

Other Code Provisions

We have nothing to report in respect of our responsibility to report when:

- The statement given by the directors, on page 143, that they consider the Annual Report taken as a whole to be fair, balanced and understandable, and provides the information necessary for the members to assess the Group's and Parent Company's position and performance, business model and strategy is materially inconsistent with our knowledge of the Group and Parent Company obtained in the course of performing our audit.
- The section of the Annual Report on pages 113 to 119 describing the work of the Audit Committee does not appropriately address matters communicated by us to the Audit Committee.
- The directors' statement relating to the Parent Company's compliance with the Code does not properly disclose a departure from a relevant provision of the Code specified, under the Listing Rules, for review by the auditors.

Directors' Remuneration

In our opinion, the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006 (CA06).

Responsibilities for the financial statements and the audit

Responsibilities of the directors for the financial statements

As explained more fully in the Preparation of the Financial Statements and Directors' responsibilities pursuant to DTR 4 set out on page 143, the directors are responsible for the preparation of the financial statements in accordance with the applicable framework and for being satisfied that they give a true and fair view. The directors are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the Financial Statements, the directors are responsible for assessing the Group's and the Parent Company's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Group or the Parent Company or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the FRC's website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditors' report.

Use of this report

This report, including the opinions, has been prepared for and only for the Parent Company's members as a body in accordance with Chapter 3 of Part 16 of the Companies Act 2006 and for no other purpose. We do not, in giving these opinions, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

Other required reporting

Companies Act 2006 exception reporting

Under the Companies Act 2006 we are required to report to you if, in our opinion:

- we have not received all the information and explanations we require for our audit; or
- adequate accounting records have not been kept by the Parent Company, or returns adequate for our audit have not been received from branches not visited by us; or
- certain disclosures of directors' remuneration specified by law are not made; or
- the Parent Company financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns.

We have no exceptions to report arising from this responsibility.

Appointment

Following the recommendation of the Audit Committee, we were appointed by the shareholders on 27 April 2017 to audit the financial statements for the year ended 31 December 2017 and subsequent financial periods. The period of total uninterrupted engagement is 2 years, covering the years ended 31 December 2017 and 31 December 2018.

Richard Hughes (Senior Statutory Auditor)
for and on behalf of
PricewaterhouseCoopers LLP
Chartered Accountants and Statutory Auditors
London
14 February 2019

Consolidated Statement of Comprehensive Income
for the year ended 31 December

	Notes	2018 $m	2017 $m	2016 $m
Product Sales	1	**21,049**	20,152	21,319
Externalisation Revenue	1	**1,041**	2,313	1,683
Total Revenue		**22,090**	22,465	23,002
Cost of sales		**(4,936)**	(4,318)	(4,126)
Gross profit		**17,154**	18,147	18,876
Distribution costs		**(331)**	(310)	(326)
Research and development expense	2	**(5,932)**	(5,757)	(5,890)
Selling, general and administrative costs	2	**(10,031)**	(10,233)	(9,413)
Other operating income and expense	2	**2,527**	1,830	1,655
Operating profit		**3,387**	3,677	4,902
Finance income	3	**138**	113	67
Finance expense	3	**(1,419)**	(1,508)	(1,384)
Share of after tax losses in associates and joint ventures	10	**(113)**	(55)	(33)
Profit before tax		**1,993**	2,227	3,552
Taxation	4	**57**	641	(146)
Profit for the period		**2,050**	2,868	3,406
Other comprehensive income:				
Items that will not be reclassified to profit or loss:				
Remeasurement of the defined benefit pension liability	21	**(46)**	(242)	(575)
Net losses on equity investments measured at fair value through other comprehensive income		**(171)**	–	–
Fair value movements related to own credit risk on bonds designated as fair value through profit and loss		**8**	(9)	–
Tax on items that will not be reclassified to profit or loss	4	**56**	16	136
		(153)	(235)	(439)
Items that may be reclassified subsequently to profit or loss:				
Foreign exchange arising on consolidation	22	**(450)**	536	(1,050)
Foreign exchange arising on designating borrowings in net investment hedges	22	**(520)**	505	(591)
Fair value movements on cash flow hedges		**(37)**	311	(115)
Fair value movements on cash flow hedges transferred to profit and loss		**111**	(315)	195
Fair value movements on derivatives designated in net investment hedges	22	**(8)**	(48)	(4)
Costs of hedging		**(54)**	–	–
Amortisation of loss on cash flow hedge		**1**	1	1
Net available for sale (losses)/gains taken to equity		**–**	(83)	139
Tax on items that may be reclassified subsequently to profit or loss	4	**51**	(33)	86
		(906)	874	(1,339)
Other comprehensive (loss)/income for the period, net of tax		**(1,059)**	639	(1,778)
Total comprehensive income for the period		**991**	3,507	1,628
Profit attributable to:				
Owners of the Parent		**2,155**	3,001	3,499
Non-controlling interests	25	**(105)**	(133)	(93)
Total comprehensive income attributable to:				
Owners of the Parent		**1,097**	3,640	1,722
Non-controlling interests	25	**(106)**	(133)	(94)
Basic earnings per $0.25 Ordinary Share	5	**$1.70**	$2.37	$2.77
Diluted earnings per $0.25 Ordinary Share	5	**$1.70**	$2.37	$2.76
Weighted average number of Ordinary Shares in issue (millions)	5	**1,267**	1,266	1,265
Diluted weighted average number of Ordinary Shares in issue (millions)	5	**1,267**	1,267	1,266
Dividends declared and paid in the period	24	**3,539**	3,543	3,540

All activities were in respect of continuing operations.

$m means millions of US dollars.

Consolidated Statement of Financial Position
at 31 December

	Notes	2018 $m	2017 $m	2016 $m
Assets				
Non-current assets				
Property, plant and equipment	7	**7,421**	7,615	6,848
Goodwill	8	**11,707**	11,825	11,658
Intangible assets	9	**21,959**	26,188	27,586
Investments in associates and joint ventures	10	**89**	103	99
Other investments	11	**833**	933	727
Derivative financial instruments	12	**157**	504	343
Other receivables	13	**515**	847	901
Deferred tax assets	4	**2,379**	2,189	1,102
		45,060	50,204	49,264
Current assets				
Inventories	14	**2,890**	3,035	2,334
Trade and other receivables	15	**5,574**	5,009	4,573
Other investments	11	**849**	1,230	884
Derivative financial instruments	12	**258**	28	27
Income tax receivable		**207**	524	426
Cash and cash equivalents	16	**4,831**	3,324	5,018
Assets held for sale	17	**982**	–	–
		15,591	13,150	13,262
Total assets		**60,651**	63,354	62,526
Liabilities				
Current liabilities				
Interest-bearing loans and borrowings	18	**(1,754)**	(2,247)	(2,307)
Trade and other payables	19	**(12,841)**	(11,641)	(10,486)
Derivative financial instruments	12	**(27)**	(24)	(18)
Provisions	20	**(506)**	(1,121)	(1,065)
Income tax payable		**(1,164)**	(1,350)	(1,380)
		(16,292)	(16,383)	(15,256)
Non-current liabilities				
Interest-bearing loans and borrowings	18	**(17,359)**	(15,560)	(14,501)
Derivative financial instruments	12	**(4)**	(4)	(117)
Deferred tax liabilities	4	**(3,286)**	(3,995)	(3,956)
Retirement benefit obligations	21	**(2,511)**	(2,583)	(2,186)
Provisions	20	**(385)**	(347)	(353)
Other payables	19	**(6,770)**	(7,840)	(9,488)
		(30,315)	(30,329)	(30,601)
Total liabilities		**(46,607)**	(46,712)	(45,857)
Net assets		**14,044**	16,642	16,669
Equity				
Capital and reserves attributable to equity holders of the Company				
Share capital	23	**317**	317	316
Share premium account		**4,427**	4,393	4,351
Capital redemption reserve		**153**	153	153
Merger reserve		**448**	448	448
Other reserves	22	**1,440**	1,428	1,446
Retained earnings	22	**5,683**	8,221	8,140
		12,468	14,960	14,854
Non-controlling interests	25	**1,576**	1,682	1,815
Total equity		**14,044**	16,642	16,669

The Financial Statements from pages 149 to 204 were approved by the Board and were signed on its behalf by

Pascal Soriot
Director

Marc Dunoyer
Director

14 February 2019

Consolidated Statement of Changes in Equity
for the year ended 31 December

	Share capital $m	Share premium account $m	Capital redemption reserve $m	Merger reserve $m	Other reserves $m	Retained earnings $m	Total attributable to owners $m	Non-controlling interests $m	Total equity $m
At 1 January 2016	316	4,304	153	448	1,435	11,834	18,490	19	18,509
Profit for the period	–	–	–	–	–	3,499	3,499	(93)	3,406
Other comprehensive loss	–	–	–	–	–	(1,777)	(1,777)	(1)	(1,778)
Transfer to other reserves[1]	–	–	–	–	11	(11)	–	–	–
Transactions with owners									
Dividends	–	–	–	–	–	(3,540)	(3,540)	–	(3,540)
Dividends paid by subsidiary to non-controlling interest	–	–	–	–	–	–	–	(13)	(13)
Acerta Pharma put option (Note 25)	–	–	–	–	–	(1,825)	(1,825)	–	(1,825)
Changes in non-controlling interest (Note 25)	–	–	–	–	–	–	–	1,903	1,903
Issue of Ordinary Shares	–	47	–	–	–	–	47	–	47
Share-based payments charge for the period (Note 28)	–	–	–	–	–	241	241	–	241
Settlement of share plan awards	–	–	–	–	–	(281)	(281)	–	(281)
Net movement	–	47	–	–	11	(3,694)	(3,636)	1,796	(1,840)
At 31 December 2016	316	4,351	153	448	1,446	8,140	14,854	1,815	16,669
Profit for the period	–	–	–	–	–	3,001	3,001	(133)	2,868
Other comprehensive income	–	–	–	–	–	639	639	–	639
Transfer to other reserves[1]	–	–	–	–	(18)	18	–	–	–
Transactions with owners									
Dividends	–	–	–	–	–	(3,543)	(3,543)	–	(3,543)
Issue of Ordinary Shares	1	42	–	–	–	–	43	–	43
Share-based payments charge for the period (Note 28)	–	–	–	–	–	220	220	–	220
Settlement of share plan awards	–	–	–	–	–	(254)	(254)	–	(254)
Net movement	1	42	–	–	(18)	81	106	(133)	(27)
At 31 December 2017	317	4,393	153	448	1,428	8,221	14,960	1,682	16,642
Adoption of new accounting standards[2]	–	–	–	–	–	(91)	(91)	–	(91)
Profit for the period	–	–	–	–	–	2,155	2,155	(105)	2,050
Other comprehensive loss[3]	–	–	–	–	–	(1,058)	(1,058)	(1)	(1,059)
Transfer to other reserves[1]	–	–	–	–	12	(12)	–	–	–
Transactions with owners									
Dividends	–	–	–	–	–	(3,539)	(3,539)	–	(3,539)
Issue of Ordinary Shares	–	34	–	–	–	–	34	–	34
Share-based payments charge for the period (Note 28)	–	–	–	–	–	219	219	–	219
Settlement of share plan awards	–	–	–	–	–	(212)	(212)	–	(212)
Net movement	–	34	–	–	12	(2,538)	(2,492)	(106)	(2,598)
At 31 December 2018	317	4,427	153	448	1,440	5,683	12,468	1,576	14,044

[1] Amounts charged or credited to other reserves relate to exchange adjustments arising on goodwill.
[2] The Group adopted IFRS 15 'Revenue from Contracts with Customers' from 1 January 2018. See page 153.
[3] Included within Other comprehensive loss of $1,059m is a charge of $54m relating to Costs of hedging.

Consolidated Statement of Cash Flows
for the year ended 31 December

	Notes	2018 $m	2017 $m	2016 $m
Cash flows from operating activities				
Profit before tax		**1,993**	2,227	3,552
Finance income and expense	3	**1,281**	1,395	1,317
Share of after tax losses of associates and joint ventures	10	**113**	55	33
Depreciation, amortisation and impairment		**3,753**	3,036	2,357
(Increase)/decrease in trade and other receivables		**(523)**	83	1,610
Increase in inventories		**(13)**	(548)	(343)
(Decrease)/increase in trade and other payables and provisions		**(103)**	415	(341)
Gains on disposal of intangible assets	2	**(1,885)**	(1,518)	(1,301)
Fair value movements on contingent consideration arising from business combinations	19	**(495)**	109	(1,158)
Non-cash and other movements	16	**(290)**	(524)	(492)
Cash generated from operations		**3,831**	4,730	5,234
Interest paid		**(676)**	(698)	(677)
Tax paid		**(537)**	(454)	(412)
Net cash inflow from operating activities		**2,618**	3,578	4,145
Cash flows from investing activities				
Non-contingent payments on business combinations		**–**	(1,450)	(2,564)
Payment of contingent consideration from business combinations	19	**(349)**	(434)	(293)
Purchase of property, plant and equipment		**(1,043)**	(1,326)	(1,446)
Disposal of property, plant and equipment		**12**	83	82
Purchase of intangible assets		**(328)**	(294)	(868)
Disposal of intangible assets		**2,338**	1,376	1,427
Purchase of non-current asset investments		**(102)**	(96)	(230)
Disposal of non-current asset investments		**24**	70	3
Movement in short-term investments and fixed deposits		**405**	(345)	(166)
Payments to joint ventures	10	**(187)**	(76)	(41)
Interest received		**193**	164	140
Payments made by subsidiaries to non-controlling interests		**–**	–	(13)
Net cash inflow/(outflow) from investing activities		**963**	(2,328)	(3,969)
Net cash inflow before financing activities		**3,581**	1,250	176
Cash flows from financing activities				
Proceeds from issue of share capital		**34**	43	47
Issue of loans		**2,971**	1,988	2,491
Repayment of loans		**(1,400)**	(1,750)	–
Dividends paid		**(3,484)**	(3,519)	(3,561)
Hedge contracts relating to dividend payments		**(67)**	(20)	18
Repayment of obligations under finance leases		**–**	(14)	(16)
Movement in short-term borrowings		**(98)**	336	(303)
Net cash outflow from financing activities		**(2,044)**	(2,936)	(1,324)
Net increase/(decrease) in Cash and cash equivalents in the period		**1,537**	(1,686)	(1,148)
Cash and cash equivalents at the beginning of the period		**3,172**	4,924	6,051
Exchange rate effects		**(38)**	(66)	21
Cash and cash equivalents at the end of the period	16	**4,671**	3,172	4,924

Group Accounting Policies

Basis of accounting and preparation of financial information

The Consolidated Financial Statements have been prepared under the historical cost convention, modified to include revaluation to fair value of certain financial instruments as described below, in accordance with the Companies Act 2006 and International Financial Reporting Standards (IFRSs) as adopted by the EU (adopted IFRSs) in response to the IAS regulation (EC 1606/2002). The Consolidated Financial Statements also comply fully with IFRSs as issued by the International Accounting Standards Board (IASB).

The adoption of IFRS 9 'Financial Instruments' from 1 January 2018 has resulted in changes to the Group's accounting policies. IFRS 9 replaced the provisions of IAS 39 that relate to the recognition, classification and measurement of financial assets and financial liabilities, derecognition of financial instruments, impairment of financial assets and hedge accounting. In accordance with the transitional provisions in IFRS 9, comparative figures have not been restated and the Group has identified that there was no material impact on the Group's Retained earnings as at 1 January 2018.

(i) Classification and measurement

On the date of initial application, 1 January 2018, the Group's management has assessed which business models apply to the financial assets and financial liabilities held by the Group and has classified its financial instruments into the appropriate IFRS 9 categories. The main effects resulting from this reclassification are as follows:

	Measurement category				
	Original (IAS 39)	New (IFRS 9)	Original $m	New $m	Carrying amounts Difference $m
Non-current financial assets					
Other investments					
Equity securities[1]	Available for sale	FVOCI	933	933	–
Derivative financial instruments	Held for trading	FVPL	504	504	–
Other receivables	Amortised cost	Amortised cost	489	489	–
Current financial assets					
Trade and other receivables					
Trade receivables – not subject to factoring	Amortised cost	Amortised cost	2,475	2,475	–
Trade receivables – subject to factoring[2]	Amortised cost	FVOCI	327	327	–
Other receivables	Amortised cost	Amortised cost	949	949	–
Other investments					
Equity securities and bonds[3]	Available for sale	FVPL	1,150	1,150	–
Fixed Deposits	Amortised cost	Amortised cost	80	80	–
Derivative financial instruments	Held for trading	FVPL	28	28	–
Cash and cash equivalents					
Cash at bank and in hand	Amortised cost	Amortised cost	784	784	–
Short-term deposits excluding money market funds	Amortised cost	Amortised cost	1,391	1,391	–
Money market funds[4]	Amortised cost	FVPL	1,149	1,149	–
Current financial liabilities					
Derivative financial instruments	Held for trading	FVPL	(24)	(24)	–
Non-current financial liabilities					
Derivative financial instruments	Held for trading	FVPL	(4)	(4)	–

[1] Equity securities investments reclassified from available to sale to assets at fair value through Other comprehensive income. These are strategic investments held directly in other pharmaceutical and biotech companies.
[2] Trade receivables that are subject to debt factoring arrangements were held at amortised cost under IAS 39. Under IFRS 9 these receivables are held under the 'hold to collect and sell' business model at fair value through other comprehensive income, however their carrying value and their fair value are considered to be materially the same.
[3] Equity security investments reclassified from available to sale to assets at fair value through profit or loss. These are primarily short-term assets invested as part of our cash management strategy to maximise gains on our liquid resources.
[4] Money market funds – the Group is invested in constant net asset value funds where liquidity is offered with same day access for subscription and redemption. Because they fail the 'solely payments of principal and interest' test criteria under IFRS 9 they are measured at fair value through profit or loss, although the fair value is materially the same as amortised cost.

(ii) Derivatives and hedging activities

The Group's risk management strategies and hedge documentation are aligned with the requirements of IFRS 9. All hedge relationships designated under IAS 39 are treated as continuing hedges under IFRS 9 and there was no impact from the adoption of IFRS 9 on prior periods.

(iii) Impairment of financial assets

The Group has financial assets that are subject to the new IFRS 9 expected credit loss model and the Group was required to revise its impairment methodology under IFRS 9 for these assets. The identified impairment change at 1 January 2018 was immaterial and the impact of the change in impairment methodology on the Group's Retained earnings was assessed as nil.

From 1 January 2018, the Group assesses on a forward looking basis the expected credit losses associated with its debt instruments carried at amortised cost and fair value through Other comprehensive income. In the prior year, the impairment of trade receivables was assessed based on the incurred loss model. The Group established an allowance for impairment that represented its estimate of incurred losses where it was deemed that a receivable may not have been recoverable. When the debt was deemed irrecoverable the allowance account was written off against the underlying receivable.

The Group has adopted IFRS 15 'Revenue from Contracts with Customers' which replaces existing accounting standards. It provides enhanced detail on the principle of recognising revenue to reflect the transfer of goods and services to customers at a value which the Group expects to be entitled to receive. The standard also updates revenue disclosure requirements.

The standard has not had a material impact on the revenue streams from the supply of goods and associated rebates and returns provisions. The timing of the recognition of product sales and the basis for the estimates of sales deductions under IAS 18 are consistent with those adopted under IFRS 15.

The previous accounting for externalisation transactions under IAS 18 includes an analysis of the performance obligations under the arrangement and upfront revenue recognition requires the transfer of substantive rights, for example a licence to use the intellectual

property and an appropriate allocation of revenue to the remaining performance obligations. While the basis for such allocation is different in IFRS 15, the impact of the adoption of the new standard on the historical allocations is not material. The licences we grant are typically rights to use the intellectual property, which does not change during the period of the licence. Those licences are generally unique and therefore the basis of allocation of revenue to performance obligations makes use of the residual approach as permitted by IFRS 15. The related sales milestones and royalties to these licences qualify for the royalty exemption available under IFRS 15 and will continue to be recognised as the underlying sales are made. Furthermore, there is no material change to the assessment of whether the performance obligations are distinct from applying the new standard.

The Group has retrospectively applied the standard from 1 January 2018 recognising the cumulative effect of initially applying the standard as an increase to contract liabilities, which are a component of Trade and other payables of $133m to defer Externalisation Revenue previously recognised, an increase to Prepayments and accrued income, which are a component of Trade and other receivables of $20m to recognise Externalisation Revenue previously not recognised, a total related tax adjustment of $22m and a corresponding net adjustment to the opening balance of Retained earnings of $91m. There is no restatement to prior periods as permitted in the transition rules for IFRS 15. The impact of initial application in the year to 31 December 2018 as compared with the year to 31 December 2017 is the recognition of additional Externalisation Revenue of $27m in the year to 31 December 2018.

In addition to the above standard amendments and new adoptions, effective from 1 January 2018, the Group has changed its presentation of Trade and other payables resulting in the following:

(1) Liabilities for product returns, discounts and other product sales adjustments are shown together with liabilities for rebates and chargebacks;
(2) Clinical trial accruals and the Acerta Pharma put option liability are shown separately;
(3) Other trade-related accruals are shown within Other accruals.

The revised presentation has no impact on the total of Trade and other payables, the Group's Statement of Financial Position, the Statement of Cash Flows or the Statement of Comprehensive Income.

After applying the requirements of IFRS 15 for revenue contract related liabilities, and following an internal review of the presentation of liabilities, the Group considers that further disaggregation of the balances in Trade and other Payables would improve the clarity and understanding of those balances.

The Group has revised the comparative presentation of Trade and other payables in Note 19 for the changes related to: (1) liabilities for product returns, discounts and other product sales adjustments; and (2) clinical trial accruals and the Acerta Pharma put option. The Group has assessed the change related to (3) other trade-related accruals as not material for revision under IAS 8 'Accounting Policies, Changes in Accounting Estimates and Errors' and therefore the comparative presentation of Trade and other payables in Note 19 has not been revised for this presentational change.

During the year, the Group has adopted the amendments to IFRS 2 'Classification and Measurement of Share-based Payment Transactions' and the interpretation within IFRIC 22 'Foreign Currency Transactions and Advance Consideration'. The adoptions have not had a significant impact on the Group's Statement of Comprehensive Income, Statement of Financial Position and Statement of Cash Flows.

The Consolidated Financial Statements are presented in US dollars, which is the Company's functional currency.

In preparing their individual financial statements, the accounting policies of some overseas subsidiaries do not conform with IASB issued IFRSs. Therefore, where appropriate, adjustments are made in order to present the Consolidated Financial Statements on a consistent basis.

Basis for preparation of Financial Statements on a going concern basis

The Group has considerable financial resources available. As at 31 December 2018, the Group has $7.1bn in financial resources (cash balances of $4.8bn and undrawn committed bank facilities of $4.1bn, of which $3.4bn is available until April 2022, $0.5bn is available until December 2020 (extendable to December 2021) and $0.2bn is available until December 2019 (extendable to December 2020), with only $1.8bn of debt due within one year). The Group's revenues are largely derived from sales of products which are covered by patents which provide a relatively high level of resilience and predictability to cash inflows, although our revenue is expected to continue to be significantly impacted by the expiry of patents over the medium term. In addition, government price interventions in response to budgetary constraints are expected to continue to adversely affect revenues in many of our mature markets. However, we anticipate new revenue streams from both recently launched medicines and products in development, and the Group has a wide diversity of customers and suppliers across different geographic areas. Consequently, the Directors believe that, overall, the Group is well placed to manage its business risks successfully. Accordingly, they continue to adopt the going concern basis in preparing the Annual Report and Financial Statements.

Estimates and judgements

The preparation of the Financial Statements in conformity with generally accepted accounting principles requires management to make estimates and judgements that affect the reported amounts of assets and liabilities at the date of the Financial Statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Judgements include matters such as the determination of operating segments while estimates focus on areas such as carrying values, estimated useful lives of Intangible assets, potential obligations and Contingent consideration.

The accounting policy descriptions set out the areas where judgements and estimates need exercising, the most significant of which are revenue recognition, research and development (including impairment reviews of associated Intangible assets), business combinations and Goodwill (and Contingent consideration arising from business combinations), litigation and environmental liabilities, employee benefits and taxation. Financial risk management policies are detailed in Note 27.

AstraZeneca's management considers the following to be the most important accounting policies in the context of the Group's operations.

Revenue

Revenues comprise Product Sales and Externalisation Revenue.

Product Sales are revenues arising from contracts with customers. Externalisation Revenue arises from other contracts. However, the recognition and measurement principles of IFRS 15 are applied as set out below.

Revenues exclude inter-company revenues and value-added taxes.

Product Sales

Product Sales represent net invoice value less estimated rebates, returns and chargebacks, which are considered to be key estimates. Sales are recognised when the control of the goods has been transferred to a third party. This is usually when title passes to the customer, either on shipment or on receipt of goods by the customer, depending on local trading terms. In markets where returns are significant, estimates of returns are accounted for at the point revenue is recognised.

For the markets where returns are significant, we estimate the quantity and value of goods which may ultimately be returned at the point of sale. Our returns accruals are based on actual experience over the preceding 12 months for established products together with market-related information such as estimated stock levels at wholesalers and competitor activity which we receive via third party information services. For newly launched products, we use rates based on our experience with similar products or a predetermined percentage.

When a product faces generic competition, particular attention is given to the possible levels of returns and, in cases where the circumstances are such that the level of returns are considered highly probable to reverse, revenues are only recognised when the right of return expires, which is generally on ultimate prescription of the product to patients.

Under certain collaboration agreements which include a profit sharing mechanism, our recognition of Product Sales depends on which party acts as principal in sales to the end customer. In the cases where AstraZeneca acts as principal, we record 100% of sales to the end customer.

Externalisation Revenue

Externalisation Revenue includes income from collaborative arrangements on the Group's products where the Group has sold certain rights associated with those products, but retains a significant ongoing economic interest, through for example the ongoing supply of finished goods or participation in profit share arrangements.

These arrangements may include development arrangements, commercialisation arrangements and collaborations. Income may take the form of upfront fees, milestones, profit sharing and royalties.

The licences we grant are typically rights to use intellectual property which do not change during the period of the licence. Those licences are generally unique and therefore, the basis of allocation of the consideration makes use of the residual approach as permitted by IFRS 15.

These arrangements typically involve the receipt of an upfront payment, which the contract attributes to the sale of the Intangible assets, and ongoing receipts, which the contract attributes to the sale of the product we manufacture. In cases where the transaction has two or more components, we account for the delivered item (for example, the transfer of title to the intangible asset) as a separate unit of accounting and record revenue on delivery of that component, provided that we can make a reasonable estimate of the fair value of the undelivered component.

Where non-contingent amounts are payable over one year from the effective date of a contract, an assessment is made as to whether a significant financing component exists, and if so, the fair value of this component is deferred and recognised over the period to the expected date of receipt.

Where control of a right to use intangible asset passes at the outset of an arrangement, revenue is recognised at the point in time control is transferred. Where the substance of an arrangement is that of a right to access rights attributable to an Intangible asset, revenue is recognised over time, normally on a straight-line basis over the life of the contract.

Where the fair market value of the undelivered component (for example, a manufacturing agreement) exceeds the contracted price for that component, we defer an appropriate element of the upfront consideration and amortise this over the performance period. However, where the fair market value of the undelivered component is equal to or lower than the contracted price for that component, we treat the whole of the upfront amount as being attributable to the delivered Intangible assets and recognise that part of the revenue upon delivery. No element of the contracted revenue related to the undelivered component is ordinarily allocated to the sale of the Intangible asset. This is because the contracted revenue relating to the undelivered component is contingent on future events (such as sales) and cannot be recognised until either receipt of the amount is highly probable or where the consideration is received for a licence of intellectual property, on the occurrence of the related sales.

Where the Group provides ongoing services, revenue in respect of this element is recognised over the duration of those services. Where the arrangement meets the definition of a licence agreement, sales milestones and sales royalties are recognised when achieved by applying the royalty exemption under IFRS 15. All other milestones and sales royalties are recognised when considered highly probable. The determination of highly probable represents a key judgement.

Where Externalisation Revenue is recorded and there is a related Intangible asset, an appropriate amount of that intangible asset is charged to Cost of sales based on an allocation of cost or value to the rights that have been sold.

Cost of sales

Cost of sales are recognised as the associated revenue is recognised. Cost of sales include manufacturing costs, royalties payable on revenues recognised, movements in provisions for inventories, inventory write offs and impairment charges in relation to manufacturing assets. Cost of sales also includes partner profit shares arising from collaborations, and foreign exchange gains and losses arising from business trading activities.

Research and development

Research expenditure is recognised in profit in the year in which it is incurred.

Internal development expenditure is capitalised only if it meets the recognition criteria of IAS 38 'Intangible Assets'. This is considered a key judgement. Where regulatory and other uncertainties are such that the criteria are not met, the expenditure is recognised in profit and this is almost invariably the case prior to approval of the drug by the relevant regulatory authority. Where, however, recognition criteria are met, Intangible assets are capitalised and amortised on a straight-line basis over their useful economic lives from product launch. At 31 December 2018, no amounts have met recognition criteria.

Payments to in-license products and compounds from third parties for new research and development projects (in process research and development) generally take the form of upfront payments, milestones and royalty payments. Where payments made to third parties represent future research and development activities, an evaluation is made as to the nature of the payments. Such payments are expensed if they represent compensation for sub-contracted research and development services not resulting in a transfer of intellectual property. By contrast, payments are capitalised if they represent compensation for the transfer of identifiable intellectual property developed at the risk of the third party. Development milestone payments relating to identifiable intellectual property are capitalised as the milestone is triggered. Any upfront or milestone payments for research activities where there is no associated identifiable intellectual property are expensed. Assets capitalised are amortised, on a straight-line basis, over their useful economic lives from product launch. The determination of the useful economic life is considered a key judgement.

Intangible assets relating to products in development are subject to impairment testing annually. All Intangible assets are tested for impairment when there are indications that the carrying value may not be recoverable. The determination of the recoverable amounts include key estimates which are highly sensitive to, and depend upon, key assumptions as detailed in Note 9.

Any impairment losses are recognised immediately in profit. Intangible assets relating to products which fail during development (or for which development ceases for other reasons) are also tested for impairment and are written down to their recoverable amount (which is usually nil).

If, subsequent to an impairment loss being recognised, development restarts or other facts and circumstances change indicating that the impairment is less or no longer exists, the value of the asset is re-estimated and its carrying value is increased to the recoverable amount, but not exceeding the original value, by recognising an impairment reversal in profit.

Business combinations and goodwill

On the acquisition of a business, fair values are attributed to the identifiable assets and liabilities. Attributing fair values is a key judgement. Contingent liabilities are also recorded at fair value unless the fair value cannot be measured reliably, in which case the value is subsumed into goodwill. Where the Group fully acquires, through a business combination, assets that were previously held in joint operations, the Group has elected not to uplift the book value of the existing interest in the asset held in the joint operation to fair value at the date full control is taken. Where fair values of acquired contingent liabilities cannot be measured reliably, the assumed contingent liability is not recognised but is disclosed in the same manner as other contingent liabilities.

Group Accounting Policies
continued

Where not all of the equity of a subsidiary is acquired, the non-controlling interest is recognised either at fair value or at the non-controlling interest's proportionate share of the net assets of the subsidiary, on a case-by-case basis. Put options over non-controlling interests are recognised as a financial liability, with a corresponding entry in either retained earnings or against non-controlling interest reserves on a case-by-case basis.

The timing and amount of future contingent elements of consideration is considered a key estimate. Contingent consideration, which may include development and launch milestones, revenue threshold milestones and revenue-based royalties, is fair valued at the date of acquisition using decision-tree analysis with key inputs including probability of success, consideration of potential delays and revenue projections based on the Group's internal forecasts. Unsettled amounts of consideration are held at fair value within payables with changes in fair value recognised immediately in profit.

Goodwill is the difference between the fair value of the consideration and the fair value of net assets acquired.

Goodwill arising on acquisitions is capitalised and subject to an impairment review, both annually and when there is an indication that the carrying value may not be recoverable.

The Group's policy up to and including 1997 was to eliminate Goodwill arising upon acquisitions against reserves. Under IFRS 1 'First-time Adoption of International Financial Reporting Standards' and IFRS 3 'Business Combinations', such Goodwill will remain eliminated against reserves.

Joint arrangements and associates

The Group has arrangements over which it has joint control and which qualify as joint operations or joint ventures under IFRS 11 'Joint Arrangements'. For joint operations, the Group recognises its share of revenue that it earns from the joint operations and its share of expenses incurred. The Group also recognises the assets associated with the joint operations that it controls and the liabilities it incurs under the joint arrangement. For joint ventures and associates, the Group recognises its interest in the joint venture or associate as an investment and uses the equity method of accounting.

Employee benefits

The Group accounts for pensions and other employee benefits (principally healthcare) under IAS 19 'Employee Benefits'. In respect of defined benefit plans, obligations are measured at discounted present value while plan assets are measured at fair value. Given the extent of the assumptions used to determine these values, these are considered to be key estimates. The operating and financing costs of such plans are recognised separately in profit, current service costs are spread systematically over the lives of employees and financing costs are recognised in full in the periods in which they arise. Remeasurements of the net defined benefit pension liability, including actuarial gains and losses, are recognised immediately in Other comprehensive income.

Where the calculation results in a surplus to the Group, the recognised asset is limited to the present value of any available future refunds from the plan or reductions in future contributions to the plan. Payments to defined contribution plans are recognised in profit as they fall due.

Taxation

The current tax payable is based on taxable profit for the year. Taxable profit differs from reported profit because taxable profit excludes items that are either never taxable or tax deductible or items that are taxable or tax deductible in a different period. The Group's current tax assets and liabilities are calculated using tax rates that have been enacted or substantively enacted by the reporting date.

Deferred tax is provided using the balance sheet liability method, providing for temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax assets are recognised to the extent that it is probable that taxable profit will be available against which the asset can be utilised. This requires judgements to be made in respect of the availability of future taxable income.

No deferred tax asset or liability is recognised in respect of temporary differences associated with investments in subsidiaries and branches where the Group is able to control the timing of reversal of the temporary differences and it is probable that the temporary differences will not reverse in the foreseeable future.

The Group's Deferred tax assets and liabilities are calculated using tax rates that are expected to apply in the period when the liability is settled or the asset realised based on tax rates that have been enacted or substantively enacted by the reporting date.

Accruals for tax contingencies require management to make judgements of potential exposures in relation to tax audit issues. Tax benefits are not recognised unless the tax positions will probably be sustained based upon management's interpretation of applicable laws and regulations and the likelihood of settlement.

Once considered probable of not being sustained, management reviews each material tax benefit to assess whether a provision should be taken against full recognition of the benefit on the basis of potential settlement through negotiation and/or litigation. Accruals for tax contingencies are measured using the single best estimate of likely outcome approach.

Further details of the estimates and assumptions made in determining our recorded liability for transfer pricing contingencies and other tax contingencies are included in Note 29 to the Financial Statements.

Share-based payments

All plans are assessed and have been classified as equity settled. The grant date fair value of employee share plan awards is calculated using a Monte Carlo model. In accordance with IFRS 2 'Share-based Payment', the resulting cost is recognised in profit over the vesting period of the awards, being the period in which the services are received. The value of the charge is adjusted to reflect expected and actual levels of awards vesting, except where the failure to vest is as a result of not meeting a market condition. Cancellations of equity instruments are treated as an acceleration of the vesting period and any outstanding charge is recognised in profit immediately.

Property, plant and equipment

The Group's policy is to write off the difference between the cost of each item of Property, plant and equipment and its residual value over its estimated useful life on a straight-line basis. Assets under construction are not depreciated.

Reviews are made annually of the estimated remaining lives and residual values of individual productive assets, taking account of commercial and technological obsolescence as well as normal wear and tear. It is impractical to calculate average asset lives exactly. However, the total lives range from approximately 10 to 50 years for buildings, and three to 15 years for plant and equipment. All items of Property, plant and equipment are tested for impairment when there are indications that the carrying value may not be recoverable. Any impairment losses are recognised immediately in profit.

Borrowing costs

The Group has no borrowing costs with respect to the acquisition or construction of qualifying assets. All other borrowing costs are recognised in profit as incurred and in accordance with the effective interest rate method.

Leases

Leases are classified as finance leases if they transfer substantially all the risks and rewards incidental to ownership, otherwise they are classified as operating leases. Assets and liabilities arising on finance leases are initially recognised at fair value or, if lower, the present value of the minimum lease payments. The discount rate used in calculating the present value of the minimum lease payments is the interest rate implicit in the lease. Finance charges under finance leases are allocated to each reporting period so as to produce a constant periodic rate of interest on the remaining balance of the finance liability. Rentals under operating leases are charged to profit on a straight-line basis.

Subsidiaries

A subsidiary is an entity controlled, directly or indirectly, by AstraZeneca PLC. Control is regarded as the exposure or rights to the variable returns of the entity when combined with the power to affect those returns.

The financial results of subsidiaries are consolidated from the date control is obtained until the date that control ceases.

Inventories

Inventories are stated at the lower of cost and net realisable value. The first in, first out or an average method of valuation is used. For finished goods and work in progress, cost includes directly attributable costs and certain overhead expenses (including depreciation). Selling expenses and certain other overhead expenses (principally central administration costs) are excluded. Net realisable value is determined as estimated selling price less all estimated costs of completion and costs to be incurred in selling and distribution.

Write-downs of inventory occur in the general course of business and are recognised in cost of sales for launched products and research and development costs for products in development.

Assets held for sale

Non-current assets are classified as assets held for sale when their carrying amount is to be recovered principally through a sale transaction and a sale is considered highly probable. A sale is usually considered highly probable only when an appropriate level of management has committed to the sale.

Assets held for sale are stated at the lower of carrying amount and fair value less costs to sell. Where there is a partial transfer of a non-current asset to held for sale, an allocation of value is made between the current and non-current portions of the asset based on the relative value of the two portions, unless there is a methodology that better reflects the asset to be disposed of.

Assets held for sale are not depreciated or amortised.

Trade and other receivables

Financial assets included in Trade and other receivables are recognised initially at fair value. The Group holds the Trade receivables with the objective to collect the contractual cash flows and therefore measures them subsequently at amortised cost using the effective interest rate method, less any impairment losses.

Trade receivables that are subject to debt factoring arrangements are derecognised if they meet the conditions for derecognition detailed in IFRS 9 'Financial Instruments'.

Trade and other payables

Financial liabilities included in Trade and other payables are recognised initially at fair value. Subsequent to initial recognition they are measured at amortised cost using the effective interest rate method. Contingent consideration payables are held at fair value within level 3 of the fair value hierarchy as defined in Note 11.

Financial instruments

The Group's financial instruments include finance leases, Trade and other receivables and payables, liabilities for contingent consideration and put options under business combinations, and rights and obligations under employee benefit plans which are dealt with in specific accounting policies.

The Group's other financial instruments include:

- Cash and cash equivalents
- Fixed deposits
- Other investments
- Bank and other borrowings
- Derivatives

Cash and cash equivalents

Cash and cash equivalents comprise cash in hand, current balances with banks and similar institutions, and highly liquid investments with maturities of three months or less when acquired. They are readily convertible into known amounts of cash and are held at amortised cost under the hold to collect classification, where they meet the hold to collect 'solely payments of principal and interest' test criteria under IFRS 9. Those not meeting these criteria are held at fair value through profit and loss.

Fixed deposits

Fixed deposits, principally comprising funds held with banks and other financial institutions, are initially measured at fair value, plus direct transaction costs, and are subsequently measured at amortised cost using the effective interest rate method at each reporting date. Changes in carrying value are recognised in profit.

Other investments

Accounting policy applied until 31 December 2017 (IAS 39)

Until 31 December 2017, the investments were classified as available for sale, initially measured at fair value (including direct transaction costs) and subsequently remeasured to fair value at each reporting date. Changes in carrying value due to changes in exchange rates on monetary available for sale investments or impairments were recognised in profit within Other operating income and expense. All other changes in fair value were recognised in Other comprehensive income.

Accounting policy applied from 1 January 2018 (IFRS 9)

On adoption of IFRS 9 'Financial Instruments' on 1 January 2018 the available for sale classification category was eliminated. Investments previously classified as available for sale are now classified as fair value through profit or loss, unless the Group makes an irrevocable election at initial recognition for certain non-current equity investments to present changes in fair value in Other comprehensive income. If this election is made, there is no subsequent reclassification of fair value gains and losses to profit and loss following the derecognition of the investment.

Reclassification from available for sale to at fair value through Other comprehensive income

These investments were reclassified from available for sale to assets at fair value through Other comprehensive income. The investments primarily relate to biotech companies and are held to access science rather than to liquidate and realise gains.

Reclassification from available for sale to at fair value through profit or loss

These investments were reclassified from available to sale to assets at fair value through profit or loss. The investments primarily relate to short-term assets invested as part of our cash management strategy to maximise gains on our liquid resources.

For the available for sale assets now at fair value through profit or loss the fair value gain that has gone through profit and loss that under the old classification would have gone to Other comprehensive income is $nil.

Bank and other borrowings

The Group uses derivatives, principally interest rate swaps, to hedge the interest rate exposure inherent in a portion of its fixed interest rate debt. In such cases the Group will either designate the debt as fair value through profit or loss when certain criteria are met or as the hedged item under a fair value hedge.

If the debt instrument is designated as fair value through profit or loss, the debt is initially measured at fair value (with direct transaction costs being included in profit as an expense) and is remeasured to fair value at each reporting date with changes in carrying value being recognised in profit (along with changes in the fair value of the related derivative), with the exception of changes in the fair value of the debt instrument relating to own credit risk which are recorded in Other comprehensive income in accordance with IFRS 9. Such a designation has been made where this significantly reduces an accounting mismatch which would result from recognising gains and losses on different bases.

If the debt is designated as the hedged item under a fair value hedge, the debt is initially measured at fair value (with direct transaction costs being amortised over the life of the debt) and is remeasured for fair value changes in respect of the hedged risk at each reporting date with changes in carrying value being recognised in profit (along with changes in the fair value of the related derivative).

If the debt is designated in a cash flow hedge, the debt is measured at amortised cost (with gains or losses taken to profit and direct transaction costs being amortised over the life of the debt). The related derivative is remeasured for fair value changes at each reporting date with the portion of the gain or loss on the derivative that is determined to be an effective hedge recognised in Other comprehensive income. The amounts that have been recognised in Other comprehensive

income are reclassified to profit in the same period that the hedged forecast cash flows affect profit. The reclassification adjustment is included in Finance expense in the Consolidated statement of comprehensive income.

Other interest-bearing loans are initially measured at fair value (with direct transaction costs being amortised over the life of the loan) and are subsequently measured at amortised cost using the effective interest rate method at each reporting date. Changes in carrying value are recognised in profit.

Derivatives

Derivatives are initially measured at fair value (with direct transaction costs being included in profit as an expense) and are subsequently remeasured to fair value at each reporting date. Changes in carrying value are recognised in profit.

Foreign currencies

Foreign currency transactions, being transactions denominated in a currency other than an individual Group entity's functional currency, are translated into the relevant functional currencies of individual Group entities at average rates for the relevant monthly accounting periods, which approximate to actual rates.

Monetary assets and liabilities arising from foreign currency transactions are retranslated at exchange rates prevailing at the reporting date. Exchange gains and losses on loans and on short-term foreign currency borrowings and deposits are included within Finance expense. Exchange differences on all other foreign currency transactions are recognised in Operating profit in the individual Group entity's accounting records.

Non-monetary items arising from foreign currency transactions are not retranslated in the individual Group entity's accounting records.

In the Consolidated Financial Statements, income and expense items for Group entities with a functional currency other than US dollars are translated into US dollars at average exchange rates, which approximate to actual rates, for the relevant accounting periods. Assets and liabilities are translated at the US dollar exchange rates prevailing at the reporting date. Exchange differences arising on consolidation are recognised in Other comprehensive income.

If certain criteria are met, non-US dollar denominated loans or derivatives are designated as net investment hedges of foreign operations. Exchange differences arising on retranslation of net investments, and of foreign currency loans which are designated in an effective net investment hedge relationship, are recognised in Other comprehensive income in the Consolidated Financial Statements. Foreign exchange derivatives hedging net investments in foreign operations are carried at fair value. Effective fair value movements are recognised in Other comprehensive income, with any ineffectiveness taken to profit. Gains and losses accumulated in the translation reserve will be recycled to profit when the foreign operation is sold.

Litigation and environmental liabilities

AstraZeneca is involved in legal disputes, the settlement of which may involve cost to the Group. Provision is made where an adverse outcome is probable and associated costs, including related legal costs, can be estimated reliably. In other cases, appropriate disclosures are included. Determining the timing of recognition of when an adverse outcome is probable is considered a key judgement.

Where it is considered that the Group is more likely than not to prevail, or in the rare circumstances where the amount of the legal liability cannot be estimated reliably, legal costs involved in defending the claim are charged to profit as they are incurred.

Where it is considered that the Group has a valid contract which provides the right to reimbursement (from insurance or otherwise) of legal costs and/or all or part of any loss incurred or for which a provision has been established, the best estimate of the amount expected to be received is recognised as an asset only when it is virtually certain.

AstraZeneca is exposed to environmental liabilities relating to its past operations, principally in respect of soil and groundwater remediation costs. Provisions for these costs are made when there is a present obligation and where it is probable that expenditure on remedial work will be required and a reliable estimate can be made of the cost. Provisions are discounted where the effect is material.

Impairment

The carrying values of non-financial assets, other than inventories and Deferred tax assets, are reviewed at least annually to determine whether there is any indication of impairment. For Goodwill, Intangible assets under development and for any other assets where such indication exists, the asset's recoverable amount is estimated based on the greater of its value in use and its fair value less cost to sell. In assessing the recoverable amount, the estimated future cash flows, adjusted for the risks specific to each asset, are discounted to their present value using a discount rate that reflects current market assessments of the time value of money, the general risks affecting the pharmaceutical industry and other risks specific to each asset. For the purpose of impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash flows of other assets. Impairment losses are recognised immediately in profit.

International accounting transition

On transition to using adopted IFRSs in the year ended 31 December 2005, the Group took advantage of several optional exemptions available in IFRS 1 'First-time Adoption of International Financial Reporting Standards'. The major impacts which are of continuing importance are detailed below:

- Business combinations – IFRS 3 'Business Combinations' has been applied from 1 January 2003, the date of transition, rather than being applied fully retrospectively. As a result, the combination of Astra and Zeneca is still accounted for as a merger, rather than through purchase accounting. If purchase accounting had been adopted, Zeneca would have been deemed to have acquired Astra.
- Cumulative exchange differences – the Group chose to set the cumulative exchange difference reserve at 1 January 2003 to nil.

Applicable accounting standards and interpretations issued but not yet adopted

IFRS 16 'Leases' is effective for accounting periods beginning on or after 1 January 2019 and will replace IAS 17 'Leases'. It will eliminate the classification of leases as either operating leases or finance leases and, instead, introduce a single lessee accounting model. The standard was endorsed by the EU on 31 October 2017. The adoption of IFRS 16 will result in the Group recognising lease liabilities, and corresponding 'right-of-use' assets for agreements that are currently classified as operating leases. The Group's principal lease arrangements are for property, most notably a portfolio of office premises, and for a global car fleet, utilised primarily by our sales and marketing teams.

The Group will adopt IFRS 16 retrospectively with the cumulative effect of initially applying the standard as an adjustment to the opening balance of Retained earnings at 1 January 2019. The Group has a choice, on a lease-by-lease basis, to measure the right-of-use asset at either its carrying amount as if IFRS 16 had been applied since the commencement of the lease, or an amount equal to the lease liability, adjusted for accruals or prepayments. The Group has assessed the difference between the two methods as immaterial and will measure the right to use asset equal to the right to use liability, after adjusting for accruals and prepayments, recognising approximately $0.7 billion of right-of-use assets and $0.7 billion of lease liabilities upon initial adoption. In applying the Standard retrospectively in this way the Group will use one or more practical expedients, on a lease-by-lease basis, to leases previously classified as operating leases, including electing to not apply the retrospective treatment to leases for which the term ends within 12 months of initial application and excluding initial direct costs from the initial measurement of the right-of-use asset. Key judgements and estimates made in calculating

the initial impact of adoption include assessing whether arrangements contain a lease, determining the lease term, and calculating the discount rate.

The Group will apply IFRS 16's low-value and short-term exemptions prospectively. While the IFRS 16 opening lease liability is calculated differently from the current operating lease commitments, there are no material differences between the positions.

The adoption of IFRS 16 will have no impact on the Group's cash flows except to present cash outflows as financing, instead of operating. There will be an immaterial benefit to Operating profit and a corresponding increase in Finance expense from the presentation of a portion of lease costs as interest costs. Profit before tax and Earnings per share are not expected to be significantly impacted.

IFRIC 23 'Uncertainty Over Income Tax Treatments' is effective for accounting periods beginning on or after 1 January 2019 and provides further clarification on how to apply the recognition and measurement requirements in IAS 12 'Income Taxes'. It is applicable where there is uncertainty over income tax treatments. The EU endorsed IFRIC 23 on 24 October 2018. The adoption of IFRIC 23 will principally result in the Group measuring the effect of uncertainty on income tax positions using either the most likely amount or the expected value amount depending on which method the entity expects to better predict the resolution of the uncertainty.

The Group will adopt IFRIC 23 retrospectively with the cumulative effect of initially applying the interpretation recognised at 1 January 2019 as an adjustment to the opening balance of Retained earnings. The initial impact of adopting IFRIC 23 is not material. Profit before tax and Earnings per share are not anticipated to be significantly impacted.

In addition, the following amendments and interpretations have been issued:

- Amendments to IFRS 9 'Prepayment Features with Negative Compensation', effective for periods beginning on or after 1 January 2019.
- Amendments to IAS 28 'Long term Interests in Associates and Joint Ventures', effective for periods beginning on or after 1 January 2019.
- Amendments to IAS 19 'Plan Amendment, Curtailment or Settlement', effective for periods beginning on or after 1 January 2019.
- Amendments to IFRS 3 'Business Combinations', effective for period beginning on or after 1 January 2020.
- Amendments to IAS 1 'Presentation of Financial Statements' and IAS 8 'Accounting Policies, Changes in Accounting Estimates and Errors', effective for periods beginning on or after 1 January 2020.

The above amendments and interpretations are not expected to have a significant impact on the Group's net results. The amendments have not yet been endorsed by the EU.

1 Revenue

Product Sales

	2018					2017					2016				
	Emerging Markets $m	US $m	Europe $m	Rest of World $m	Total $m	Emerging Markets $m	US $m	Europe $m	Rest of World $m	Total $m	Emerging Markets $m	US $m	Europe $m	Rest of World $m	Total $m
Oncology:															
Tagrisso	347	869	314	330	1,860	135	405	187	228	955	10	254	76	83	423
Faslodex	154	537	221	116	1,028	115	492	256	78	941	96	438	228	68	830
Zoladex	409	8	133	202	752	353	15	141	226	735	355	35	156	270	816
Lynparza	51	345	190	61	647	18	141	130	8	297	7	127	81	3	218
Imfinzi	6	564	27	36	633	–	19	–	–	19	–	–	–	–	–
Iressa	286	26	109	97	518	251	39	112	126	528	233	23	120	137	513
Arimidex	132	–	31	49	212	118	7	34	58	217	110	14	37	71	232
Casodex	113	1	20	67	201	108	(1)	22	86	215	107	2	27	111	247
Calquence	–	62	–	–	62	–	3	–	–	3	–	–	–	–	–
Others	30	–	8	77	115	28	–	3	83	114	25	–	8	71	104
	1,528	2,412	1,053	1,035	6,028	1,126	1,120	885	893	4,024	943	893	733	814	3,383
Cardiovascular, Renal and Metabolism:															
Crestor	841	170	203	219	1,433	784	373	666	542	2,365	721	1,223	866	591	3,401
Farxiga	336	591	315	149	1,391	232	489	242	111	1,074	133	457	187	58	835
Brilinta	326	588	348	59	1,321	224	509	295	51	1,079	189	348	258	44	839
Seloken/Toprol-XL	641	39	19	13	712	593	37	52	13	695	536	95	90	16	737
Bydureon	8	475	81	20	584	9	458	88	19	574	4	463	100	11	578
Onglyza	172	223	89	59	543	130	320	104	57	611	142	376	132	70	720
Atacand	157	13	70	20	260	178	19	86	17	300	162	36	97	20	315
Byetta	8	74	29	15	126	12	114	34	16	176	24	164	45	21	254
Symlin	–	34	–	–	34	–	48	–	–	48	–	–	–	–	–
Others	206	(1)	76	25	306	205	4	92	43	344	228	40	119	50	437
	2,695	2,206	1,230	579	6,710	2,367	2,371	1,659	869	7,266	2,139	3,202	1,894	881	8,116
Respiratory:															
Symbicort	495	862	773	431	2,561	439	1,099	819	446	2,803	402	1,242	909	436	2,989
Pulmicort	995	116	90	85	1,286	840	156	92	88	1,176	698	174	99	90	1,061
Fasenra	1	218	32	46	297	–	1	–	–	1	–	–	–	–	–
Daliresp/Daxas	5	155	28	1	189	4	167	26	1	198	4	134	15	1	154
Tudorza/Eklira	1	25	74	10	110	2	66	73	9	150	1	77	83	9	170
Duaklir	1	–	91	3	95	–	–	77	2	79	1	–	60	2	63
Bevespi	–	33	–	–	33	–	16	–	–	16	–	–	–	–	–
Others	146	7	141	46	340	103	4	129	47	283	137	11	118	50	316
	1,644	1,416	1,229	622	4,911	1,388	1,509	1,216	593	4,706	1,243	1,638	1,284	588	4,753
Other:															
Nexium	690	306	235	471	1,702	684	499	248	521	1,952	690	554	251	537	2,032
Synagis	1	287	377	–	665	–	317	370	–	687	–	325	352	–	677
Seroquel XR/IR	118	108	107	28	361	151	193	127	37	508	159	572	190	46	967
Losec/Prilosec	161	7	70	34	272	140	11	77	43	271	128	10	83	55	276
FluMist/Fluenz	1	15	91	3	110	(1)	–	76	3	78	1	33	64	6	104
Movantik/Moventig	–	108	–	1	109	–	120	2	–	122	1	90	–	–	91
Others	53	11	67	50	181	294	29	93	122	538	490	48	213	169	920
	1,024	842	947	587	3,400	1,268	1,169	993	726	4,156	1,469	1,632	1,153	813	5,067
Product Sales	6,891	6,876	4,459	2,823	21,049	6,149	6,169	4,753	3,081	20,152	5,794	7,365	5,064	3,096	21,319

Product Sales represents net invoice value less estimated rebates, returns and chargebacks, which are considered to be key estimates. The major market where estimates are seen as significant is the US and when invoicing Product Sales in the US, we estimate the rebates and chargebacks we expect to pay. The adjustment in respect of prior year net US Product Sales in 2018 was 3.2% (2017: 8.9%; 2016: 6.0%).

Externalisation Revenue

	2018 $m	2017 $m	2016 $m
Global co-development and commercialisation of *Lynparza* and selumetinib with MSD	**790**	1,247	–
Licence agreement for *Crestor* in Spain with Almirall	**61**	–	–
Transfer of rights to *Zoladex* in the US and Canada to TerSera	**35**	250	–
Transfer of rights to anaesthetics medicines to Aspen	**–**	150	520
Licence of rights to brodalumab to Valeant and LEO Pharma	**–**	150	–
Co-development and commercialisation of MEDI8897 with Sanofi	**–**	127	–
Commercial rights to *Plendil* in China to CMS	**–**	–	298
Transfer of rights to *Toprol-XL* in the US to Aralez	**–**	–	175
Licence of rights to tralokinumab to LEO Pharma	**–**	–	115
Grant of authorised generic rights to various medicines in Japan	**41**	45	42
Other externalisation upfronts	**10**	114	158
Other externalisation milestones	**4**	87	203
Royalty income	**49**	108	119
Other externalisation revenue	**51**	35	53
	1,041	2,313	1,683

Included with Externalisation Revenue is $35m relating to contract liabilities recognised at 1 January 2018.

2 Operating profit

Operating profit includes the following significant items:

Selling, general and administrative costs

In 2018, Selling, general and administrative costs includes a credit of $482m (2017: charge of $208m; 2016: credit of $999m) resulting from changes in the fair value of Contingent consideration arising from the acquisition of the diabetes alliance from BMS. These adjustments reflect revised estimates for future sales performance for the products acquired and, as a result, revised estimates for future royalties payable.

In 2018, Selling, general and administrative costs also includes a credit of $113m (2017: $209m; 2016: $41m) resulting from changes in estimates of the cash flows arising from the put option over the non-controlling interest in Acerta Pharma.

In 2018, Selling, general and administrative costs also includes a credit of $219m (2017: charge of $241m; 2016: charge of $223m) of legal provisions relating to a number of legal proceedings in various jurisdictions in relation to several marketed products.

Further details of impairment charges for 2018, 2017 and 2016 are included in Notes 7 and 9.

Other operating income and expense

	2018 $m	2017 $m	2016 $m
Royalties			
Income	**96**	132	406
Amortisation	**(4)**	(45)	(86)
Gains on disposal of intangible assets	**1,885**	1,518	1,301
Gains on disposal of short-term investments	**–**	161	–
Net (losses)/gains on disposal of other non-current assets	**(8)**	24	29
Impairment of property, plant and equipment	**–**	(78)	–
Legal settlements	**374**	–	–
Other income	**277**	286	146
Other expense	**(93)**	(168)	(141)
Other operating income and expense	**2,527**	1,830	1,655

Royalty amortisation relates to intangible assets recorded in respect of income streams acquired with MedImmune, and upon the restructuring of a historical joint venture with MSD.

Gains on disposal of intangible assets in 2018 includes $695m on the disposal of Europe rights to *Nexium*, $527m on the disposal of rights to *Seroquel* in the UK, China and other international markets, $210m from the sale of rights to *Atacand* in Europe to Cheplapharm, milestone receipts of $172m from the disposal of the anaesthetics portfolio outside the US to Aspen and $139m from the sale of global rights to *Alvesco*, *Omnaris* and *Zetonna* to Covis.

Gains on disposal of intangible assets in 2017 includes $555m on the disposal of the remaining rights to the global anaesthetics portfolio, $301m on disposal of Europe rights to *Seloken* and $193m on disposal of the global rights to *Zomig*.

Gains on disposal of intangible assets in 2016 includes $368m on the disposal of the small molecule antibiotics assets in most markets outside the US, $321m on the disposal of Rest of World rights to *Rhinocort Aqua*, $231m on the disposal of global rights to MEDI2070 and $183m on the disposal of Rest of World rights to *Imdur*.

2 Operating profit *continued*

Restructuring costs

The tables below show the costs that have been charged in respect of restructuring programmes by cost category and type. Severance provisions are detailed in Note 20.

	2018 $m	2017 $m	2016 $m
Cost of sales	**432**	181	130
Research and development expense	**94**	201	178
Selling, general and administrative costs	**181**	347	823
Other operating income and expense	**(10)**	78	(24)
Total charge	**697**	807	1,107

	2018 $m	2017 $m	2016 $m
Severance costs	**41**	176	505
Accelerated depreciation and impairment	**259**	141	46
Other	**397**	490	556
Total charge	**697**	807	1,107

Other costs are those incurred in designing and implementing the Group's various restructuring initiatives, including costs of decommissioning sites impacted by changes to our global footprint, temporary lease costs during relocation, internal project costs, and external consultancy fees.

Financial instruments

Included within Operating profit are the following net gains and losses on financial instruments:

	2018 $m	2017 $m	2016 $m
Losses on forward foreign exchange contracts	**(100)**	(6)	(216)
Gains/(losses) on receivables and payables	**43**	(30)	132
Gains on disposal of short-term investments	**–**	161	–
Gains on other available for sale investments	**–**	34	–
Total	**(57)**	159	(84)

3 Finance income and expense

	2018 $m	2017 $m	2016 $m
Finance income			
Returns on fixed deposits and equity securities	**10**	8	8
Returns on short-term deposits	**86**	62	35
Fair value gains on debt and interest rate swaps	**–**	4	–
Net exchange gains	**–**	–	8
Discount unwind on other long-term assets	**6**	10	16
Interest on tax receivables	**36**	29	–
Total	**138**	113	67
Finance expense			
Interest on debt and commercial paper	**(673)**	(612)	(565)
Interest on overdrafts, finance leases and other financing costs	**(68)**	(52)	(52)
Net interest on post-employment defined benefit plan net liabilities (Note 21)	**(52)**	(49)	(63)
Net exchange losses	**(51)**	(148)	–
Discount unwind on contingent consideration arising from business combinations (Note 19)	**(416)**	(402)	(497)
Discount unwind on other long-term liabilities	**(154)**	(245)	(190)
Fair value losses on debt and interest rate swaps	**(2)**	–	(17)
Interest on tax payables	**(3)**	–	–
Total	**(1,419)**	(1,508)	(1,384)
Net finance expense	**(1,281)**	(1,395)	(1,317)

Financial instruments

Included within finance income and expense are the following net gains and losses on financial instruments:

	2018 $m	2017 $m	2016 $m
Interest and fair value adjustments in respect of debt designated at fair value through profit or loss, net of derivatives	**(11)**	8	(14)
Interest and changes in carrying values of debt designated as hedged items in fair value hedges, net of derivatives	**(28)**	(35)	(21)
Interest and fair value changes on fixed and short-term deposits, equity securities, other derivatives and tax balances	**96**	52	74
Interest on debt, overdrafts, finance leases and commercial paper held at amortised cost	**(619)**	(559)	(553)

Fair value losses of $13m (2017: $9m; 2016: $29m) on interest rate fair value hedging instruments and $10m fair value gains (2017: $9m; 2016: $30m) on the related hedged items have been included within interest and changes in carrying values of debt designated as hedged items, net of derivatives. All fair value hedge relationships were effective during the year.

Fair value losses of $13m (2017: $10m; 2016: $12m) on derivatives related to debt instruments designated at fair value through profit or loss and $13m fair value gains (2017: $3m; 2016: $9m) on debt instruments designated at fair value through profit or loss have been included within interest and fair value adjustments in respect of debt designated at fair value through profit or loss, net of derivatives. Ineffectiveness on the net investment hedge taken to profit was $nil (2017: $nil; 2016: $nil).

4 Taxation

Taxation recognised in the Consolidated Statement of Comprehensive Income is as follows:

	2018 $m	2017 $m	2016 $m
Current tax expense			
Current year	**711**	665	384
Adjustment to prior years	**38**	(287)	(14)
Total	**749**	378	370
Deferred tax expense			
Origination and reversal of temporary differences	**(644)**	(1,113)	(94)
Adjustment to prior years	**(162)**	94	(130)
Total	**(806)**	(1,019)	(224)
Taxation recognised in the profit for the period	**(57)**	(641)	146

Taxation relating to components of Other comprehensive income is as follows:

	2018 $m	2017 $m	2016 $m
Current and deferred tax			
Items that will not be reclassified to profit or loss:			
Remeasurement of the defined benefit liability	**37**	24	110
Share-based payments	**–**	9	51
Net losses on equity investments measured at fair value through other comprehensive income	**30**	–	–
Deferred tax impact of reduction in US, Sweden and other tax rates	**(11)**	(17)	(25)
Total	**56**	16	136
Items that may be reclassified subsequently to profit or loss:			
Foreign exchange arising on consolidation	**69**	(79)	63
Foreign exchange arising on designating borrowings in net investment hedges	**–**	14	83
Net available for sale losses/(gains) recognised in other comprehensive income	**–**	2	(61)
Other	**–**	–	1
Deferred tax impact of reduction in US, Sweden and other tax rates	**(18)**	30	–
Total	**51**	(33)	86
Taxation relating to components of other comprehensive income	**107**	(17)	222

The Reported Tax Rate of (3)% in the year benefitted from a favourable net adjustment of $297m to Deferred taxes, reflecting the recently announced Dutch and Swedish income tax rate reductions, and a favourable adjustment of $188m on the release of provisions for tax contingencies on expiry of statute of limitations and conclusion of tax authority review.

Absent these benefits, the Reported Tax Rate for the year would have been 21%.

The cash tax paid for the year was $537m which was 27% of Profit before tax.

Taxation has been provided at current rates on the profits earned for the periods covered by the Group Financial Statements. The 2018 prior period current tax adjustment relates mainly to net reductions in provisions for tax contingencies and tax accrual to tax return adjustments. The 2017 prior period current tax adjustment relates mainly to net reductions in provisions for tax contingencies totalling $105m and tax accrual to tax return adjustments. The 2016 prior period current tax adjustment relates mainly to net reductions in provisions for tax contingencies totalling $67m and tax accrual to tax return adjustments.

The 2018 and 2017 prior period deferred tax adjustments relate mainly to tax accrual to return adjustments. The 2016 prior period deferred tax adjustments relate mainly to tax accrual to return adjustments and releases in provisions for tax contingencies.

To the extent that dividends remitted from overseas subsidiaries, joint ventures and associates are expected to result in additional taxes, appropriate amounts have been provided for. No deferred tax has been provided for unremitted earnings of Group companies overseas as these are considered permanently employed in the business of these companies. Unremitted earnings may be liable to overseas taxes and/or UK taxation (after allowing for double tax relief) if distributed as dividends. The aggregate amount of temporary differences associated with investments in subsidiaries and branches for which Deferred tax liabilities have not been recognised totalled approximately $8,144m at 31 December 2018 (2017: $8,359m; 2016: $6,884m).

Factors affecting future tax charges

As a group with worldwide operations, AstraZeneca is subject to several factors that may affect future tax charges, principally the levels and mix of profitability in different jurisdictions, transfer pricing regulations, tax rates imposed and tax regime reforms.

Details of the material tax exposures and items currently under audit, negotiation and review are set out in Note 29.

4 Taxation *continued*

Tax reconciliation to UK statutory rate

The table below reconciles the UK statutory tax charge to the Group's total tax (credit)/charge:

	2018 $m	2017 $m	2016 $m
Profit before tax	**1,993**	2,227	3,552
Notional taxation charge at UK corporation tax rate of 19% (2017: 19.25%; 2016: 20%)	**379**	429	710
Differences in effective overseas tax rates	**18**	(212)	(233)
Deferred tax credit relating to reduction in Dutch, Swedish and other tax rates[1]	**(334)**	(616)	(16)
Unrecognised deferred tax asset[2]	**7**	(105)	242
Items not deductible for tax purposes	**167**	203	132
Items not chargeable for tax purposes	**(6)**	(14)	(7)
Other items[3]	**(164)**	(133)	(538)
Adjustments in respect of prior periods[4]	**(124)**	(193)	(144)
Total tax (credit)/charge for the year	**(57)**	(641)	146

[1] The 2018 item relates to the recent reduction in the Dutch and Swedish Corporate Income Tax rates (credit of $297m) and other (credit of $37m). The Dutch Corporate Income Tax rate reduces from 25% to 22.55% effective from 1 January 2020 and to 20.5% effective from 1 January 2021. The Swedish Income Tax rate reduces from 22% to 21.4% effective from 1 January 2019 and to 20.6% effective from 1 January 2021. The 2017 item relates to the reduction in the US Federal Income Tax rate from 35% to 21% effective from 1 January 2018 (credit of $617m) and other (charge of $1m). The 2016 item relates to the reduction in the UK Statutory Corporation Tax rate from 18% to 17% effective from 1 April 2020.
[2] The 2017 item relates to recognition of previously unrecognised net deferred tax assets.
[3] Other items in 2018 relate to a credit of $188m relating to the release of tax contingencies following the expiry of the relevant statute of limitations and on the conclusion of tax authority review partially offset by a provision build for transfer pricing and other contingencies (charge $24m). Other items in 2017 relate to the release of tax contingencies following the expiry of the relevant statute of limitations (credit $178m) partially offset by a provision build for transfer pricing and other contingencies (charge $45m). Other items in 2016 relate to the release of tax contingencies following agreements between the Canadian tax authority and UK and Swedish tax authorities in respect of transfer pricing arrangements for the 13 year period from 2004 to 2016 (credit $453m) and release of certain tax contingencies following the expiry of the relevant statute of limitations (credit $280m) partially offset by a provision build for transfer pricing contingencies (charge $195m).
[4] Further details explaining the adjustments in respect of prior periods is set out above on page 163.

AstraZeneca is domiciled in the UK but operates in other countries where the tax rates and laws are different to those in the UK. The impact on differences in effective overseas tax rates on the Group's overall tax charge is noted above. Profits arising from our manufacturing operation in Puerto Rico are granted special status and are taxed at a reduced rate compared with the normal rate of tax in that territory under a tax incentive grant continuing until 2031.

Deferred tax

The movements in the net deferred tax balance during the year are as follows:

	Intangibles, property, plant & equipment[1] $m	Pension and post-retirement benefits $m	Inter-company inventory transfers $m	Untaxed reserves[2] $m	Losses and tax credits carried forward[3] $m	Accrued expenses and other $m	Total $m
Net deferred tax balance at 1 January 2016	(3,261)	427	738	(692)	804	613	(1,371)
Taxation expense	(132)	11	314	(53)	151	(67)	224
Other comprehensive income	83	101	–	–	–	(24)	160
Additions through business combinations[4]	(1,827)	–	–	–	50	–	(1,777)
Exchange	(1)	(74)	(38)	48	(1)	(13)	(79)
Other movements[5]	(11)	–	–	–	–	–	(11)
Net deferred tax balance at 31 December 2016	(5,149)	465	1,014	(697)	1,004	509	(2,854)
Income statement	1,393	(8)	(231)	159	(128)	(166)	1,019
Other comprehensive income	(84)	9	–	–	–	35	(40)
Exchange	(12)	43	48	(62)	30	22	69
Net deferred tax balance at 31 December 2017	(3,852)	509	831	(600)	906	400	(1,806)
Net adjustment to the opening balance of Retained earnings	**–**	**–**	**–**	**–**	**–**	**12**	**12**
Income statement	**401**	**(15)**	**179**	**(4)**	**129**	**116**	**806**
Other comprehensive income	**56**	**26**	**–**	**–**	**–**	**31**	**113**
Equity[6]	**–**	**–**	**–**	**–**	**–**	**12**	**12**
Exchange	**27**	**(25)**	**(30)**	**47**	**(27)**	**(36)**	**(44)**
Net deferred tax balance at 31 December 2018[7]	**(3,368)**	**495**	**980**	**(557)**	**1,008**	**535**	**(907)**

[1] Includes deferred tax on contingent liabilities in respect of intangibles.
[2] Untaxed reserves relate to taxable profits where the tax liability is deferred to later periods.
[3] Includes losses and tax credits carried forward which will expire within 1 to 20 years.
[4] The deferred tax liability of $1,777m relates to the acquisition of Acerta Pharma (see Note 25).
[5] Arising on the deconsolidation of Entasis as detailed in Note 10.
[6] Deferred tax movement on share-based payments recorded through equity.
[7] The UK had a net deferred tax asset of $691m as at 31 December 2018, mainly in respect of losses and pensions and post-retirement benefits, which has been recognised on the basis of sufficient forecast future taxable profits against which the deductible temporary differences can be utilised.

The net deferred tax balance, before the offset of balances within countries, consists of:

	Intangibles, property, plant & equipment $m	Pension and post-retirement benefits $m	Inter-company inventory transfers $m	Untaxed reserves $m	Losses and tax credits carried forward $m	Accrued expenses and other $m	Total $m
Deferred tax assets at 31 December 2016	875	465	1,014	–	1,004	629	3,987
Deferred tax liabilities at 31 December 2016	(6,024)	–	–	(697)	–	(120)	(6,841)
Net deferred tax balance at 31 December 2016	(5,149)	465	1,014	(697)	1,004	509	(2,854)
Deferred tax assets at 31 December 2017	1,226	559	1,011	–	957	885	4,638
Deferred tax liabilities at 31 December 2017	(5,078)	(50)	(180)	(600)	(51)	(485)	(6,444)
Net deferred tax balance at 31 December 2017	(3,852)	509	831	(600)	906	400	(1,806)
Deferred tax assets at 31 December 2018	**1,071**	**521**	**1,287**	**–**	**1,103**	**913**	**4,895**
Deferred tax liabilities at 31 December 2018	**(4,439)**	**(26)**	**(307)**	**(557)**	**(95)**	**(378)**	**(5,802)**
Net deferred tax balance at 31 December 2018	**(3,368)**	**495**	**980**	**(557)**	**1,008**	**535**	**(907)**

Analysed in the statement of financial position, after offset of balances within countries, as:

	2018 $m	2017 $m	2016 $m
Deferred tax assets	**2,379**	2,189	1,102
Deferred tax liabilities	**(3,286)**	(3,995)	(3,956)
Net deferred tax balance	**(907)**	(1,806)	(2,854)

Unrecognised deferred tax assets

Deferred tax assets of $444m have not been recognised in respect of deductible temporary differences, which include items which will expire within 1 to 20 years (2017: $420m; 2016: $542m) because it is not probable that future taxable profit will be available against which the Group can utilise the benefits therefrom.

5 Earnings per $0.25 Ordinary Share

	2018	2017	2016
Profit for the year attributable to equity holders ($m)	**2,155**	3,001	3,499
Basic earnings per Ordinary Share	**$1.70**	$2.37	$2.77
Diluted earnings per Ordinary Share	**$1.70**	$2.37	$2.76
Weighted average number of Ordinary Shares in issue for basic earnings (millions)	**1,267**	1,266	1,265
Dilutive impact of share options outstanding (millions)	**–**	1	1
Diluted weighted average number of Ordinary Shares in issue (millions)	**1,267**	1,267	1,266

The earnings figures used in the calculations above are post-tax.

6 Segment information

AstraZeneca is engaged in a single business activity of biopharmaceuticals and the Group does not have multiple operating segments. AstraZeneca's biopharmaceuticals business consists of the discovery and development of new products, which are then manufactured, marketed and sold. All of these functional activities take place (and are managed) globally on a highly integrated basis. These individual functional areas are not managed separately.

The SET, established and chaired by the CEO, is the vehicle through which he exercises the authority delegated to him from the Board for the management, development and performance of our business. It is considered that the SET is AstraZeneca's chief operating decision making body (as defined by IFRS 8). The operation of the SET is principally driven by the management of the commercial operations, R&D, and manufacturing and supply. All significant operating decisions are taken by the SET. While members of the SET have responsibility for implementation of decisions in their respective areas, operating decision making is at SET level as a whole. Where necessary, these are implemented through cross-functional sub-committees that consider the Group-wide impact of a new decision. For example, product launch decisions would be initially considered by the SET and, on approval, passed to an appropriate sub-team for implementation. The impacts of being able to develop, produce, deliver and commercialise a wide range of pharmaceutical products drive the SET decision making process.

In assessing performance, the SET reviews financial information on an integrated basis for the Group as a whole, substantially in the form of, and on the same basis as, the Group's IFRS Financial Statements. The high upfront cost of discovering and developing new products coupled with the relatively insignificant and stable unit cost of production means that there is not the clear link that exists in many manufacturing businesses between the revenue generated on an individual product sale and the associated cost and hence margin generated on a product. Consequently, the profitability of individual drugs or classes of drugs is not considered a key measure of performance for the business and is not monitored by the SET.

Resources are allocated on a Group-wide basis according to need. In particular, capital expenditure, in-licensing, and R&D resources are allocated between activities on merit, based on overall therapeutic considerations and strategy under the aegis of the Group's Early Stage Product Committees and a single Late Stage Product Committee.

6 Segment information *continued*

Geographic areas

The following table shows information for Total Revenue by geographic area and material countries. The additional tables show the Operating profit and Profit before tax made by companies located in that area, together with segment assets, segment assets acquired, net operating assets, and Property, plant and equipment owned by the same companies; export sales and the related profit are included in the area/country where the legal entity resides and from which those sales were made.

	Total Revenue		
	2018 $m	2017 $m	2016 $m
UK	**2,390**	3,240	1,849
Continental Europe			
France	**617**	701	899
Germany	**592**	541	615
Italy	**426**	514	529
Spain	**396**	447	440
Sweden	**477**	842	1,522
Others	**1,312**	1,512	1,575
	3,820	4,557	5,580
The Americas			
Canada	**483**	482	495
US	**7,240**	6,666	7,828
Others	**806**	809	846
	8,529	7,957	9,169
Asia, Africa & Australasia			
Australia	**313**	377	385
China	**3,778**	2,955	2,650
Japan	**1,952**	2,172	2,145
Others	**1,308**	1,207	1,224
	7,351	6,711	6,404
Total Revenue	**22,090**	22,465	23,002

Total revenue outside of the UK totalled $19,700m for the year ended 31 December 2018 (2017: $19,225m; 2016: $21,153m).

	Operating (loss)/profit			(Loss)/profit before tax		
	2018 $m	2017 $m	2016 $m	**2018 $m**	2017 $m	2016 $m
UK	**(66)**	(694)	(526)	**(514)**	(1,146)	(950)
Continental Europe	**3,671**	2,482	3,695	**3,179**	1,918	3,136
The Americas	**(757)**	1,242	1,259	**(1,171)**	822	919
Asia, Africa & Australasia	**539**	647	474	**499**	633	447
Continuing operations	**3,387**	3,677	4,902	**1,993**	2,227	3,552

	Non-current assets[1]			Total assets		
	2018 $m	2017 $m	2016 $m	**2018 $m**	2017 $m	2016 $m
UK	**4,828**	5,371	5,127	**13,573**	12,842	12,704
Continental Europe	**14,529**	16,305	15,731	**17,119**	18,962	18,174
The Americas	**22,191**	24,811	26,044	**26,381**	28,180	28,792
Asia, Africa & Australasia	**976**	1,024	917	**3,578**	3,370	2,856
Continuing operations	**42,524**	47,511	47,819	**60,651**	63,354	62,526

	Assets acquired[2]			Net operating assets[3]		
	2018 $m	2017 $m	2016 $m	**2018 $m**	2017 $m	2016 $m
UK	**556**	400	362	**3,471**	3,351	3,306
Continental Europe	**530**	629	8,494	**8,913**	10,228	8,479
The Americas	**356**	585	688	**18,598**	20,339	20,969
Asia, Africa & Australasia	**105**	138	129	**1,037**	1,198	1,030
Continuing operations	**1,547**	1,752	9,673	**32,019**	35,116	33,784

[1] Non-current assets exclude Deferred tax assets and Derivative financial instruments.
[2] Included in Assets acquired are those assets that are expected to be used during more than one period (Property, plant and equipment, Goodwill and Intangible assets).
[3] Net operating assets exclude short-term investments, cash, short-term borrowings, loans, Derivative financial instruments, retirement benefit obligations and non-operating receivables and payables.

	Property, plant and equipment		
	2018 $m	2017 $m	2016 $m
UK	**1,605**	1,455	1,026
Sweden	**1,456**	1,508	1,142
US	**2,844**	3,055	3,233
Rest of the world	**1,516**	1,597	1,447
Continuing operations	**7,421**	7,615	6,848

Geographic markets

The table below shows Product Sales in each geographic market in which customers are located.

	2018 $m	2017 $m	2016 $m
UK	**469**	489	487
Continental Europe	**4,388**	4,712	4,987
The Americas	**8,177**	7,467	8,717
Asia, Africa & Australasia	**8,015**	7,484	7,128
Continuing operations	**21,049**	20,152	21,319

Product Sales are recognised when control of the goods has been transferred to a third party. In general this is upon delivery of the products to wholesalers. One wholesaler (2017: zero; 2016: one) individually represented greater than 10% of Product Sales. The value of these transactions recorded as Product Sales were $2,704m (2017: N/A; 2016: $2,851m).

7 Property, plant and equipment

	Land and buildings $m	Plant and equipment $m	Assets in course of construction $m	Total property, plant and equipment $m
Cost				
At 1 January 2016	4,812	7,468	1,568	13,848
Capital expenditure	29	206	1,214	1,449
Transfer of assets into use	222	109	(331)	–
Disposals and other movements	(236)	(700)	(16)	(952)
Exchange adjustments	(211)	(540)	(143)	(894)
At 31 December 2016	4,616	6,543	2,292	13,451
Capital expenditure	39	198	1,074	1,311
Transfer of assets into use	525	567	(1,092)	–
Disposals and other movements	(367)	(577)	–	(944)
Exchange adjustments	210	452	159	821
At 31 December 2017	5,023	7,183	2,433	14,639
Capital expenditure	**25**	**99**	**910**	**1,034**
Transfer of assets into use	**429**	**594**	**(1,023)**	**–**
Disposals and other movements	**50**	**(427)**	**(14)**	**(391)**
Exchange adjustments	**(161)**	**(353)**	**(129)**	**(643)**
At 31 December 2018	**5,366**	**7,096**	**2,177**	**14,639**
Depreciation				
At 1 January 2016	2,253	5,182	–	7,435
Charge for year	185	424	–	609
Impairment	2	–	–	2
Disposals and other movements	(222)	(656)	–	(878)
Exchange adjustments	(126)	(439)	–	(565)
At 31 December 2016	2,092	4,511	–	6,603
Charge for year	182	442	–	624
Impairment	78	–	–	78
Disposals and other movements	(249)	(501)	–	(750)
Exchange adjustments	128	341	–	469
At 31 December 2017	2,231	4,793	–	7,024
Charge for year	**202**	**412**	**–**	**614**
Impairment	**150**	**98**	**43**	**291**
Disposals and other movements	**10**	**(336)**	**(43)**	**(369)**
Exchange adjustments	**(89)**	**(253)**	**–**	**(342)**
At 31 December 2018	**2,504**	**4,714**	**–**	**7,218**
Net book value				
At 31 December 2016	2,524	2,032	2,292	6,848
At 31 December 2017	2,792	2,390	2,433	7,615
At 31 December 2018	**2,862**	**2,382**	**2,177**	**7,421**

Impairment charges in 2018 were recognised for Land and buildings and Plant and equipment as a result of the announcement of the closure of Boulder and Longmont, Colorado manufacturing centres. These charges have been recognised in Cost of sales.

Included within other movements in 2018 is a transfer (cost of $120m and accumulated depreciation of $75m) from Plant and equipment to Land and buildings.

	2018 $m	2017 $m	2016 $m
The net book value of land and buildings comprised:			
Freeholds	**2,567**	2,514	2,326
Leaseholds	**295**	278	198

Included within Plant and equipment are Information Technology assets held under finance leases with a net book value of $nil (2017: $nil; 2016: $43m).

8 Goodwill

	2018 $m	2017 $m	2016 $m
Cost			
At 1 January	**12,143**	11,969	12,113
Additions through business combinations (Note 26)	**–**	–	19
Exchange and other adjustments	**(121)**	174	(163)
At 31 December	**12,022**	12,143	11,969
Amortisation and impairment losses			
At 1 January	**318**	311	313
Exchange and other adjustments	**(3)**	7	(2)
At 31 December	**315**	318	311
Net book value at 31 December	**11,707**	11,825	11,658

Goodwill is tested for impairment at the operating segment level, this being the level at which goodwill is monitored for internal management purposes. As detailed in Note 6, the Group does not have multiple operating segments and is engaged in a single business activity of biopharmaceuticals.

Recoverable amount is determined on a fair value less costs to sell basis using the market value of the Company's outstanding Ordinary Shares. Our market capitalisation is compared to the book value of the Group's net assets and this indicates a significant surplus at 31 December 2018 (and 31 December 2017 and 31 December 2016).

As a further check, we also perform a discounted cash flow calculation whereby we risk adjust projections of the Group's post-tax cash flows over 10 years. This length of time is considered by the Board as a reasonable period given the long development and life-cycle of a medicine. The projections include assumptions about product launches, competition from rival products and pricing policy as well as the possibility of generics entering the market. In setting these assumptions we consider our past experience, external sources of information (including information on expected increases and ageing of populations in our established markets and the expanding patient populations in newer markets), our knowledge of competitor activity and our assessment of future changes in the pharmaceutical industry. The 10-year period is covered by internal budgets and forecasts. Given that internal budgets and forecasts are prepared for all projections, no general growth rates are used to extrapolate internal budget and forecast amounts. No terminal value is included as the recoverable amount determined by the cash flows exceed the carrying value of net assets without inclusion of a terminal value.

AstraZeneca's post-tax weighted average cost of capital (7.0% for 2018, 2017 and 2016) is used in the calculation to discount the cash flows to reflect the impact of risks relevant to the Group and the time value of money.

No goodwill impairment was identified.

9 Intangible assets

	Product, marketing and distribution rights $m	Other intangibles $m	Software development costs $m	Total $m
Cost				
At 1 January 2016	35,318	2,795	2,019	40,132
Additions through business combinations (Note 26)	7,307	–	–	7,307
Additions – separately acquired	789	32	77	898
Disposals	(339)	(15)	(141)	(495)
Exchange and other adjustments	(1,472)	(232)	(127)	(1,831)
At 31 December 2016	41,603	2,580	1,828	46,011
Additions – separately acquired	397	7	37	441
Disposals	(249)	(67)	(62)	(378)
Exchange and other adjustments	1,162	116	108	1,386
At 31 December 2017	42,913	2,636	1,911	47,460
Additions – separately acquired	**476**	**–**	**37**	**513**
Transferred to assets held for sale (Note 17)	**(2,486)**	**–**	**–**	**(2,486)**
Disposals	**(630)**	**–**	**(16)**	**(646)**
Exchange and other adjustments	**(1,137)**	**(110)**	**(93)**	**(1,340)**
At 31 December 2018	**39,136**	**2,526**	**1,839**	**43,501**
Amortisation and impairment losses				
At 1 January 2016	14,104	1,773	1,609	17,486
Amortisation for year	1,454	162	85	1,701
Impairment	43	1	1	45
Disposals	(25)	(15)	(124)	(164)
Exchange and other adjustments	(481)	(85)	(77)	(643)
At 31 December 2016	15,095	1,836	1,494	18,425
Amortisation for year	1,627	118	84	1,829
Impairment	488	–	3	491
Disposals	(19)	–	(52)	(71)
Exchange and other adjustments	467	50	81	598
At 31 December 2017	17,658	2,004	1,610	21,272
Amortisation for year	**2,016**	**69**	**80**	**2,165**
Impairment	**683**	**–**	**–**	**683**
Transferred to assets held for sale (Note 17)	**(1,504)**	**–**	**–**	**(1,504)**
Disposals	**(294)**	**–**	**(13)**	**(307)**
Exchange and other adjustments	**(652)**	**(38)**	**(77)**	**(767)**
At 31 December 2018	**17,907**	**2,035**	**1,600**	**21,542**
Net book value				
At 31 December 2016	26,508	744	334	27,586
At 31 December 2017	25,255	632	301	26,188
At 31 December 2018	**21,229**	**491**	**239**	**21,959**

Other intangibles consist mainly of research and device technologies.

9 Intangible assets *continued*

Amortisation charges are recognised in profit as follows:

	Product, marketing and distribution rights $m	Other intangibles $m	Software development costs $m	Total $m
Year ended 31 December 2016				
Cost of sales	124	–	–	124
Research and development expense	–	48	–	48
Selling, general and administrative costs	1,327	31	85	1,443
Other operating income and expense	3	83	–	86
Total	1,454	162	85	1,701
Year ended 31 December 2017				
Cost of sales	149	–	–	149
Research and development expense	–	43	–	43
Selling, general and administrative costs	1,478	30	84	1,592
Other operating income and expense	–	45	–	45
Total	1,627	118	84	1,829
Year ended 31 December 2018				
Cost of sales	**187**	**–**	**–**	**187**
Research and development expense	**–**	**33**	**–**	**33**
Selling, general and administrative costs	**1,829**	**32**	**80**	**1,941**
Other operating income and expense	**–**	**4**	**–**	**4**
Total	**2,016**	**69**	**80**	**2,165**

Impairment charges are recognised in profit as follows:

	Product, marketing and distribution rights $m	Other intangibles $m	Software development costs $m	Total $m
Year ended 31 December 2016				
Research and development expense	32	1	–	33
Selling, general and administrative costs	11	–	1	12
Total	43	1	1	45
Year ended 31 December 2017				
Research and development expense	101	–	–	101
Selling, general and administrative costs	387	–	3	390
Total	488	–	3	491
Year ended 31 December 2018				
Research and development expense	**539**	**–**	**–**	**539**
Selling, general and administrative costs	**144**	**–**	**–**	**144**
Total	**683**	**–**	**–**	**683**

Impairment charges and reversals

Intangible assets under development and not available for use are tested annually for impairment and other intangible assets are tested when there is an indication of impairment. Recoverable amount is determined as the higher of value in use or fair value less costs to sell using discounted cash flow calculations where the products' expected post-tax cash flows are risk-adjusted over their estimated remaining useful economic life. The projections are covered by internal budgets and forecasts. The risk-adjusted cash flows are discounted using AstraZeneca's post-tax weighted average cost of capital (7% for 2018, 2017 and 2016).

The estimates used in calculating the recoverable amount are highly sensitive and depend on assumptions specific to the nature of the Group's activities including:

- outcome of R&D activities;
- probability of technical and regulatory success;
- market volume, share and pricing;
- amount and timing of projected future cash flows; and
- sales erosion curves following patent expiry.

In 2018, the Group recorded impairment charges of $144m in respect of launched products *Eklira* ($114m, revised carrying value of $396m) and *Movantik* ($30m, revised carrying value of $59m). Impairment charges recorded against products in development related to MEDI0680 ($470m) and other intangible assets ($95m).

In 2017, the Group recorded an impairment charge of $491m in respect of launched products *Byetta* ($92m, revised carrying value of $407m), *FluMist* ($121m, revised carrying value of $267m) and *Movantik* ($174m, revised carrying value of $106m). Impairment charges recorded against products in development related to tralokinumab ($53m) and other intangible assets ($51m).

Impairment charges recorded in 2016 relates to the termination, or reassessment of the likelihood of success, of several individual projects, none of which had significant capitalised values.

The impairments recorded on launched products were a consequence of revised market volume, share and price assumptions and, for *FluMist* in 2017, the US market expected timing of renewed recommendation from the Advisory Committee on Immunization Practices (ACIP) under the Centers for Disease Control and Prevention. These impairments were calculated using value in use models. Impairments recorded on products in development were a consequence of failed or poor performing trials, with the individual assets being fully impaired.

When launched products, such as the ones detailed above, are partially impaired, the carrying values of these assets in future periods are particularly sensitive to changes in forecast assumptions, including those assumptions set out above, as the asset is impaired down to its recoverable amount.

Assets that are particularly sensitive to variations in valuation assumptions include *Byetta* (carrying value as at 31 December 2018 of $316m) and Ardea (carrying value of $1,172m). The *Byetta* valuation, impaired in 2017, is most sensitive to the expected timing of a generic entering the market. Increasing the probability of a generic entry into the market by 20% from our base valuation model would result in an impairment charge of $25m. No impairment charge has been recorded on Ardea, a product in development, with a net book value of $1,172m. The Ardea valuation is particularly sensitive to variations in the probability of technical and regulatory success ('PTRS') assumptions. Sensitivities performed at the year end on the Ardea asset included reducing the PTRS by 5 percentage points. Applying this sensitivity would result in an impairment charge against the Ardea intangible asset of approximately $70m.

The Group has performed an assessment on assets which have had impairments recorded in previous periods to determine if any reversals of impairments were required and none were identified with the exception of a reversal of $28m in respect of an asset previously impaired prior to 2016. This assessment included *FluMist* where an impairment of $121m was taken in 2017 and where currently the uncertainty remains around long term sales potential in the US following the reinstatement of the US recommendation by ACIP in 2018.

Significant assets

	Carrying value $m	Remaining amortisation period
Intangible assets arising from the acquisition of Acerta Pharma	6,745	14 years
Intangible assets arising from the acquisition of ZS Pharma	3,067	13 years
Farxiga/*Forxiga* intangible assets acquired from BMS	1,177	9 years
Intangible assets arising from the acquisition of Ardea[1]	1,172	Not amortised
Intangible assets arising from the restructuring of a historical joint venture with MSD	1,092	1 to 12 years
RSV franchise assets arising from the acquisition of MedImmune	1,068	7 years
Bydureon intangible assets acquired from BMS	988	12 years
Intangible assets arising from the acquisition of Pearl Therapeutics	828	10 years
Other diabetes intangible assets acquired from BMS	795	4 to 7 years
Onglyza intangible assets acquired from BMS	752	5 years
Respiratory intangible assets acquired from Almirall and Actavis	733	1 to 20 years
Intangible assets arising from the acquisition of Omthera[1]	533	Not amortised
Roxadustat intangible assets acquired from FibroGen[1]	327	Not amortised

[1] Assets in development are not amortised but are tested annually for impairment.

All the assets listed above are classified as Product, marketing and distribution rights.

10 Investments in associates and joint ventures

	2018 $m	2017 $m	2016 $m
At 1 January	**103**	99	85
Additions	**187**	76	65
Share of after tax losses	**(113)**	(55)	(33)
Unrecognised profit on transactions with joint ventures	**(64)**	(27)	–
Exchange adjustments	**(24)**	10	(18)
At 31 December	**89**	103	99

On 23 February 2018, AstraZeneca entered into an agreement with a consortium of investors to form a new, US domiciled standalone company called Viela Bio. This agreement was to divest a number of assets in MedImmune's non-core inflammation and autoimmunity portfolio to Viela, including MEDI-551, which is an advanced Phase IIb/III asset, and a number of other clinical & pre-clinical assets. AstraZeneca contributed $142m in initial funds and has a 45% interest in the joint venture. Consideration was $142m and a restricted disposal gain of $63m was recognised in Other operating income.

On 27 November 2017, AstraZeneca entered into a joint venture agreement with Chinese Future Industry Investment Fund (FIIF), to discover, develop and commercialise potential new medicines to help meet unmet needs globally, and to bring innovative new medicines to patients in China faster. The agreement resulted in the formation of a joint venture entity based in China, Dizal (Jiangsu) Pharmaceutical Co., Limited. AstraZeneca contributed $55m in initial funds and has a 48% interest in the joint venture. The joint venture entity purchased exclusive rights from AstraZeneca in 2017 to develop and commercialise three potential medicines currently in pre-clinical development in the areas of oncology, cardiovascular and metabolic diseases, and respiratory, resulting in a disposal gain of $28m for AstraZeneca recognised in Other operating income.

In 2015, AstraZeneca established the subsidiaries Entasis Therapeutics Ltd and Entasis Therapeutics Inc. (collectively known as 'Entasis') for the development of early-stage infection assets. In March 2016, Entasis closed a Series B financing, raising $25m from four third party investors. Under the funding agreement, a new board of directors was appointed, and a voting rights agreement was put in place committing to reduce AstraZeneca's voting interest to approximately 49%. The results of Entasis were consequently deconsolidated in 2016 from the Group, with an investment in associate of $24m recognised. There was no gain or loss recognised on deconsolidation. During 2017, the voting interests were further reduced and at 31 December 2017 were approximately 18%. Entasis completed an IPO on 26 September 2018. A gain was made of $25m recognised in profit. After the IPO AstraZeneca's holding was reduced to 16.5% with only one member on an increased board size of 14. As a result, the investment is no longer accounted for as an associate and is now included in equity securities held at FVOCI.

10 Investments in associates and joint ventures *continued*

On 1 December 2015, AstraZeneca entered into a joint venture agreement with Fujifilm Kyowa Kirin Biologics Co., Ltd. to develop a biosimilar using the combined capabilities of the two parties. The agreement resulted in the formation of a joint venture entity based in the UK, Centus Biotherapeutics Limited. AstraZeneca contributed $45m in cash to the joint venture entity and has a 50% interest in the joint venture. An additional contribution of $10m was made in 2016 and additional contributions totalling $20m were made in 2017 with further contributions of $27m made in 2018.

On 30 April 2014, AstraZeneca entered into a joint venture agreement with Samsung Biologics Co., Ltd. to develop a biosimilar using the combined capabilities of the two parties. The agreement resulted in the formation of a joint venture entity based in the UK, Archigen Biotech Limited, with a branch in South Korea. AstraZeneca contributed $70m in cash to the joint venture entity and has a 50% interest in the joint venture. An additional contribution of $30m was made in 2016 and a further $15m in 2018. At the end of the year Archigen had net liabilities of $18m, of which AstraZeneca's share is $9m, and the investment is held at nil value. The Group has made a provision of $5m, within Trade and other payables, for anticipated future costs.

All investments are accounted for using the equity method.

Aggregated summarised financial information for the associate and joint venture entities is set out below:

	2018 $m	2017 $m	2016 $m
Non-current assets	**260**	207	144
Current assets	**233**	158	128
Total liabilities	**(71)**	(41)	(20)
Net assets	**422**	324	252
Amount attributable to AstraZeneca	**104**	117	125
Exchange adjustments	**(15)**	(14)	(26)
Carrying value of investments in associate and joint ventures	**89**	103	99

11 Other investments

	2018 $m	2017 $m	2016 $m
Non-current investments			
Equity securities at fair value through other comprehensive income	**833**	–	–
Equity securities available for sale	**–**	933	727
Total	**833**	933	727
Current investments			
Fixed income securities at fair value through profit and loss	**809**	–	–
Fixed income securities available for sale	**–**	1,150	847
Fixed deposits	**40**	80	37
Total	**849**	1,230	884

Investments classified as available for sale in 2016 and 2017 under IAS 39 have been reclassified in 2018 on adoption of IFRS 9 on 1 January 2018, as either at fair value through Other comprehensive income or at fair value through profit and loss. The financial impact from the reclassification of equity and fixed income investments from available for sale to at fair value through Other comprehensive income and at fair value through profit and loss has been recorded in the Group accounting policies under 'Impact from adoption of IFRS 9'.

Other investments classified as at fair value through Other comprehensive income and at fair value through profit and loss (IFRS 9)

Other investments held at fair value through Other comprehensive income include equity securities which are not held for trading and which the Group has irrevocably elected at initial recognition to recognise in this category. Other investments held at fair value through profit and loss comprise fixed income securities for which the Group has not elected to recognise fair value gains through Other comprehensive income.

The fair value of listed investments is based on year end quoted market prices. Fixed deposits are held at amortised cost with carrying value being a reasonable approximation of fair value given their short-term nature.

Other investments previously classified as available for sale in 2017 (IAS 39)

Impairment charges of $14m in respect of available for sale equity securities were included in Other operating income and expense in 2017 (2016: $21m). Equity and fixed income securities available for sale were held at fair value until re-classification.

Fair value hierarchy

The table below analyses equity securities and bonds, contained within Other investments and carried at fair value, by valuation method. The different levels have been defined as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2: inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (ie as prices) or indirectly (ie derived from prices).
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

	2018 FVPL $m	**2018 FVOCI $m**	2017 AFS $m	2016 AFS $m
Level 1	**809**	**667**	1,408	933
Level 2	**–**	**–**	–	–
Level 3	**–**	**166**	675	641
Total	**809**	**833**	2,083	1,574

Equity securities that are analysed at Level 3 include investments in private biotech companies. In the absence of specific market data, these unlisted investments are held at fair value calculated by taking costs and adjusting as necessary for impairments and revaluations on new funding rounds, which approximates to fair value. Movements in Level 3 investments are detailed below:

	2018 FVOCI $m	2017 AFS $m	2016 AFS $m
At 1 January	**675**	641	352
Additions	**79**	53	210
Revaluations	**(147)**	(1)	110
Transfers out	**(434)**	(12)	(12)
Disposals	**(6)**	(15)	(2)
Impairments and exchange adjustments	**(1)**	9	(17)
At 31 December	**166**	675	641

Assets are transferred in or out of Level 3 on the date of the event or change in circumstances that caused the transfer.

12 Derivative financial instruments

	Non-current assets $m	Current assets $m	Current liabilities $m	Non-current liabilities $m	Total $m
Interest rate swaps designated in a fair value hedge	–	19	–	(2)	17
Interest rate swaps related to instruments designated at fair value through profit and loss	65	–	–	–	65
Cross currency swaps designated in a net investment hedge	278	–	–	–	278
Cross currency swaps designated in a cashflow hedge	–	–	–	(115)	(115)
Other derivatives	–	8	(18)	–	(10)
31 December 2016	343	27	(18)	(117)	235

	Non-current assets $m	Current assets $m	Current liabilities $m	Non-current liabilities $m	Total $m
Interest rate swaps designated in a fair value hedge	–	–	(3)	–	(3)
Interest rate swaps related to instruments designated at fair value through profit and loss	53	–	–	–	53
Cross currency swaps designated in a net investment hedge	223	12	–	(4)	231
Cross currency swaps designated in a cashflow hedge	197	–	–	–	197
Cross currency swaps designated in a fair value hedge	31	–	–	–	31
Other derivatives	–	16	(21)	–	(5)
31 December 2017	504	28	(24)	(4)	504

	Non-current assets $m	**Current assets $m**	**Current liabilities $m**	**Non-current liabilities $m**	**Total $m**
Interest rate swaps related to instruments designated at fair value through profit and loss	**40**	**–**	**–**	**–**	**40**
Cross currency swaps designated in a net investment hedge[1]	**–**	**213**	**–**	**(4)**	**209**
Cross currency swaps designated in a cashflow hedge[2]	**101**	**–**	**–**	**–**	**101**
Cross currency swaps designated in a fair value hedge[3]	**16**	**–**	**–**	**–**	**16**
Other derivatives	**–**	**45**	**(27)**	**–**	**18**
31 December 2018	**157**	**258**	**(27)**	**(4)**	**384**

[1] Cross currency swaps designated in a net investment hedge comprise a $750m Japanese yen to US dollar cross currency interest rate swap maturing in 2019 and a $69m Chinese renminbi to US dollar cross currency interest rate swap maturing in 2026. The Japanese to US swap effectively converts $750m of the Group's $1,000m 1.95% 2019 bond into a Japanese yen borrowing, partially hedging the Group's Japanese yen denominated assets and revenues. At 31 December 2018 the fair value of this swap was $213m (2017: $223m; 2016: $242m), the swapped US dollar:Japanese yen rate was 78.01 and the Japanese yen interest rate on the swap was 0.3452%. The Chinese renminbi to US dollar swap hedges inter-company funding provided to Chinese Group entities. At 31 December 2018 the fair value of this swap was $(4)m (2017: $(4)m; 2016: $7m), the swapped US dollar:Chinese renminbi rate was 6.68 and the Chinese renminbi interest rate on the swap was 4.796%. A further $151m Chinese renminbi to US dollar swap matured in December 2018 when the inter-company loan it was hedging was repaid (fair value 2017: $11m; 2016: $29m). Hedge ineffectiveness recognised on swaps designated in a net investment hedge during the period was $nil.

[2] Instruments designated in a cash flow hedge are cross currency swaps with total nominal amounts of euro 2.2bn that effectively convert our fixed rate euro 500m 0.25%, euro 900m 0.75% and euro 800m 1.25% callable bonds repayable in 2021, 2024 and 2028 respectively into fixed rate USD borrowings and hedge the exposure to foreign exchange spot rate and interest rate risk. The fair value of these swaps at 31 December 2018 was $101m (2017: $197m; 2016: $(115)m). The swap maturity dates match the underlying bond maturity dates and the average swapped euro:US dollar exchange rate and swapped interest rates are 1.14 and 2.7% respectively.

[3] Cross currency swaps designated in a fair value hedge refers to a cross currency interest rate swap that hedges a designated euro 300m portion of our euro 750m 0.875% 2021 non-callable bond against exposure to movements in the euro:US dollar exchange rate. The maturity date of the cross currency interest rate swap is in 2021 and the swapped euro:US dollar exchange rate and swapped interest rate are 1.09 and three month US dollar libor + 1.27% respectively.

All derivatives are held at fair value and fall within Level 2 of the fair value hierarchy as defined in Note 11. None of the derivatives have been reclassified in the year.

The fair value of interest rate swaps and cross currency swaps is estimated using appropriate zero coupon curve valuation techniques to discount future contractual cash flows based on rates at current year end.

The fair value of forward foreign exchange contracts and currency options are estimated by cash flow accounting models using appropriate yield curves based on market forward foreign exchange rates at the year end. The majority of forward foreign exchange contracts for existing transactions had maturities of less than one month from year end.

The interest rates used to discount future cash flows for fair value adjustments, where applicable, are based on market swap curves at the reporting date, and were as follows:

	2018	2017	2016
Derivatives	**(0.4)% to 3.2%**	1.7% to 2.2%	1.5% to 2.2%

13 Non-current other receivables

Non-current other receivables of $515m (2017: $847m; 2016: $901m) include a prepayment of $114m (2017: $180m; 2016: $380m) which represents the long-term element of minimum contractual royalties payable to Shionogi under the global licence agreement for *Crestor*, which was renegotiated in December 2013. The resulting modified royalty structure, which includes fixed minimum and maximum payments in years until 2020, has resulted in the Group recognising liabilities, and corresponding prepayments, for the discounted value of total minimum payments. The current portion of the prepayment is $114m (2017: $181m; 2016: $116m) and is reported in amounts due within one year (see Note 15).

Non-current other receivables also include $146m (2017: $178m; 2016: $178m) prepayments in relation to our research collaboration with Moderna and $nil (2017: $175m; 2016: $175m) receivable related to the disposal of the small molecule antibiotics assets in 2016, as it has been reclassified to amounts due within one year.

14 Inventories

	2018 $m	2017 $m	2016 $m
Raw materials and consumables	**794**	1,024	811
Inventories in process	**1,450**	1,208	1,060
Finished goods and goods for resale	**646**	803	463
Inventories	**2,890**	3,035	2,334

The Group recognised $2,659m (2017: $2,493m; 2016: $2,644m) of inventories as an expense within cost of sales during the year.

Inventory write-offs in the year amounted to $208m (2017: $109m; 2016: $198m).

15 Current trade and other receivables

	2018 $m	2017 $m	2016 $m
Amounts due within one year			
Trade receivables	**3,033**	2,818	2,625
Less: Amounts provided for doubtful debts (Note 27)	**(38)**	(16)	(42)
	2,995	2,802	2,583
Other receivables	**1,143**	793	852
Prepayments and accrued income	**1,363**	1,148	879
	5,501	4,743	4,314
Amounts due after more than one year			
Other receivables	**–**	156	140
Prepayments and accrued income	**73**	110	119
	73	266	259
Trade and other receivables	**5,574**	5,009	4,573

Trade receivables includes $724m (2017: $327m; 2016: $655m) due from customers which are subject to debt factoring agreements, where invoices have currently not been factored and then derecognised.

All financial assets included within current Trade and other receivables are held at amortised cost with carrying value being a reasonable approximation of fair value.

16 Cash and cash equivalents

	2018 $m	2017 $m	2016 $m
Cash at bank and in hand	**893**	784	782
Short-term deposits	**3,938**	2,540	4,236
Cash and cash equivalents	**4,831**	3,324	5,018
Unsecured bank overdrafts	**(160)**	(152)	(94)
Cash and cash equivalents in the cash flow statement	**4,671**	3,172	4,924

The Group holds $86m (2017: $93m; 2016: $91m) of Cash and cash equivalents which is required to meet insurance solvency, capital and security requirements.

Under IAS 39 all Cash and cash equivalents were held at amortised cost with fair value approximating to carrying value. Following the adoption of IFRS 9 Financial Instruments on 1 January 2018 US dollar liquidity fund balances included in Cash and cash equivalents were reclassified from amortised cost to fair value through profit or loss. During 2018 AstraZeneca was invested in constant net asset value funds with same day access for subscription and redemption. These investments fail the 'solely payments of principal and interest' test criteria under IFRS 9. They are therefore measured at fair value through profit or loss, although the fair value will be materially the same as amortised cost. The balance reclassified on 1 January 2018 was $1,150m as shown under 'Impact from adoption of IFRS 9' in the Group accounting policies section.

Non-cash and other movements, within operating activities in the Consolidated Statement of Cash Flows, includes:

	2018 $m	2017 $m	2016 $m
Gains on disposal of short-term investments	**–**	(161)	–
Net gains/(losses) on disposal of non-current assets	**8**	(24)	(29)
Changes in fair value of put option (Acerta Pharma)	**(113)**	(209)	(41)
Share-based payments charge for period	**219**	220	241
Settlement of share plan awards	**(212)**	(254)	(281)
Pension contributions	**(174)**	(157)	(192)
Pension charges recorded in operating profit	**128**	74	74
Foreign exchange and other	**(146)**	(13)	(264)
Total operating activities non-cash and other movements	**(290)**	(524)	(492)

17 Assets held for sale

Assets held for sale of $982m (2017: $nil; 2016: $nil) comprise intangible assets relating to the US rights to RSV franchise assets (specifically *Synagis*) arising from the acquisition of MedImmune and to US rights to certain respiratory assets acquired from Almirall and Actavis (including *Tudorza*). In both cases a partial transfer has been made from the respective intangible assets based on the relative values of the portion being disposed of and the portion retained.

AstraZeneca agreed to dispose of the US Rights to *Synagis* to SOBI on 13 November 2018 with completion of the transaction subject to certain contingencies. The transaction closed and control of the assets transferred on 23 January 2019.

In December 2018, Circassia exercised an option right to acquire the remaining rights to *Tudorza* in the US, which was previously part of a strategic collaboration between the two companies. The transaction closed on 1 January 2019.

18 Interest-bearing loans and borrowings

		Repayment dates	2018 $m	2017 $m	2016 $m
Current liabilities					
Bank overdrafts		On demand	**160**	152	94
Bank collateral[1]			**384**	513	–
Finance leases			**–**	5	87
5.9% Callable bond	US dollars	2017	**–**	–	1,769
Floating rate notes	US dollars	2018	**–**	399	–
1.75% Callable bond	US dollars	2018	**–**	998	–
1.95% Callable bond	US dollars	2019	**999**	–	–
Other loans (Commercial paper)		Within one year	**211**	180	357
Total			**1,754**	2,247	2,307
Non-current liabilities					
Finance leases			**–**	–	6
Floating rate notes	US dollars	2018	**–**	–	399
1.75% Callable bond	US dollars	2018	**–**	–	998
1.95% Callable bond	US dollars	2019	**–**	999	998
2.375% Callable bond	US dollars	2020	**1,594**	1,591	1,589
0.875% Non-callable bond	euros	2021	**854**	890	782
0.25% Callable bond	euros	2021	**570**	594	522
Floating rate notes	US dollars	2022	**250**	249	–
2.375% Callable bond	US dollars	2022	**994**	992	–
7% Guaranteed debentures	US dollars	2023	**325**	347	350
Floating rate notes	US dollars	2023	**400**	–	–
3.5% Callable bond	US dollars	2023	**845**	–	–
0.75% Callable bond	euros	2024	**1,022**	1,067	937
3.375% Callable bond	US dollars	2025	**1,980**	1,978	1,976
3.125% Callable bond	US dollars	2027	**743**	742	–
1.25% Callable bond	euros	2028	**903**	941	827
4% Callable bond	US dollars	2029	**992**	–	–
5.75% Non-callable bond	pounds sterling	2031	**443**	468	426
6.45% Callable bond	US dollars	2037	**2,721**	2,720	2,719
4% Callable bond	US dollars	2042	**987**	987	986
4.375% Callable bond	US dollars	2045	**979**	979	979
4.375% Callable bond	US dollars	2048	**736**	–	–
Other loans	US dollars		**21**	16	7
Total			**17,359**	15,560	14,501

[1] In 2017 the Group changed its accounting policy such that collateral receipts were included in interest bearing loans and borrowings. Previously these were included in short term deposits.

All loans and borrowings above are unsecured, except for finance leases which were secured against the Information Technology assets to which they relate (see Note 7).

18 Interest-bearing loans and borrowings *continued*

	Current loans and borrowings $m	Non-current loans and borrowings $m	Total $m
At 31 December 2017	2,247	15,560	17,807
Changes from financing cash flows			
Issue of loans	**–**	**2,971**	**2,971**
Repayment of loans	**(1,400)**	**–**	**(1,400)**
Movement in short-term borrowings	**(98)**	**–**	**(98)**
Total changes in liabilities arising on financing activities	**(1,498)**	**2,971**	**1,473**
Movement in overdrafts	**8**	**–**	**8**
Transfers	**999**	**(999)**	**–**
Exchange and other movements	**(2)**	**(173)**	**(175)**
At 31 December 2018	**1,754**	**17,359**	**19,113**

Set out below is a comparison by category of carrying values and fair values of all the Group's interest-bearing loans and borrowings:

	Instruments in a fair value hedge relationship[1] $m	Instruments designated at fair value[2] $m	Instruments designated in cash flow hedge[3] $m	Amortised cost[4] $m	Total carrying value $m	Fair value $m
2016						
Overdrafts	–	–	–	94	94	94
Finance leases due within one year	–	–	–	87	87	87
Finance leases due after more than one year	–	–	–	6	6	6
Loans due within one year	770	–	–	1,356	2,126	2,161
Loans due after more than one year	598	350	2,286	11,261	14,495	15,826
Total at 31 December 2016	1,368	350	2,286	12,804	16,808	18,174
2017						
Overdrafts	–	–	–	152	152	152
Finance leases due within one year	–	–	–	5	5	5
Loans due within one year	596	–	–	1,494	2,090	2,092
Loans due after more than one year	304	347	2,602	12,307	15,560	17,031
Total at 31 December 2017	900	347	2,602	13,958	17,807	19,280
2018						
Overdrafts	**–**	**–**	**–**	**160**	**160**	**160**
Finance leases due within one year	**–**	**–**	**–**	**–**	**–**	**–**
Loans due within one year	**–**	**–**	**–**	**1,594**	**1,594**	**1,587**
Loans due after more than one year	**346**	**325**	**2,495**	**14,193**	**17,359**	**17,841**
Total at 31 December 2018	**346**	**325**	**2,495**	**15,947**	**19,113**	**19,588**

[1] Instruments designated as hedged items in a fair value hedge relationship relate to a designated euro 300m portion of our euro 750m 0.875% 2021 non-callable bond. The accumulated amount of fair value hedge adjustments to the bond is a loss of $19m and hedge ineffectiveness recognised during the period was nil.
[2] Instruments designated at fair value through profit or loss include the US dollar 7% guaranteed debentures repayable in 2023.
[3] Instruments designated in a cash flow hedge include the euro 500m 0.25%, euro 900m 0.75% and euro 800m 1.25% Callable bonds repayable in 2021, 2024 and 2028 respectively. Hedge ineffectiveness recognised during the period was nil.
[4] Included within borrowings held at amortised cost are amounts designated as hedges of net investments in foreign operations of $954m at 31 December 2018 (2017: $1,054m; 2016: $1,208m). The fair value of these borrowings was $1,106m at 31 December 2018 (2017: $1,206m; 2016: $1,400m). These borrowings comprise our £350m 5.75% 2031 non-callable bond and a euro 450m portion of our euro 750m 0.875% 2021 non-callable bond and have been designated as hedges of net investments in the Group's UK and Euro operations respectively. Also included within borrowings held at amortised cost is the Group's $1bn 1.95% 2019 bond, $750m of which has been swapped to Japanese yen. The US dollar to Japanese yen cross currency interest rate swap has been designated as a hedge of net investments in the Group's Japanese operations. Hedge ineffectiveness recognised on borrowings designated in a net investment hedge during the period was nil.

The fair value of fixed-rate publicly traded debt is based on year end quoted market prices; the fair value of floating rate debt is nominal value, as mark to market differences would be minimal given the frequency of resets. The carrying value of loans designated at fair value through profit or loss is the fair value; this falls within the Level 1 valuation method as defined in Note 11. For loans designated in a fair value hedge relationship, carrying value is initially measured at fair value and remeasured for fair value changes in respect of the hedged risk at each reporting date. All other loans are held at amortised cost. Fair values, as disclosed in the table above, are all determined using the Level 1 valuation method as defined in Note 11, with the exception of overdrafts and finance leases, where fair value approximates to carrying values.

A gain of $8m was made during the year on the fair value of bonds designated at fair value through profit or loss, due to increased credit risk. A gain of $34m has been made on these bonds since designation due to increased credit risk. Under IFRS 9, the Group records the component of fair value changes relating to the component of own credit risk through Other comprehensive income. Changes in credit risk had no material effect on any other financial assets and liabilities recognised at fair value in the Group Financial Statements. The change in fair value attributable to changes in credit risk is calculated as the change in fair value not attributable to market risk. The amount payable at maturity on bonds designated at fair value through profit or loss is $287m.

The interest rates used to discount future cash flows for fair value adjustments, where applicable, are based on market swap curves at the reporting date, and were as follows:

	2018	2017	2016
Loans and borrowings	**2.3% to 2.4%**	1.9% to 2.2%	1.5% to 2.2%

19 Trade and other payables

	2018 $m	2017 $m	2016 $m
Current liabilities			
Trade payables	**1,720**	2,285	1,680
Value added and payroll taxes and social security	**204**	243	240
Rebates, chargebacks, returns and other revenue accruals	**4,043**	3,264	3,601
Clinical trial accruals	**993**	922	696
Other accruals	**3,951**	3,324	2,714
Externalisation revenue contract liabilities	**92**	–	–
Contingent consideration	**867**	555	527
Other payables	**971**	1,048	1,028
Total	**12,841**	11,641	10,486
Non-current liabilities			
Accruals	**7**	143	292
Externalisation revenue contract liabilities	**78**	–	–
Contingent consideration	**4,239**	4,979	4,930
Acerta Pharma put option liability (Note 25)	**1,838**	1,823	1,901
Other payables	**608**	895	2,365
Total	**6,770**	7,840	9,488

The Group has revised the presentation of Trade and other payables in 2018 to separately present clinical trial accruals, returns and other revenue accruals that have historically been presented within Trade payables (see the Group Accounting policies section from page 153). The Group has also separately presented the Acerta put option that has historically been presented within Other payables.

Included within Rebates, chargebacks, returns and other revenue accruals are contract liabilities of $126m (1 January 2018: $138m). The revenue recognised in the year for contract liabilities is $139m, comprising $104m relating to other revenue accruals and $35m Externalisation Revenue contract liabilities.

Trade payables includes $166m (2017: $64m; 2016: $nil) due to suppliers that have signed up to a supply chain financing programme, under which the suppliers can elect on a invoice by invoice basis to receive a discounted early payment from the partner bank rather than being paid in line with the agreed payment terms. If the option is taken the Group's liability is assigned by the supplier to be due to the partner bank rather than the supplier. The value of the liability payable by the Group remains unchanged. The Group assesses the arrangement against indicators to assess if debts which vendors have sold to the funder under the supplier financing scheme continue to meet the definition of trade payables or should be classified as borrowings. At 31 December 2018 the payables met the criteria of Trade payables.

The Acerta Pharma put option liability is remeasured each period, based on the latest assessment of the expected redemption amount with remeasurements taken to Selling, general and administrative costs (see Note 2). Interest arising from amortising the liability is included within Finance expense (see Note 3). The expected redemption amount is dependent on the accumulated profits of *Calquence* to the point of redemption, which may vary materially dependent on factors such as revenues earned, research and development expenditure, regulatory approvals received, and certain other expenses of Acerta Pharma B.V. and its subsidiaries.

The Group has adopted IFRS 15 Revenue from Contracts with Customers from 1 January 2018 under the modified retrospective method. Consequently, the Group has presented Externalisation revenue contract liabilities prospectively from that date.

With the exception of Contingent consideration payables of $5,106m (2017: $5,534m; 2016: $5,457m) which are held at fair value within Level 3 of the fair value hierarchy as defined in Note 11, all other financial liabilities are held at amortised cost with carrying value being a reasonable approximation of fair value.

Contingent consideration

	2018 $m	2017 $m	2016 $m
At 1 January	**5,534**	5,457	6,411
Settlements	**(349)**	(434)	(293)
Revaluations	**(495)**	109	(1,158)
Discount unwind (Note 3)	**416**	402	497
At 31 December	**5,106**	5,534	5,457

Contingent consideration arising from business combinations is fair valued using decision-tree analysis, with key inputs including the probability of success, consideration of potential delays and the expected levels of future revenues.

Revaluations of Contingent consideration are recognised in Selling, general and administrative costs and include a decrease of $482m in 2018 (2017: an increase of $208m; 2016: a decrease of $999m) based on revised milestone probabilities, and revenue and royalty forecasts, relating to the acquisition of BMS's share of the Global Diabetes Alliance. Discount unwind on the liability is included within Finance expense (see Note 3).

Management has identified that reasonably possible changes in certain key assumptions, including the likelihood of achieving successful trial results, obtaining regulatory approval, the projected market share of the therapeutic area and expected pricing for launched products, may cause the calculated fair value of the above contingent consideration to vary materially in future years.

The contingent consideration balance relating to BMS's share of Global Diabetes Alliance of $3,983m (2017: $4,477m; 2016: $4,240m) would increase/decrease by $398m with an increase/decrease in sales of 10% as compared with the current estimates.

19 Trade and other payables *continued*

The maximum development and sales milestones payable under outstanding contingent consideration arrangements arising on business combinations are as follows:

Acquisitions	Year	Nature of contingent consideration	Maximum future milestones $m
Spirogen	2013	Milestones	216
Amplimmune	2013	Milestones	275
Omthera	2013	Milestones	120
Pearl Therapeutics	2013	Milestones	390
BMS's share of Global Diabetes Alliance[1]	2014	Milestones and royalties	600
Almirall[1]	2014	Milestones and royalties	620
Definiens[1]	2014	Milestones	150

[1] These contingent consideration liabilities have been designated as the hedge instrument in a net investment hedge of foreign currency risk arising on the Group's underlying US dollar net investments held in non-US dollar denominated subsidiaries. Exchange differences on the retranslation of the contingent consideration liability are recognised in Other comprehensive income to the extent that the hedge is effective. Any ineffectiveness is taken to profit.

The amount of royalties payable under the arrangements is inherently uncertain and difficult to predict, given the direct link to future sales and the range of outcomes. The maximum amount of royalties payable in each year is with reference to net sales.

20 Provisions

	Severance $m	Environmental $m	Employee benefits $m	Legal $m	Other provisions $m	Total $m
At 1 January 2016	403	67	158	357	257	1,242
Charge for year	578	11	6	223	170	988
Cash paid	(433)	(19)	(21)	(126)	(87)	(686)
Reversals	(40)	–	–	–	(39)	(79)
Exchange and other movements	(21)	–	–	(16)	(10)	(47)
At 31 December 2016	487	59	143	438	291	1,418
Charge for year	225	11	30	281	55	602
Cash paid	(324)	(20)	(43)	(48)	(37)	(472)
Reversals	(75)	–	(10)	(40)	(44)	(169)
Exchange and other movements	45	9	6	23	6	89
At 31 December 2017	358	59	126	654	271	1,468
Charge for year	**94**	**65**	**1**	**11**	**30**	**201**
Cash paid	**(152)**	**(24)**	**(9)**	**(232)**	**(28)**	**(445)**
Reversals	**(58)**	**–**	**–**	**(230)**	**(28)**	**(316)**
Exchange and other movements	**(16)**	**(3)**	**1**	**(5)**	**6**	**(17)**
At 31 December 2018	**226**	**97**	**119**	**198**	**251**	**891**

	2018 $m	2017 $m	2016 $m
Due within one year	**506**	1,121	1,065
Due after more than one year	**385**	347	353
Total	**891**	1,468	1,418

AstraZeneca is undergoing a global restructuring initiative which involves rationalisation of the global supply chain, the sales and marketing organisation, IT and business support infrastructure, and R&D. Employee costs in connection with the initiatives are recognised in severance provisions. Final severance costs are often subject to the completion of the requisite consultations on the areas impacted.

Details of the environmental and legal provisions are provided in Note 29. Two payments totalling $145m were paid out of the legal provision during January 2019.

Employee benefit provisions include the Deferred Bonus Plan. Further details are included in Note 28.

Other provisions comprise amounts relating to specific contractual or constructive obligations and disputes.

No provision has been released or applied for any purpose other than that for which it was established.

21 Post-retirement benefits

Pensions

Background

The Company and most of its subsidiaries offer retirement plans which cover the majority of employees in the Group. The Group's policy is to provide 'defined contribution' ('DC') orientated pension provision to its employees unless otherwise compelled by local regulation. As a result, many of these retirement plans are DC, where the Group contribution and resulting charge is fixed at a set level or is a set percentage of employees' pay.

However, several plans, mainly in the UK, the US and Sweden, are 'defined benefit' ('DB'), where benefits are based on employees' length of service and linked to their salary. The major defined benefit plans are now largely legacy arrangements as they have been closed to new entrants since 2000, apart from the collectively bargained Swedish plan (which is still open to employees born before 1979). During 2010, following consultation with its UK employees' representatives, the Group introduced a freeze on pensionable pay at 30 June 2010 levels for defined benefit members of the UK Pension Fund. The number of active members in the Fund continues to decline and is now approximately 700 employees. In November 2017, the Group closed the qualified and non-qualified US defined benefit pension plans to future accrual (and removed any salary link) from 31 December 2017.

The major defined benefit plans are funded through separate, fiduciary-administered assets. The cash funding of the plans, which may from time to time involve special Group payments, is designed, in consultation with independent qualified actuaries, to ensure that the assets are sufficient to meet future obligations as and when they fall due. The funding level is monitored rigorously by the Group and local fiduciaries, taking into account: the Group's credit rating; local regulation; cash flows; and the solvency and maturity of the relevant pension scheme.

Financing principles

Ninety one per cent of the Group's defined benefit obligations at 31 December 2018 are in schemes within the UK, the US and Sweden. In these countries, the pension obligations are funded in line with the Group's financing principles. There have been no fundamental changes to these principles during 2018. The Group believes:

- In funding the benefits it promises to employees and meeting its obligations.
- That the pension arrangements should be considered in the context of its broader capital structure. In general, it does not believe in committing excessive capital for funding when the Group might use the capital elsewhere to reinvest in the wider business, nor does it wish to generate surpluses.
- In taking some measured and rewarded risks with the investments underlying the funding, subject to a long-term plan to reduce those risks when opportunities arise.
- That holding certain investments may cause volatility in the funding position. However, the Group would not wish to amend its contribution level for relatively small deviations from its preferred funding level, because it is expected that there will be short-term volatility, but it is prepared to react appropriately to more significant deviations.
- That proactive engagement with local Fiduciary Bodies is necessary and helpful to provide robust oversight and input in relation to funding and investment strategy and to facilitate liability management exercises appropriate to each pension plan.
- In considering the use of alternative methods of providing security that do not require immediate cash funding but help mitigate exposure of the pension arrangement to the credit risk of the Group.

These principles are appropriate at the present date but they are kept under ongoing review, should circumstances change these principles may also be subject to change.

The Group has developed a long-term funding framework to implement these principles, which targets full funding on a low risk funding measure over the long term as the pension funds mature, with affordable long-term de-risking of investment strategy over time. Unless local regulation dictates otherwise, this framework determines the cash contributions payable to the pension funds. A key element of this funding framework is the investment strategy used to grow existing assets and hedge against changes in liability values. The Group provides regular input to local fiduciary boards with the aim of ensuring that an appropriate investment return is targeted over the long term in a risk-controlled manner.

UK

The UK defined benefit pension fund represents approximately 62% of the Group's defined benefit obligations at 31 December 2018. The financing principles are modified in light of the UK regulatory requirements (summarised below) and resulting discussions with the Pension Fund Trustee.

Role of Trustees and Regulation (UK)

The UK Pension Fund is governed and administered by a corporate Trustee which is legally separate from the Group. The Trustee Directors are comprised of representatives appointed by both the employer and employees, and include an independent professional Trustee Director. The Trustee Directors are required by law to act in the interest of all relevant beneficiaries and are responsible in particular for the asset investment policy and the day-to-day administration of the benefits. They are also responsible for jointly agreeing with the employer the level of contributions due to the UK Pension Fund (see below).

The UK pensions market is regulated by The Pensions Regulator whose statutory objectives and regulatory powers are described on its website, www.thepensionsregulator.gov.uk.

Funding requirements (UK)

UK legislation requires that pension schemes are funded prudently. On a triennial basis, the Trustee and the Group must agree the contributions required (if any) to ensure the Fund is fully funded over an appropriate time-period and on a suitably prudent measure. The last full actuarial valuation of the AstraZeneca Pension Fund was carried out by a qualified actuary as at 31 March 2016 and following discussions between the Group and Trustee was finalised and accepted by The Pensions Regulator in 2017. The next actuarial valuation is due to take place as at 31 March 2019, with a likely timescale for completion in early to mid-2020.

In relation to deficit recovery contributions, a lump sum contribution of £51m ($68m) was made in March 2018, with a further £51m contribution due before 31 March 2019. In addition, a contribution of £26m ($35m) was made in March 2018, with a further contribution of £27m due before 31 March 2019, in relation to part payment of the deferred contribution explained below.

During 2017, the Group provided a letter of credit to the Trustee, to underwrite the deferral of an additional deficit recovery contribution payment of approximately £126m which was due in 2017. This contribution will now be paid in five instalments (with interest added each year) from March 2018 to March 2022. The letter of credit underwriting these payments will be renewed each year, but will reduce in value as each annual payment is made.

The Group entered into a long-term funding agreement with the Trustee in October 2016 under which the Group will grant a charge in favour of the Trustee over certain land and buildings at the Cambridge Biomedical Campus, which would crystallise only in the event of the Group's insolvency. This charge will provide security in respect of future UK Pension Fund contributions.

Under the funding assumptions used to set the statutory funding target, the key assumptions from the actuarial valuation as at 31 March 2016 were as follows: long-term UK price inflation set at 2.6% per annum; salary increases at 0% per annum (as a result of pensionable pay levels being frozen in 2010); pension increases at 2.85% per annum; and discount rate at 3.71% per annum. The resulting valuation of the Fund's liabilities on that basis were £5,265m ($6,710m) compared to a market value of assets at 31 March 2016 of £4,492m ($5,724m).

Under the governing documentation of the UK Pension Fund, any future surplus in the Fund would be returnable to the Group by refund assuming gradual settlement of the liabilities over the lifetime of the Fund. As such, there are no adjustments required in respect of IFRIC 14 'IAS 19 – The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction'.

21 Post-retirement benefits *continued*

GMP Equalisation (UK)

A UK High Court judgment was issued on 26 October 2018 relating to Guaranteed Minimum Pensions ('GMP'). Although the ruling relates to the Lloyds Banking Group pension schemes, it is expected to create a precedent for other UK defined benefit pension schemes. The ruling requires the equalisation of member benefits earned between 1990 and 1997 to address gender inequality in instances where GMP benefits are currently unequal. While there remains some uncertainty, the Group has made a provision for the estimated financial impact of this ruling on the UK Pension Fund, based on a comparison of the cumulative value of members' benefits with the benefits of a notional member of the opposite gender (method C2 under the terminology of the High Court Judgement). The estimated impact is based on the broad profile of the Fund (ie age profile, service profile and GMP proportion) and a past service cost of £17m ($23m) has been recognised in the year ended 31 December 2018. Further work will be carried out with the Trustee over 2019 to determine the exact impact.

Rest of Group

The IAS 19 positions for the US and Sweden as at 31 December 2018 are shown below. These plans account for 29% of the Group's defined benefit obligations. The US and Sweden pension funds are governed by Fiduciary Bodies with responsibility for the investment policies of those funds. These plans are funded in line with the Group's financing principles and contributions are paid as prescribed by the long-term funding framework (subject to local regulations being met).

The US defined benefit pension plans were actuarially revalued at 31 December 2018, when plan obligations were $1,463m and plan assets were $1,379m. This includes obligations in respect of the non-qualified plan which is unfunded. There has been an improvement in the funding position of the qualified US pension plan and it is now close to being fully funded on the IAS 19 basis. As the funding position improved over 2018, the investment strategy was de-risked, reducing equity exposure and increasing the interest rate hedge.

The Swedish defined benefit pension plans were actuarially valued at 31 December 2018, when plan obligations were estimated to amount to $1,872m and plan assets were $1,017m. It should be noted that the Swedish plans have a funding surplus on the local GAAP accounting basis and this influences contribution policy.

On current bases, it is expected that ongoing contributions (excluding those in respect of past service deficit contributions) during the year ending 31 December 2019 for the three main countries will be approximately $32m.

Post-retirement benefits other than pensions

In the US, and to a lesser extent in certain other countries, AstraZeneca's employment practices include the provision of healthcare and life assurance benefits for retired employees. As at 31 December 2018, some 3,215 retired employees and covered dependants currently benefit from these provisions and some 2,231 current employees will be eligible on their retirement. AstraZeneca accrues for the present value of such retiree obligations over the working life of the employee. In practice, these benefits will be funded with reference to the financing principles.

The cost of post-retirement benefits other than pensions for the Group in 2018 was $5m (2017: $14m; 2016: $17m). Plan assets were $260m and plan obligations were $263m at 31 December 2018. These benefit plans have been included in the disclosure of post-retirement benefits under IAS 19.

Financial assumptions

Qualified independent actuaries have updated the actuarial valuations under IAS 19 of the major defined benefit schemes operated by the Group to 31 December 2018. The assumptions used may not necessarily be borne out in practice, due to the inherent financial and demographic uncertainty associated with making long-term projections. These assumptions were as follows:

	2018		2017	
	UK	**Rest of Group**	UK	Rest of Group
Inflation assumption	**3.2%**	**1.1%**	3.1%	2.2%
Rate of increase in salaries	**–**[1]	**2.0%**	–[1]	3.1%
Rate of increase in pensions in payment	**3.0%**	**1.1%**	2.9%	1.1%
Discount rate – defined benefit obligation	**2.8%**[2]	**3.0%**	2.5%[2]	3.0%
Discount rate – interest cost[2]	**2.4%**[3]	**2.5%**	2.5%[3]	2.7%
Discount rate – service cost[2]	**2.5%**[3]	**2.9%**	2.7%[3]	3.5%

[1] Pensionable pay frozen at 30 June 2010 levels following UK fund changes.
[2] Group defined benefit obligation as at 31 December 2018 calculated using discount rates based on market conditions as at 31 December 2018.
[3] 2018 interest costs and service costs calculated using discount rates based on market conditions as at 31 December 2017.

In the UK, a new assumption has been made that 30% of members will transfer out of the defined benefit section of the AstraZeneca Pension Fund at the point of retirement. This assumption is based on Fund experience since pensions freedoms legislation came into effect in April 2015 and will be reviewed each year to ensure it remains appropriate. The assumption has the impact of reducing liabilities by approximately £53m ($70m) and has been recorded in Other comprehensive income.

The weighted average duration of the post-retirement scheme obligations in the UK is 16 years and 15 years in the Rest of Group.

Demographic assumptions

The mortality assumptions are based on country-specific mortality tables. These are compared to actual experience and adjusted where sufficient data is available. Additional allowance for future improvements in life expectancy is included for all major schemes where there is credible data to support a continuing trend.

The table below illustrates life expectancy assumptions at age 65 for male members retiring in 2018 and male members expected to retire in 2038 (2017: 2017 and 2037 respectively).

	Life expectancy assumption for a male member retiring at age 65			
Country	**2018**	2038	2017	2037
UK	**23.2**	24.7	23.7	24.8
US	**22.2**	22.8	20.8	23.0
Sweden	**21.9**	23.6	21.9	23.6

The Group adopted the CMI 2017 Mortality Projections Model with a 1% long-term improvement rate in 2018 in the UK.

Risks associated with the Group's defined benefit pensions

The UK defined benefit plan accounts for 62% of the Group's defined benefit obligations and exposes the Group to a number of risks, the most significant of which are:

Risk	Description	Mitigation
Volatile asset returns	The Defined Benefit Obligation (DBO) is calculated using a discount rate set with reference to AA-rated corporate bond yields; asset returns that differ from the discount rate will create an element of volatility in the solvency ratio. The UK Pension Fund holds a significant proportion of assets (around 72.5%) in a growth portfolio. Although these growth assets are expected to outperform AA-rated corporate bonds in the long term, they can lead to volatility and mismatching risk in the short term. The allocation to growth assets is monitored to ensure it remains appropriate given the UK Pension Fund's long-term objectives.	In order to mitigate investment risk, the Trustee invests in a suitably diversified range of asset classes, return drivers and investment managers. The investment strategy will continue to evolve to further improve the expected risk/return profile as opportunities arise. The Trustee has hedged the majority (over 80%) of unintended non-sterling, overseas currency risk within the UK Pension Fund assets.
Changes in bond yields	A decrease in corporate bond yields will increase the present value placed on the DBO for accounting purposes.	The interest rate hedge of the UK Pension Fund is implemented via holding gilts and swaps of appropriate duration and set at approximately 85% of total assets and protects to some degree against falls in long-term interest rates (approximately 80% hedged at the end of 2017). There is a framework in place to gradually increase the level of interest rate hedging to 100% of assets over time, via a combination of liability management exercises and additional market-based hedging. There are some differences in the bonds and instruments held by the UK Pension Fund to hedge interest rate risk on the statutory and long-term funding basis (gilts and swaps) and the bonds analysed to set the DBO discount rate on an accounting basis (AA corporate bonds). As such, there remains some mismatching risk on an accounting basis should yields on gilts and swaps diverge compared to AA corporate bonds.
Inflation risk	A significant proportion of the DBO is indexed in line with price inflation (mainly inflation as measured by the UK Retail Price Index (RP') but also for some members a component of pensions is indexed by the UK Consumer Price Index (CPI)) and higher inflation will lead to higher liabilities (although, in most cases, this is capped at an annual increase of 5%).	The UK Pension Fund holds index-linked gilts and derivative instruments such as swaps. The inflation hedge of the UK Pension Fund is set at approximately 88% of total assets and protects to some degree against higher-than-expected inflation increases on the DBO (approximately 85% hedged at the end of 2017). There is a framework in place to gradually increase the level of inflation hedging to 100% of assets over time, via a combination of liability management exercises and additional market-based hedging.
Life expectancy	The majority of the UK Pension Fund's obligations are to provide benefits for the life of the member, so increases in life expectancy will result in an increase in the liabilities.	The UK Pension Fund entered into a longevity swap during 2013 which provides hedging against the longevity risk of increasing life expectancy over the next 75 years for around 10,000 of the UK Pension Fund's current pensioners and covers $2.1bn of the UK Pension Fund's liabilities. A one-year increase in life expectancy will result in a $217m increase in pension fund assets.

Other risks

There are a number of other risks of running the UK Pension Fund including counterparty risks from using derivatives (mitigated by using a diversified range of counterparties of high standing and ensuring positions are collateralised daily). Furthermore, there are operational risks (such as paying out the wrong benefits) and legislative risks (such as the government increasing the burden on companies through new legislation). These are mitigated so far as possible via the governance structure in place which oversees and administers the pension funds.

The Group's pension plans in the US and Sweden also manage these key risks, where they are relevant, in a similar manner, with the local fiduciary bodies investing in a diversified growth portfolio and employing a framework to hedge interest rate risk.

Post-retirement scheme deficit

The assets and obligations of the defined benefit schemes operated by the Group at 31 December 2018, as calculated in accordance with IAS 19, are shown overleaf. The fair values of the schemes' assets are not intended to be realised in the short term and may be subject to significant change before they are realised. The present value of the schemes' obligations is derived from cash flow projections over long periods and is therefore inherently uncertain.

21 Post-retirement benefits *continued*

Scheme assets

	UK		Rest of Group		Total		2017
	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Total $m
Government bonds[1]	2,056	–	79	45	2,135	45	2,180
Corporate bonds[2]	–	37	849	–	849	37	886
Derivatives[3]	–	(237)	(12)	26	(12)	(211)	(223)
Investment funds: Listed Equities	–	1,174	371	421	371	1,595	1,966
Investment funds: Global Macro Hedge[4]	–	1,004	–	396	–	1,400	1,400
Investment funds: Diversified growth/Multi Strategy[4]	–	1,921	–	416	–	2,337	2,337
Investment funds: Multi-asset credit[4]	–	633	–	268	–	901	901
Cash and cash equivalents	40	121	23	23	63	144	207
Other	–	–	2	266	2	266	268
Total fair value of scheme assets[5]	2,096	4,653	1,312	1,861	3,408	6,514	9,922

	UK		**Rest of Group**		**Total**		**2018**
	Quoted $m	**Unquoted $m**	**Quoted $m**	**Unquoted $m**	**Quoted $m**	**Unquoted $m**	**Total $m**
Government bonds[1]	**1,725**	**–**	**199**	**–**	**1,924**	**–**	**1,924**
Corporate bonds[2]	**–**	**–**	**870**	**–**	**870**	**–**	**870**
Derivatives[3]	**–**	**(189)**	**3**	**145**	**3**	**(44)**	**(41)**
Investment funds: Listed Equities	**–**	**1,197**	**201**	**190**	**201**	**1,387**	**1,588**
Investment funds: Global Macro Hedge[4]	**–**	**733**	**–**	**280**	**–**	**1,013**	**1,013**
Investment funds: Diversified growth/Multi Strategy[4]	**–**	**1,712**	**–**	**449**	**–**	**2,161**	**2,161**
Investment funds: Multi-asset credit[4]	**–**	**596**	**–**	**191**	**–**	**787**	**787**
Cash and cash equivalents	**39**	**176**	**81**	**5**	**120**	**181**	**301**
Other	**–**	**–**	**1**	**250**	**1**	**250**	**251**
Total fair value of scheme assets[5]	**1,764**	**4,225**	**1,355**	**1,510**	**3,119**	**5,735**	**8,854**

[1] Predominantly developed markets in nature.
[2] Predominantly developed markets in nature and investment grade (AAA-BBB).
[3] Includes interest rate swaps, inflation swaps, longevity swap, equity total return swaps and other contracts.
[4] Investment Funds are pooled, commingled vehicles, whereby the pension scheme owns units in the fund, alongside other investors. The pension schemes invest in a number of Investment Funds, including Listed Equities (primarily developed markets with some emerging markets across the world), Multi-asset credit (bonds and debt including a range of investment grade and non-investment grade credit across the world), Diversified growth/Multi Strategy (multi-asset exposure both across and within traditional and alternative asset classes), and Global Macro Hedge funds (Discretionary/Fundamental Macro and managed futures).
[5] Included in scheme assets is $nil (2017: $nil) of the Group's own assets.

Scheme obligations

			2018			2017
	UK $m	**Rest of Group $m**	**Total $m**	UK $m	Rest of Group $m	Total $m
Present value of scheme obligations in respect of:						
Active membership	**(751)**	**(1,468)**	**(2,219)**	(814)	(1,018)	(1,832)
Deferred membership	**(1,665)**	**(1,215)**	**(2,880)**	(1,998)	(1,688)	(3,686)
Pensioners	**(4,636)**	**(1,630)**	**(6,266)**	(5,220)	(1,767)	(6,987)
Total value of scheme obligations	**(7,052)**	**(4,313)**	**(11,365)**	(8,032)	(4,473)	(12,505)

Net deficit in the scheme

			2018			2017
	UK $m	**Rest of Group $m**	**Total $m**	UK $m	Rest of Group $m	Total $m
Total fair value of scheme assets	**5,989**	**2,865**	**8,854**	6,749	3,173	9,922
Total value of scheme obligations	**(7,052)**	**(4,313)**	**(11,365)**	(8,032)	(4,473)	(12,505)
Deficit in the scheme as recognised in the Consolidated Statement of Financial Position	**(1,063)**	**(1,448)**	**(2,511)**	(1,283)	(1,300)	(2,583)

Fair value of scheme assets

			2018			2017
	UK $m	**Rest of Group $m**	**Total $m**	UK $m	Rest of Group $m	Total $m
At beginning of year	**6,749**	**3,173**	**9,922**	6,137	2,979	9,116
Interest income on scheme assets	**156**	**79**	**235**	159	81	240
Expenses	**(5)**	**(9)**	**(14)**	(6)	(12)	(18)
Actuarial gains	**(351)**	**(123)**	**(474)**	45	188	233
Exchange and other adjustments	**(349)**	**(23)**	**(372)**	596	176	772
Employer contributions	**143**	**31**	**174**	123	34	157
Participant contributions	**2**	**1**	**3**	3	–	3
Benefits paid	**(356)**	**(264)**	**(620)**	(308)	(273)	(581)
Scheme assets' fair value at end of year	**5,989**	**2,865**	**8,854**	6,749	3,173	9,922

The actual return on the plan assets was a loss of $239m (2017: gain of $473m).

Movement in post-retirement scheme obligations

	2018			2017		
	UK $m	Rest of Group $m	Total $m	UK $m	Rest of Group $m	Total $m
Present value of obligations in scheme at beginning of year	**(8,032)**	**(4,473)**	**(12,505)**	(7,118)	(4,184)	(11,302)
Current service cost	**(23)**	**(51)**	**(74)**	(23)	(64)	(87)
Past service (cost)/credit	**(34)**	**(6)**	**(40)**	(39)	70	31
Participant contributions	**(2)**	**(1)**	**(3)**	(3)	–	(3)
Benefits paid	**356**	**264**	**620**	308	273	581
Interest expense on post-retirement scheme obligations	**(185)**	**(102)**	**(287)**	(184)	(105)	(289)
Actuarial losses	**472**	**(44)**	**428**	(272)	(202)	(474)
Exchange and other adjustments	**396**	**100**	**496**	(701)	(261)	(962)
Present value of obligations in scheme at end of year	**(7,052)**	**(4,313)**	**(11,365)**	(8,032)	(4,473)	(12,505)

The obligations arise from the following plans:

	2018			2017		
	UK $m	Rest of Group $m	Total $m	UK $m	Rest of Group $m	Total $m
Funded – pension schemes	**(7,034)**	**(3,584)**	**(10,618)**	(8,013)	(3,698)	(11,711)
Funded – post-retirement healthcare	**–**	**(230)**	**(230)**	–	(245)	(245)
Unfunded – pension schemes	**–**	**(483)**	**(483)**	–	(515)	(515)
Unfunded – post-retirement healthcare	**(18)**	**(16)**	**(34)**	(19)	(15)	(34)
Total	**(7,052)**	**(4,313)**	**(11,365)**	(8,032)	(4,473)	(12,505)

Consolidated Statement of Comprehensive Income disclosures

The amounts that have been charged to the Consolidated Statement of Comprehensive Income, in respect of defined benefit schemes for the year ended 31 December 2018, are set out below.

	2018			2017		
	UK $m	Rest of Group $m	Total $m	UK $m	Rest of Group $m	Total $m
Operating profit						
Current service cost	**(23)**	**(51)**	**(74)**	(23)	(64)	(87)
Past service (cost)/credit	**(34)**	**(6)**	**(40)**	(39)	70	31
Expenses	**(5)**	**(9)**	**(14)**	(6)	(12)	(18)
Total charge to operating profit	**(62)**	**(66)**	**(128)**	(68)	(6)	(74)
Finance expense						
Interest income on scheme assets	**156**	**79**	**235**	159	81	240
Interest expense on post-retirement scheme obligations	**(185)**	**(102)**	**(287)**	(184)	(105)	(289)
Net interest on post-employment defined benefit plan liabilities	**(29)**	**(23)**	**(52)**	(25)	(24)	(49)
Charge before taxation	**(91)**	**(89)**	**(180)**	(93)	(30)	(123)
Other comprehensive income						
Difference between the actual return and the expected return on the post-retirement scheme assets	**(351)**	**(123)**	**(474)**	45	188	233
Experience gains/(losses) arising on the post-retirement scheme obligations	**(26)**	**(46)**	**(72)**	(50)	(4)	(54)
Changes in financial assumptions underlying the present value of the post-retirement scheme obligations	**389**	**4**	**393**	(261)	(214)	(475)
Changes in demographic assumptions	**109**	**(2)**	**107**	39	15	54
Remeasurement of the defined benefit liability	**121**	**(167)**	**(46)**	(227)	(15)	(242)

Past service cost in 2018 includes a charge to Operating Profit of $23m arising from the expected impact of the UK High Court judgment relating to Guaranteed Minimum Pensions on the UK Pension Fund, as referred to in the UK section on page 179. The past service cost in 2018 also includes costs predominantly related to enhanced pensions in early retirement in the UK and Sweden.

Group costs in respect of defined contribution schemes during the year were $341m (2017: $304m).

Rate sensitivities

The following table shows the US dollar effect of a change in the significant actuarial assumptions used to determine the retirement benefits obligations in our three main defined benefit pension obligation countries.

	2018		2017	
	+0.5%	–0.5%	+0.5%	–0.5%
Discount rate				
UK ($m)	**520**	**(586)**	618	(703)
US ($m)	**78**	**(83)**	95	(101)
Sweden ($m)	**152**	**(174)**	147	(168)
Total ($m)	**750**	**(843)**	860	(972)

21 Post-retirement benefits *continued*

	2018		2017	
	+0.5%	**–0.5%**	+0.5%	–0.5%
Inflation rate[1]				
UK ($m)	**(444)**	**421**	(526)	495
US ($m)	**–**	**–**	–	–
Sweden ($m)	**(171)**	**151**	(165)	146
Total ($m)	**(615)**	**572**	(691)	641

	2018		2017	
	+0.5%	**–0.5%**	+0.5%	–0.5%
Rate of increase in salaries				
UK ($m)	**–**	**–**	–	–
US ($m)	**–**	**–**	–	–
Sweden ($m)	**(52)**	**48**	(51)	47
Total ($m)	**(52)**	**48**	(51)	47

	2018		2017	
	+1 year	**–1 year**	+1 year	–1 year
Mortality rate				
UK ($m)	**(301)**[2]	**302**[3]	(337)	337
US ($m)	**(24)**	**24**	(26)	27
Sweden ($m)	**(68)**	**68**	(63)	64
Total ($m)	**(393)**	**394**	(426)	428

[1] Rate of increase in pensions in payment follows inflation.
[2] Of the $301m increase, $217m is covered by the longevity swap.
[3] Of the $302m decrease, $212m is covered by the longevity swap.

The sensitivity to the financial assumptions shown above has been estimated taking into account the approximate duration of the liabilities and the overall profile of the plan membership. The sensitivity to the life expectancy assumption has been estimated based on the distribution of the plan cash flows.

22 Reserves

Retained earnings

The cumulative amount of goodwill written off directly to reserves resulting from acquisitions, net of disposals, amounted to $619m (2017: $631m; 2016: $613m) using year-end rates of exchange.

At 31 December 2018, 456,792 shares, at a cost of $22m, have been deducted from retained earnings (2017: 476,504 shares, at a cost of $22m; 2016: 276,303 shares, at a cost of $19m) to satisfy future vesting of employee share plans.

There are no significant statutory or contractual restrictions on the distribution of current profits of subsidiaries; undistributed profits of prior years are, in the main, permanently employed in the businesses of these companies. The undistributed income of AstraZeneca companies overseas might be liable to overseas taxes and/or UK taxation (after allowing for double taxation relief) if they were to be distributed as dividends (see Note 4).

	2018 $m	2017 $m	2016 $m
Cumulative translation differences included within retained earnings			
At 1 January	**(1,017)**	(2,028)	(372)
Foreign exchange arising on consolidation	**(450)**	536	(1,050)
Exchange adjustments on goodwill (recorded against other reserves)	**(12)**	18	(11)
Foreign exchange arising on designating borrowings in net investment hedges[1]	**(520)**	505	(591)
Fair value movement on derivatives designated in net investment hedges[2]	**(8)**	(48)	(4)
Net exchange movement in retained earnings	**(990)**	1,011	(1,656)
At 31 December	**(2,007)**	(1,017)	(2,028)

[1] Foreign exchange arising on designated borrowings in net investment hedges includes $45m in respect of designated bonds and $(565)m in respect of designated contingent consideration liabilities. The change in value of designated bonds relates to $25m in respect of our £350m 5.75% 2031 non-callable bond and $20m in respect of a €450m portion of our €750m 0.875% 2021 non-callable bond. The change in value of designated contingent consideration liabilities relates to $(358)m in respect of BMS' share of Global Diabetes Alliance, $(32)m in respect of Almirall and $(6)m in respect of Definiens and $(169)m in relation to the put option liability in Acerta Pharma.
[2] Fair value movement on derivatives designated in net investment hedges comprises $(13)m in respect of our $750m Japanese yen to US dollar cross currency interest rate swap, $(1)m in respect of our $69m Chinese renminbi to US dollar cross currency interest rate swap and $6m in respect of our matured $151m Chinese renminbi to US dollar cross currency interest rate swap.

Cumulative amounts with respect to cash flow hedges included within retained earnings are $37m (2017: $76m; 2016: $80m). With effect from 1 January 2018, the Company has disclosed separately the costs of hedging of cross currency interest rate swaps in cash flow hedges and net investment hedges. The cumulative gain with respect to costs of hedging is $47m and the loss during the year was $54m.

The balance remaining in the foreign currency translation reserve from net investment hedging relationships for which hedge accounting no longer applied is a gain of £154m.

Other reserves

The other reserves arose from the cancellation of £1,255m of share premium account by the Company in 1993 and the redenomination of share capital ($157m) in 1999. The reserves are available for writing off goodwill arising on consolidation and, subject to guarantees given to preserve creditors at the date of the court order, are available for distribution.

23 Share capital of the Company

	Allotted, called-up and fully paid		
	2018 $m	2017 $m	2016 $m
Issued Ordinary Shares ($0.25 each)	**317**	317	316
Redeemable Preference Shares (£1 each – £50,000)	**–**	–	–
At 31 December	**317**	317	316

The Redeemable Preference Shares carry limited class voting rights and no dividend rights. This class of shares is capable of redemption at par at the option of the Company on the giving of seven days' written notice to the registered holder of the shares.

The Company does not have a limited amount of authorised share capital.

The movements in the number of Ordinary Shares during the year can be summarised as follows:

	No. of shares		
	2018	2017	2016
At 1 January	**1,266,221,605**	1,265,229,424	1,264,122,670
Issues of shares (share schemes)	**817,831**	992,181	1,106,754
At 31 December	**1,267,039,436**	1,266,221,605	1,265,229,424

Share repurchases

No Ordinary Shares were repurchased by the Company in 2018 (2017: nil; 2016: nil).

Shares held by subsidiaries

No shares in the Company were held by subsidiaries in any year.

24 Dividends to shareholders

	2018 Per share	2017 Per share	2016 Per share	**2018 $m**	2017 $m	2016 $m
Second interim (March 2018)	**$1.90**	$1.90	$1.90	**2,402**	2,404	2,402
Interim (September 2018)	**$0.90**	$0.90	$0.90	**1,139**	1,139	1,138
Total	**$2.80**	$2.80	$2.80	**3,541**	3,543	3,540

The Company has exercised its authority in accordance with the provisions set out in the Company's Articles of Association that the balance of unclaimed dividends over past 12 years be forfeited. $2m of unclaimed dividends have been adjusted for in retained earnings in 2018.

The 2017 second interim dividend of $1.90 per share was paid on 19 March 2018.

Reconciliation of dividend charged to equity to cash flow statement:

	2018 $m	2017 $m	2016 $m
Dividends charged to equity	**3,541**	3,543	3,540
Exchange losses/(gains) on payment of dividend	**10**	(4)	3
Hedge contracts relating to payment of dividends (cash flow statement)	**(67)**	(20)	18
Dividends paid (cash flow statement)	**3,484**	3,519	3,561

25 Non-controlling interests

Following the acquisition of a majority stake in Acerta Pharma on 2 February 2016, the Group Financial Statements at 31 December 2018 reflect equity of $1,567m (2017: $1,676m; 2016: $1,808m) and total comprehensive losses of $109m (2017: losses of $132m; 2016: losses of $95m) attributable to the non-controlling interests, held by other parties, of Acerta Pharma B.V. and its subsidiaries. The following summarised financial information, for Acerta Pharma B.V. and its subsidiaries, is presented on a stand-alone basis since the acquisition date, and before the impact of Group-related adjustments, some of which are incorporated into this calculation of the loss attributable to the non-controlling interests:

	2018 $m	2017 $m	2016 $m
Total Revenue	**–**	–	–
(Loss)/profit after tax	**(9)**	412	(212)
Other comprehensive income	**–**	–	–
Total comprehensive (loss)/income	**(9)**	412	(212)

	2018 $m	2017 $m	2016 $m
Non-current assets	**16**	3	73
Current assets	**526**	904	79
Total assets	**542**	907	152
Current liabilities	**(63)**	(417)	(171)
Total liabilities	**(63)**	(417)	(171)
Net assets/(liabilities)	**479**	490	(19)

	2018 $m	2017 $m	2016 $m
Net cash inflow/(outflow) from operating activities	**7**	5	(223)
Net cash (outflow)/inflow from investing activities	**(4)**	–	139
Increase/(decrease) in cash and cash equivalents in the year	**3**	5	(84)

25 Non-controlling interests *continued*

The non-controlling interest in Acerta Pharma is subject to a put option, exercisable by the minority shareholders at certain points in the future, not earlier than the commercial launch of *Calquence* (acalabrutinib) in both the US and Europe and when the extent of the commercial opportunity has been fully established. This put option gives rise to a liability which is recorded at the present value of the expected redemption amount, calculated using a probability-weighted model based on forecast revenue and earnings of Acerta Pharma, and is recorded within Non-current other payables (see Note 19). The forecast revenue and earnings of Acerta Pharma will particularly be affected by the outcome of ongoing clinical trials and regulatory submissions relating to *Calquence*. If actual earnings are lower than forecast, the liability for the put option will decrease. Similarly, if actual earnings are higher than forecast, the liability for the put option will increase. The value of the liability is also sensitive to the expected timing of exercise. The amount of the liability is not directly correlated to time until the expected date of exercise. During the year, the liability was remeasured due to a change in the expected timing of the exercise of the put option, while during 2017, *Calquence* received regulatory approval in the US for the treatment of adult patients with mantle cell lymphoma (MCL) who have received at least one prior therapy. This approval has changed the weighted probability of certain outcomes in respect of the forecast earnings of Acerta Pharma and has brought forward the weighted average expected exercise date of the put option. The changes to these assumptions resulted in a decrease (2017: decrease; 2016 decrease) in the liability for the year before the effect of interest costs. On exercise of the put option, the associated cash flows will be disclosed as financing activities within the Consolidated Statement of Cash Flows.

26 Acquisitions of business operations

There were no acquisitions of business operations in 2018 or 2017.

2016 Acquisitions

Acerta Pharma

On 2 February 2016, AstraZeneca completed an agreement to invest in a majority equity stake in Acerta Pharma, a privately-owned biopharmaceutical company based in the Netherlands and US. The transaction provides AstraZeneca with a potential best-in-class irreversible oral Bruton's tyrosine kinase (BTK) inhibitor, *Calquence*, currently in Phase III development for B-cell blood cancers and in Phase I/II clinical trials in multiple solid tumours. Acerta Pharma has approximately 150 employees.

Under the terms of the agreement, AstraZeneca has acquired 55% of the issued share capital of Acerta Pharma for an upfront payment of $2.5bn. A further payment of $1.5bn was due either on receipt of the first regulatory approval for *Calquence* for any indication in the US, or the end of 2018, depending on which was first. This was paid in 2017 on receipt of first regulatory approval in the US. The agreement also includes options which, if exercised, provide the opportunity for Acerta Pharma's shareholders to sell, and AstraZeneca to buy, the remaining 45% of shares in Acerta Pharma. The options can be exercised at various points in time, conditional on the first approval of *Calquence* in both the US and Europe and when the extent of the commercial opportunity has been fully established, at a price of approximately $3bn net of certain costs and payments incurred by AstraZeneca and net of agreed future adjusting items, using a pre-agreed pricing mechanism.

The acquiring entity within the Group was a Swedish krona functional currency subsidiary. Foreign currency risk arises from the retranslation of the US dollar denominated liabilities arising from the transaction. To manage this foreign currency risk these liabilities have been designated as the hedge instrument in a net investment hedge of the Group's underlying US dollar net investments. Exchange differences on the retranslation of the contingent consideration liability are recognised in Other comprehensive income to the extent that the hedge is effective. Any ineffectiveness is taken to profit.

AstraZeneca's 55% holding is a controlling interest and Acerta Pharma's combination of intangible product rights with an established workforce and their operating processes requires that the transaction is accounted for as a business combination in accordance with IFRS 3.

Goodwill is principally attributable to the value of the specialist know-how inherent in the acquired workforce and the accounting for deferred taxes. Goodwill is not expected to be deductible for tax purposes.

Acerta Pharma's results have been consolidated into the Group's results from 2 February 2016. From the period from acquisition to 31 December 2016, Acerta Pharma had no revenues and its loss after tax was $212m.

If the acquisition had taken effect at the beginning of the reporting period in which the acquisition occurred (1 January 2016), on a *pro forma* basis, the revenue of the combined Group for 2016 would have been unchanged and the profit after tax would have been $3,367m. This *pro forma* information does not purport to represent the results of the combined Group that actually would have occurred had the acquisition taken place on 1 January 2016 and should not be taken to be representative of future results.

The fair values assigned to the Acerta Pharma business combination completed in 2016 were:

	Fair value $m
Non-current assets	
Intangible assets (Note 9)	7,307
Current assets	253
Current liabilities	(90)
Non-current liabilities	
Deferred tax liabilities	(1,777)
Total net assets acquired	5,693
Non-controlling interests	(1,903)
Goodwill (Note 8)	19
Fair value of total consideration	3,809
Less: fair value of deferred consideration	(1,332)
Total upfront consideration	2,477
Less: cash and cash equivalents acquired	(94)
Net cash outflow	2,383

Acquisition costs were immaterial.

27 Financial risk management objectives and policies

The Group's principal financial instruments, other than derivatives, comprise bank overdrafts, finance leases, loans, current and non-current investments, cash and short-term deposits. The main purpose of these financial instruments is to manage the Group's funding and liquidity requirements. The Group has other financial assets and liabilities such as trade receivables and trade payables, which arise directly from its operations.

The principal financial risks to which the Group is exposed are those of liquidity, interest rate, foreign currency and credit. Each of these is managed in accordance with Board-approved policies. These policies are set out below.

The Group uses foreign currency borrowings, foreign currency forwards and swaps, currency options, interest rate swaps and cross-currency interest rate swaps for the purpose of hedging its foreign currency and interest rate risks. The Group may designate certain financial instruments as fair value hedges, cash flow hedges or net investment hedges in accordance with IFRS 9. Hedge effectiveness is determined at the inception of the hedge relationship, and through periodic prospective effectiveness assessments to ensure that an economic relationship exists between the hedged item and hedging instrument. Sources of hedge effectiveness will depend on the hedge relationship designation but may include:

- A significant change in the credit risk of either party to the hedging relationship.
- A timing mismatch between the hedging instrument and the hedged item.
- Movements in foreign currency basis spread for derivatives in a fair value hedge.
- A significant change in the value of the foreign currency denominated net assets of the Group in a net investment hedge.

The hedge ratio for each designation will be established by comparing the quantity of the hedging instrument and the quantity of the hedged item to determine their relative weighting; for all of the Group's existing hedge relationships the hedge ratio has been determined as 1:1.

Key controls applied to transactions in derivative financial instruments are: to use only instruments where good market liquidity exists, to revalue all financial instruments regularly using current market rates and to sell options only to offset previously purchased options or as part of a risk management strategy. The Group is not a net seller of options, and does not use derivative financial instruments for speculative purposes.

Capital management

The capital structure of the Group consists of shareholders' equity (Note 23), debt (Note 18), other current investments (Note 11) and cash (Note 16). For the foreseeable future, the Board will maintain a capital structure that supports the Group's strategic objectives through:

- managing funding and liquidity risk
- optimising shareholder return
- maintaining a strong, investment-grade credit rating.

The Group utilises factoring arrangements for selected trade receivables. These factoring arrangements qualify for full derecognition of the associated trade receivables under IFRS 9. Amounts due, on invoices that have not been factored at year end, from customers that are subject to factoring arrangements are disclosed in Note 15.

Funding and liquidity risk are reviewed regularly by the Board and managed in accordance with policies described below.

The Board's distribution policy comprises a regular cash dividend and, subject to business needs, a share repurchase component. The Board regularly reviews its shareholders' return strategy, and in 2012 decided to suspend share repurchases in order to retain strategic flexibility.

The Group's net debt position (loans and borrowings net of Cash and cash equivalents, other investments and derivative financial instruments) has increased from a net debt position of $12,679m at the beginning of the year to a net debt position of $13,003m at 31 December 2018.

Liquidity risk

The Board reviews the Group's ongoing liquidity risks annually as part of the planning process and on an *ad hoc* basis. The Board considers short-term requirements against available sources of funding, taking into account forecast cash flows. The Group manages liquidity risk by maintaining access to a number of sources of funding which are sufficient to meet anticipated funding requirements. Specifically, the Group uses US commercial paper, bank loans, committed bank facilities and cash resources to manage short-term liquidity and manages long-term liquidity by raising funds through the capital markets. The Group is assigned short-term credit ratings of P-2 by Moody's and A-2 by Standard and Poor's. The Group's long-term credit rating is A3 negative outlook by Moody's and BBB+ stable outlook by Standard and Poor's.

In addition to Cash and cash equivalents of $4,831m, short-term fixed income investments of $809m, fixed deposits of $40m, less overdrafts of $160m at 31 December 2018, the Group has committed bank facilities of $4.1bn available to manage liquidity. At 31 December 2018, the Group has issued $3,792m under a Euro Medium Term Note programme and $14,546m under a SEC-registered programme. The Group increased its committed bank facilities by $1.1bn in the year to a total of $4.1bn at 31 December 2018. $0.2bn of the new facilities mature in December 2019 but have a one-year extension option, exercisable by the Group. $0.5bn of the new facilities mature in December 2020 but have a one-year extension option, exercisable by the Group. $0.4bn of the new facilities, together with the existing $3bn of facilities, mature in April 2022. The funds made available under these facility agreements may be used for the general corporate purposes of the Group. The Group regularly monitors the credit standing of the banking group and currently does not anticipate any issue with drawing on the committed facilities should this be necessary. Advances under the revolving facilities bear an interest rate per annum based on LIBOR (or other relevant benchmark rate) plus a margin. The facility agreements contain no financial covenants. At 31 December 2018 the facilities were undrawn.

27 Financial risk management objectives and policies *continued*

The maturity profile of the anticipated future contractual cash flows including interest in relation to the Group's financial liabilities, on an undiscounted basis and which, therefore, differs from both the carrying value and fair value, is as follows:

	Bank overdrafts and other loans $m	Bonds $m	Finance leases $m	Trade and other payables $m	Total non-derivative financial instruments $m	Interest rate swaps $m	Cross-currency swaps $m	Total derivative financial instruments $m	Total $m
Within one year	455	2,374	42	10,566	13,437	(54)	32	(22)	13,415
In one to two years	–	1,921	24	4,986	6,931	(19)	12	(7)	6,924
In two to three years	–	1,500	16	1,144	2,660	(15)	(216)	(231)	2,429
In three to four years	–	2,080	10	1,666	3,756	(15)	47	32	3,788
In four to five years	7	1,756	3	877	2,643	(15)	86	71	2,714
In more than five years	–	14,796	–	3,624	18,420	(30)	320	290	18,710
	462	24,427	95	22,863	47,847	(148)	281	133	47,980
Effect of interest	(4)	(8,111)	(2)	–	(8,117)	148	(351)	(203)	(8,320)
Effect of discounting, fair values and issue costs	–	(59)	–	(2,889)	(2,948)	(82)	(93)	(175)	(3,123)
31 December 2016	458	16,257	93	19,974	36,782	(82)	(163)	(245)	36,537

	Bank overdrafts and other loans $m	Bonds $m	Finance leases $m	Trade and other payables $m	Total non-derivative financial instruments $m	Interest rate swaps $m	Cross-currency swaps[1] $m	Total derivative financial instruments[1] $m	Total $m
Within one year	859	1,985	5	11,840	14,689	(10)	32	22	14,711
In one to two years	–	1,564	–	1,976	3,540	(12)	(190)	(202)	3,338
In two to three years	–	2,144	–	1,586	3,730	(12)	53	41	3,771
In three to four years	16	2,000	–	3,240	5,256	(12)	(11)	(23)	5,233
In four to five years	–	1,736	–	1,112	2,848	(12)	37	25	2,873
In more than five years	–	15,575	–	2,808	18,383	(12)	31	19	18,402
	875	25,004	5	22,562	48,446	(70)	(48)	(118)	48,328
Effect of interest	(14)	(7,969)	–	–	(7,983)	70	(504)	(434)	(8,417)
Effect of discounting, fair values and issue costs	–	(94)	–	(3,081)	(3,175)	(50)	93	43	(3,132)
31 December 2017	861	16,941	5	19,481	37,288	(50)	(459)	(509)	36,779

[1] The 2017 disclosures have been revised with the within one year outflow reducing to $32m from $420m, the in one to two years inflow increasing to $190m from $100m, the in two to three years outflow reducing to $53m from $295m, the in three to four years inflow reducing to $11m from $747m, the in four to five years outflow increasing to $37m from $34m and the in more than five years outflow increasing to $31m from $26m.

	Bank overdrafts and other loans $m	**Bonds $m**	**Finance leases $m**	**Trade and other payables $m**	**Total non-derivative financial instruments $m**	**Interest rate swaps $m**	**Cross-currency swaps $m**	**Total derivative financial instruments $m**	**Total $m**
Within one year	**774**	**1,629**	**–**	**13,029**	**15,432**	**(10)**	**(172)**	**(182)[1]**	**15,250**
In one to two years	**7**	**2,210**	**–**	**1,688**	**3,905**	**(9)**	**57**	**48[2]**	**3,953**
In two to three years	**14**	**2,002**	**–**	**833**	**2,849**	**(9)**	**33**	**24[3]**	**2,873**
In three to four years	**–**	**1,813**	**–**	**3,340**	**5,153**	**(9)**	**37**	**28[4]**	**5,181**
In four to five years	**–**	**2,069**	**–**	**776**	**2,845**	**(9)**	**37**	**28[5]**	**2,873**
In more than five years	**–**	**17,405**	**–**	**2,084**	**19,489**	**–**	**69**	**69[6]**	**19,558**
	795	**27,128**	**–**	**21,750**	**49,673**	**(46)**	**61**	**15**	**49,688**
Effect of interest	**(2)**	**(8,669)**	**–**	**–**	**(8,671)**	**46**	**(304)**	**(258)**	**(8,929)**
Effect of discounting, fair values and issue costs	**(17)**	**(122)**	**–**	**(2,139)**	**(2,278)**	**(40)**	**(83)**	**(123)**	**(2,401)**
31 December 2018	**776**	**18,337**	**–**	**19,611**	**38,724**	**(40)**	**(326)**	**(366)**	**38,358**

[1] Total derivative financial instruments within one year excludes Other current derivatives of $(18)m (2017: $5m; 2016: $10m). Total derivative financial instruments within one year and Other current derivatives reflect receivables of $10.207bn (2017: $6.738bn) and payables of $10.007bn (2017: $6.765bn).
[2] Total derivative financial instruments in one to two years reflects receivables of $35m (2017: $803m) and payables of $83m (2017: $601m).
[3] Total derivative financial instruments in two to three years reflects receivables of $950m (2017: $39m) and payables of $974m (2017: $80m).
[4] Total derivative financial instruments in three to four years reflects receivables of $30m (2017: $994m) and payables of $58m (2017: $971m).
[5] Total derivative financial instruments in four to five years reflects receivables of $30m (2017: $34m) and payables of $58m (2017: $59m).
[6] Total derivative financial instruments in more than five years reflects receivables of $2.084bn (2017: $2.198bn) and payables of $2.153bn (2017: $2.217bn).

Where interest payments are on a floating rate basis, it is assumed that rates will remain unchanged from the last business day of each year ended 31 December.

It is not expected that the cash flows in the maturity profile could occur significantly earlier or at significantly different amounts, with the exception of $5,106m of contingent consideration and $1,838m arising from the put option over the non-controlling interest in Acerta Pharma, both held within Other payables (see Note 19).

Market risk

Interest rate risk

The Group maintains a mix of fixed and floating rate debt. The portion of fixed rate debt was approved by the Board and any variation requires Board approval.

A significant portion of the long-term debt is held at fixed rates of interest. The Group uses interest rate swaps and forward rate agreements to manage this mix. During the year, the Group issued $1.25bn of bonds maturing in 2023, $1.0bn in 2029 and $0.75bn in 2048. These were to refinance the $1.4bn of bonds maturing in 2018 and for general corporate purposes.

At 31 December 2018, the Group held interest rate swaps with a notional value of $0.29bn, converting the 7% guaranteed debentures payable in 2023 to floating rates. No new interest rate swaps were entered into during 2018. At 31 December 2018, swaps with a notional value of $0.29bn related to debt designated as fair value through profit or loss. Designated hedges are expected to be effective and therefore the impact of ineffectiveness on profit is not expected to be material. The accounting treatment for fair value hedges and debt designated as fair value through profit or loss is disclosed in the Group Accounting Policies section from page 157.

The majority of surplus cash is currently invested in US dollar liquidity funds, fully collateralised repurchase arrangements and investment grade fixed income securities.

The interest rate profile of the Group's interest-bearing financial instruments, as at 31 December 2018, 31 December 2017 and 31 December 2016, is set out below. In the case of current and non-current financial liabilities, the classification includes the impact of interest rate swaps which convert the debt to floating rate.

	2018			2017			2016		
	Fixed rate $m	**Floating rate $m**	**Total $m**	Fixed rate $m	Floating rate $m	Total $m	Fixed rate $m	Floating rate $m	Total $m
Financial liabilities									
Interest-bearing loans and borrowings									
Current	**999**	**755**	**1,754**	404	1,843	2,247	1,086	1,221	2,307
Non-current	**16,038**	**1,321**	**17,359**	14,608	952	15,560	13,154	1,347	14,501
Total	**17,037**	**2,076**	**19,113**	15,012	2,795	17,807	14,240	2,568	16,808
Financial assets									
Fixed deposits	**40**	**–**	**40**	–	80	80	–	37	37
Cash and cash equivalents	**–**	**4,831**	**4,831**	–	3,324	3,324	–	5,018	5,018
Total	**40**	**4,831**	**4,871**	–	3,404	3,404	–	5,055	5,055

In addition to the financial assets above, there are $6,195m (2017: $6,366m; 2016: $5,519m) of other current and non-current asset investments and other financial assets on which no interest is received.

Foreign currency risk

The US dollar is the Group's most significant currency. As a consequence, the Group results are presented in US dollars and exposures are managed against US dollars accordingly.

Translational

Approximately 67% of Group external sales in 2018 were denominated in currencies other than the US dollar, while a significant proportion of manufacturing, and research and development costs were denominated in pounds sterling and Swedish krona. Surplus cash generated by business units is substantially converted to, and held centrally in, US dollars. As a result, operating profit and total cash flow in US dollars will be affected by movements in exchange rates.

This currency exposure is managed centrally, based on forecast cash flows. The impact of movements in exchange rates is mitigated significantly by the correlations which exist between the major currencies to which the Group is exposed and the US dollar. Monitoring of currency exposures and correlations is undertaken on a regular basis and hedging is subject to pre-execution approval.

As at 31 December 2018, before impact of derivatives, 2.4% of interest-bearing loans and borrowings were denominated in pounds sterling and 18.3% were denominated in euros. Where there is non-US dollar debt and an underlying net investment of that amount in the same currency, the Group applies net investment hedging. Exchange differences on the retranslation of debt designated as net investment hedges are recognised in other comprehensive income to the extent that the hedge is effective. Any ineffectiveness is taken to profit.

The Group holds cross-currency swaps to hedge against the impact of fluctuations in foreign exchange rates. Fair value movements on the revaluation of the cross-currency swaps are recognised in other comprehensive income to the extent that the hedge is effective, with any ineffectiveness taken to profit.

Foreign currency risk arises when the Group has inter-company funding and investments in certain subsidiaries operating in countries with exchange controls or where there is risk of significant future currency devaluation. One indicator of potential foreign currency risk is where a country is officially designated as hyper inflationary. As at 31 December 2018, the Group operates in two countries designated as hyper inflationary being Argentina and Venezuela.

The foreign exchange risk to the Group from Argentina is immaterial.

At the start of 2018 Venezuela operated a two tier exchange rate system with a heavily subsidised DIPRO rate for essential goods and services and a second rate, DICOM, to cover all other non-essentials. During 2017 the Group had begun to use the DICOM rate for the consolidation of its financial statements, believing that this was the best expectation of the rate at which profits would be remitted. As a result of this the Group was unaffected by the elimination of the DIPRO rate in early 2018. The foreign exchange risk to the Group from Venezuela is immaterial.

Transactional

The Group aims to hedge all its forecast major transactional currency exposures on working capital balances, which typically extend for up to three months, are hedged, where practicable, using forward foreign exchange contracts against individual Group companies' reporting currency. In addition, the Group's external dividend, which is paid principally in pounds sterling and Swedish krona, is fully hedged from announcement to payment date. Foreign exchange gains and losses on forward contracts transacted for transactional hedging are taken to profit.

Sensitivity analysis

The sensitivity analysis set out overleaf summarises the sensitivity of the market value of our financial instruments to hypothetical changes in market rates and prices. The range of variables chosen for the sensitivity analysis reflects our view of changes which are reasonably possible over a one-year period. Market values are the present value of future cash flows based on market rates and prices at the valuation date. For long-term debt, an increase in interest rates results in a decline in the fair value of debt.

27 Financial risk management objectives and policies *continued*

The sensitivity analysis assumes an instantaneous 100 basis point change in interest rates in all currencies from their levels at 31 December 2018, with all other variables held constant. Based on the composition of our long-term debt portfolio as at 31 December 2018, a 1% increase in interest rates would result in an additional $17m in interest expense being incurred per year. The exchange rate sensitivity analysis assumes an instantaneous 10% change in foreign currency exchange rates from their levels at 31 December 2018, with all other variables held constant. The +10% case assumes a 10% strengthening of the US dollar against all other currencies and the -10% case assumes a 10% weakening of the US dollar.

Each incremental 10% movement in foreign currency exchange rates would have approximately the same effect as the initial 10% detailed in the table below and each incremental 1% change in interest rates would have approximately the same effect as the 1% detailed in the table below.

	Interest rates		Exchange rates	
31 December 2016	+1%	–1%	+10%	–10%
Increase/(decrease) in fair value of financial instruments ($m)	1,249	(1,390)	180	(180)
Impact on profit: (loss)/gain ($m)	–	–	(24)	24
Impact on equity: gain/(loss) ($m)	–	–	204	(204)

	Interest rates		Exchange rates	
31 December 2017	+1%	–1%	+10%	–10%
Increase/(decrease) in fair value of financial instruments ($m)	1,329	(1,293)	198	(198)
Impact on profit: (loss)/gain ($m)	–	–	(123)	123
Impact on equity: gain/(loss) ($m)	–	–	321	(321)

	Interest rates		Exchange rates	
31 December 2018	**+1%**	**–1%**	+10%	–10%
Increase/(decrease) in fair value of financial instruments ($m)	**1,130**	**(1,267)**	**(146)**	**161**
Impact on profit: (loss)/gain ($m)	**–**	**–**	**(299)**	**348**
Impact on equity: gain/(loss) ($m)	**–**	**–**	**153**	**(187)**

In 2018 the Group changed the method for assessing a 10% change in foreign currency exchange rates. In 2017 and 2016 the sensitivity was calculated as 10% of year end exposure. The sensitivity is now calculated by dividing the non-USD balances by adjusted foreign rates. This does not have a material impact on results but has resulted in the weakening and strengthening values no longer being symmetrical. There have been no other changes in the methods and assumptions used in preparing the sensitivity analysis.

Credit risk

The Group is exposed to credit risk on financial assets, such as cash investments, derivative instruments, and Trade and other receivables. The Group is also exposed in its Net asset position to its own credit risk in respect of the 2023 debentures which are accounted for at fair value through profit or loss. Under IFRS 9, the Group records the effect of the losses and gains, arising from own credit risk, on the fair value of bonds designated at fair value through profit or loss in Other comprehensive income.

Financial counterparty credit risk

The majority of the AstraZeneca Group's cash is centralised within the Group Treasury entity and is subject to counterparty risk on the principal invested. The level of the Group's cash investments and hence credit risk will depend on the cash flow generated by the Group and the timing of the use of that cash. The credit risk is mitigated through a policy of prioritising security and liquidity over return, and, as such, cash is only invested in high credit quality investments. Counterparty limits are set according to the assessed risk of each counterparty and exposures are monitored against these limits on a regular basis.

The Group's principal financial counterparty credit risks at 31 December 2018 were as follows:

Current assets

	2018 $m	2017 $m	2016 $m
Cash at bank and in hand	**893**	784	782
Money market liquidity fund	**3,435**	1,150	3,440
Collateralised repurchase agreement	**400**	1,150	950
Bank collateral[1]	**–**	–	(242)
Other short-term cash equivalents	**103**	240	88
Total Cash and cash equivalents (Note 16)	**4,831**	3,324	5,018
Fixed income securities at fair value through profit and loss (Note 11)	**809**	–	–
Fixed income securities available for sale (Note 11)	**–**	1,150	847
Fixed deposits (Note 11)	**40**	80	37
Total derivative financial instruments (Note 12)	**258**	28	27
Current assets subject to credit risk	**5,938**	4,582	5,929

[1] In 2017 the Group changed its accounting policy such that collateral receipts were included in interest bearing loans and borrowings.

Non-current assets

	2018 $m	2017 $m	2016 $m
Equity securities at fair value through other comprehensive income (Note 11)	**833**	–	–
Equity securities available for sale (Note 11)	**–**	933	727
Derivative financial instruments (Note 12)	**157**	504	343
Non-current assets subject to credit risk	**990**	1,437	1,070

The Group may hold significant cash balances as part of its normal operations, with the amount of cash held at any point reflecting the level of cash flow generated by the business and the timing of the use of that cash. The majority of excess cash is centralised within the Group treasury entity and is subject to counterparty risk on the principal invested. This risk is mitigated through a policy of prioritising security and liquidity over return, and, as such, cash is only invested in high credit quality investments. Counterparty limits are set according to the assessed risk of each counterparty and exposures are monitored against these limits on a regular basis. The majority of the Group's cash is invested in US dollar AAA-rated liquidity funds, fully collateralised repurchase agreements and short-term bank deposits.

The money market liquidity fund portfolios are managed by five external third-party fund managers to maintain an AAA rating. The Group's investments represent no more than 10% of each overall fund value. There were no other significant concentrations of financial credit risk at the reporting date.

The short-term repurchase agreements are fully collateralised investments. The collateral is fixed income in nature and is held by a third party custodian and represents approximately 101% of the value of the cash deposited. The minimum long term credit rating of the collateral is BBB minus. In the event of any default, ownership of the collateral would revert to the Group, and would be readily convertible to cash. The value of the collateral held at 31 December 2018 was $403m (2017: $1,151m; 2016: $951m).

The fixed income securities are managed by four external third-party fund managers. The long term rating of these securities was BBB minus or better.

All financial derivatives are transacted with commercial banks, in line with standard market practice. The Group has agreements with some bank counterparties whereby the parties agree to post cash collateral, for the benefit of the other, equivalent to the market valuation of the derivative positions above a predetermined threshold. The carrying value of such cash collateral held by the Group at 31 December 2018 was $384m (2017: $513m; 2016: $322m) and the carrying value of each cash collateral posted by the Group at 31 December 2018 was $14m (2017: $nil; 2016: $80m).

The impairment provision for other financial assets at 31 December 2018 was immaterial.

Equity securities represent non-controlling investments in third-party pharmaceutical companies.

Trade and other receivables

Trade receivable exposures are managed locally in the operating units where they arise and credit limits are set as deemed appropriate for the customer. The Group is exposed to customers ranging from government-backed agencies and large private wholesalers to privately owned pharmacies, and the underlying local economic and sovereign risks vary throughout the world. Where appropriate, the Group endeavours to minimise risks by the use of trade finance instruments such as letters of credit and insurance. Following the adoption of IFRS 9 on 1 January 2018 the Group introduced the expected credit loss approach to establish an allowance for impairment that represents its estimate of expected losses in respect of Trade and other receivables. Given the general quality and short-term nature of our trade receivables, there was no material impact assessed arising from the introduction of this method.

The Group applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables. To measure expected credit losses trade receivables have been grouped based on shared credit characteristics and the days past due.

The expected loss rates are based on payment profiles over a period of 36 months before 31 December 2018 or 1 January 2018 respectively and the corresponding historical credit losses experienced within this period. The historical loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors affecting the ability of the customer to settle the receivables.

On that basis, the loss allowance as at 31 December 2018 and 1 January 2018 was determined as follows:

31 December 2018	Current	0-90 days past due	90-180 days past due	Over 180 days past due	Total
Expected loss rate	0.05%	0.75%	10%	47%	
Gross carrying amount	2,854	82	27	70	3,033
Loss allowance	1	1	3	33	38

1 January 2018	Current	0-90 days past due	90-180 days past due	Over 180 days past due	Total
Expected loss rate	0.05%	0.75%	5%	33%	
Gross carrying amount	2,490	262	31	35	2,818
Loss allowance	1	2	1	12	16

Trade receivables are written off where there is no reasonable expectation of recovery.

Impairment losses on trade receivables are presented as net impairment losses within operating profit, any subsequent recoveries are credited against the same line.

In the US, sales to three wholesalers accounted for approximately 88% of US sales (2017: three wholesalers accounted for approximately 60%; 2016: three wholesalers accounted for approximately 83%).

27 Financial risk management objectives and policies *continued*

The ageing of trade receivables at the reporting date was:

	2018 $m	2017 $m	2016 $m
Not past due	**2,853**	2,488	2,559
Past due 0–90 days	**81**	260	14
Past due 90–180 days	**24**	31	–
Past due > 180 days	**37**	23	10
	2,995	2,802	2,583

	2018 $m	2017 $m	2016 $m
Movements in provisions for trade receivables			
At 1 January	**16**	42	52
Income statement	**22**	(26)	–
Amounts utilised, exchange and other movements	**–**	–	(10)
At 31 December	**38**	16	42

Given the profile of our customers, including large wholesalers and government-backed agencies, no further credit risk has been identified with the trade receivables not past due other than those balances for which an allowance has been made. The income statement credit or charge is recorded in Selling, general and administrative costs.

28 Employee costs and share plans for employees

Employee costs

The average number of people, to the nearest hundred, employed by the Group is set out in the table below. In accordance with the Companies Act 2006, this includes part-time employees.

	2018	2017	2016
Employees			
UK	**7,200**	6,900	7,000
Continental Europe	**14,800**	14,500	14,700
The Americas	**16,700**	16,300	17,800
Asia, Africa & Australasia	**24,500**	22,300	22,000
Continuing operations	**63,200**	60,000	61,500

Geographical distribution described in the table above is by location of legal entity employing staff. Certain staff will spend some or all of their activity in a different location.

The number of people employed by the Group at the end of 2018 was 64,400 (2017: 61,100; 2016: 59,700).

The costs incurred during the year in respect of these employees were:

	2018 $m	2017 $m	2016 $m
Salaries	**5,370**	5,004	4,664
Social security costs	**626**	570	584
Pension costs	**469**	378	426
Other employment costs	**505**	534	610
Total	**6,970**	6,486	6,284

Severance costs of $94m are not included above (2017: $225m; 2016: $578m).

The Directors believe that, together with the basic salary system, the Group's employee incentive schemes provide competitive and market-related packages to motivate employees. They should also align the interests of employees with those of shareholders, as a whole, through long-term share ownership in the Company. The Group's current UK, Swedish and US schemes are described below; other arrangements apply elsewhere.

Bonus plans

The AstraZeneca UK Performance Bonus Plan

Employees of participating AstraZeneca UK companies are invited to participate in this bonus plan, which rewards strong individual performance. Bonuses are paid in cash.

The AstraZeneca Executive Annual Bonus Scheme

This scheme is a performance bonus scheme for Directors and senior employees who do not participate in the AstraZeneca UK Performance Bonus Plan. Annual bonuses are paid in cash and reflect both corporate and individual performance measures. The Remuneration Committee has discretion to reduce or withhold bonuses if business performance falls sufficiently short of expectations in any year such as to make the payment of bonuses inappropriate.

The AstraZeneca Deferred Bonus Plan

This plan was introduced in 2006 and is used to defer a portion of the bonus earned under the AstraZeneca Executive Annual Bonus Scheme into Ordinary Shares in the Company for a period of three years. The plan currently operates only in respect of Executive Directors and members of the SET. Awards of shares under this plan are typically made in March each year, the first award having been made in February 2006.

Sweden
In Sweden, an all-employee performance bonus plan is in operation, which rewards strong individual performance. Bonuses are paid 50% into a fund investing in AstraZeneca equities and 50% in cash. The AstraZeneca Executive Annual Bonus Scheme, the AstraZeneca Performance Share Plan and the AstraZeneca Global Restricted Stock Plan all operate in respect of relevant AstraZeneca employees in Sweden.

US
In the US, there are two all-employee short-term or annual performance bonus plans in operation to differentiate and reward strong individual performance. Annual bonuses are paid in cash. There is also one senior staff long-term incentive scheme, under which 123 participants may be eligible for awards granted as AstraZeneca ADSs. AstraZeneca ADSs necessary to satisfy the awards are purchased in the market or funded via a share trust. The AstraZeneca Performance Share Plan and the AstraZeneca Global Restricted Stock Plan operate in respect of relevant employees in the US.

Share plans
The charge for share-based payments in respect of share plans is $219m (2017: $220m; 2016: $241m). The plans are equity settled.

The AstraZeneca UK All-Employee Share Plan
The Company offers UK employees the opportunity to buy Partnership Shares (Ordinary Shares). Employees may invest up to £1,800 over a 12-month accumulation period and purchase Partnership Shares in the Company with the total proceeds at the end of the period. The purchase price for the shares is the lower of the price at the beginning or the end of the 12-month period. In 2010, the Company introduced a Matching Share element, the first award of which was made in 2011. Currently one Matching Share is awarded for every four Partnership Shares purchased. Partnership Shares and Matching Shares are held in the HM Revenue & Customs (HMRC)-approved All-Employee Share Plan. At the Company's AGM in 2002, shareholders approved the issue of new shares for the purposes of the All-Employee Share Plan.

The AstraZeneca 2014 Performance Share Plan (PSP)
This plan was approved by shareholders in 2014 for a period of 10 years and replaces the AstraZeneca Performance Share Plan. Generally, awards can be granted at any time, but not during a closed period of the Company. The first grant of awards was made in May 2014. Awards granted under the plan vest after three years, or in the case of Executive Directors and members of the SET, after an additional two-year holding period, and can be subject to the achievement of performance conditions. For awards granted to all participants in 2018, vesting is subject to a combination of measures focused on scientific leadership, revenue growth and financial performance. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated, including agreeing performance targets and which employees should be invited to participate. The main grant of awards in 2018 under the plan took place in March with further grants in May and August.

	Shares '000	WAFV[1] pence	WAFV[1] $
Shares awarded in March 2016	2,673	1962	28.19
Shares awarded in May 2016	24	1935	28.64
Shares awarded in August 2016	67	2536	33.58
Shares awarded in March 2017	2,359	2440	30.88
Shares awarded in May 2017	10	2607	34.20
Shares awarded in August 2017	44	2234	29.11
Shares awarded in March 2018	3,400	2427	34.62
Shares awarded in May 2018	18	2651	36.42
Shares awarded in August 2018	92	2982	38.46

[1] Weighted average fair value.

The AstraZeneca Investment Plan (AZIP)
This plan was introduced in 2010 and approved by shareholders at the 2010 AGM. The final grant of awards under this plan took place in March 2016. Awards granted under the plan vest after eight years and are subject to performance conditions measured over a period of between three and eight years.

	Shares '000	WAFV pence	WAFV $
Shares awarded in March 2016	84	3923	56.38

The AstraZeneca Global Restricted Stock Plan
This plan was introduced in 2010. The main grant of awards in 2018 under the plan was in March, with further, smaller grants in May, August and November. This plan provides for the grant of restricted stock unit (RSU) awards to selected below SET-level employees and is used in conjunction with the AstraZeneca Performance Share Plan to provide a mix of RSUs and performance shares. Awards typically vest on the third anniversary of the date of grant and are contingent on continued employment with the Company. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated.

	Shares '000	WAFV pence	WAFV $
Shares awarded in March 2016	2,695	3923	56.38
Shares awarded in August 2016	122	5071	67.16
Shares awarded in March 2017	2,502	4880	61.76
Shares awarded in May 2017	78	5214	68.40
Shares awarded in August 2017	31	4468	58.22
Shares awarded in November 2017	77	4942	66.24
Shares awarded in March 2018	4,474	4853	69.24
Shares awarded in August 2018	40	5964	76.92
Shares awarded in November 2018	3	6300	82.86

28 Employee costs and share plans for employees *continued*

The AstraZeneca Restricted Share Plan

This plan was introduced in 2008 and provides for the grant of restricted share awards to key employees, excluding Executive Directors. Awards are made on an *ad hoc* basis with variable vesting dates. The plan has been used four times in 2018 to make awards to 252 employees. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated.

	Shares '000	WAFV pence	WAFV $
Shares awarded in March 2016	809	3923	56.38
Shares awarded in May 2016	335	3869	57.28
Shares awarded in August 2016	37	5071	67.16
Shares awarded in November 2016	14	4233	53.42
Shares awarded in February 2017	205	4293	55.50
Shares awarded in March 2017	134	4880	61.76
Shares awarded in May 2017	8	5214	68.40
Shares awarded in August 2017	26	4468	58.22
Shares awarded in September 2017	31	4765	65.60
Shares awarded in November 2017	23	4942	66.24
Shares awarded in March 2018	148	4853	69.24
Shares awarded in May 2018	45	5301	72.84
Shares awarded in August 2018	37	5964	76.92
Shares awarded in November 2018	38	6300	82.86

The AstraZeneca Extended Incentive Plan

This plan was introduced in 2018 and provides for the grant of awards to key employees, excluding Executive Directors. Awards are made on an *ad hoc* basis and 50% of the award will normally vest on the fifth anniversary of grant, with the balance vesting on the tenth anniversary of grant. The award can be subject to the achievement of performance conditions. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated, including agreeing performance targets (if any) and which employees should be invited to participate.

	Shares '000	WAFV pence	WAFV $
Shares awarded in March 2018	163	4853	69.24
Shares awarded in August 2018	116	5964	76.92
Shares awarded in November 2018	24	6300	82.86

The fair values were determined using a modified version of the Monte Carlo model. This method incorporated expected dividends but no other features into the measurements of fair value. The grant date fair values of share awards disclosed in this section do not take account of service and non-market related performance conditions.

29 Commitments and contingent liabilities

Commitments	**2018 $m**	2017 $m	2016 $m
Contracts placed for future capital expenditure on Property, plant and equipment and software development costs not provided for in these accounts	**586**	570	629

Guarantees and contingencies arising in the ordinary course of business, for which no security has been given, are not expected to result in any material financial loss.

Research and development collaboration payments

The Group has various ongoing collaborations, including in-licensing and similar arrangements with development partners. Such collaborations may require the Group to make payments on achievement of stages of development, launch or revenue milestones, although the Group generally has the right to terminate these agreements at no cost. The Group recognises research and development milestones as intangible assets once it is committed to payment, which is generally when the Group reaches set trigger points in the development cycle. Revenue-related milestones are recognised as Intangible assets on product launch at a value based on the Group's long-term revenue forecasts for the related product. The table below indicates potential development and revenue-related payments that the Group may be required to make under such collaborations.

	Total $m	**Under 1 year $m**	**Years 1 and 2 $m**	**Years 3 and 4 $m**	**Years 5 and greater $m**
Future potential research and development milestone payments	**6,881**	**425**	**966**	**1,395**	**4,095**
Future potential revenue milestone payments	**6,011**	**68**	**718**	**271**	**4,954**

The table includes all potential payments for achievement of milestones under ongoing research and development arrangements. Revenue-related milestone payments represent the maximum possible amount payable on achievement of specified levels of revenue as set out in individual contract agreements, but exclude variable payments that are based on unit sales (eg royalty-type payments) which are expensed as the associated sale is recognised. The table excludes any payments already capitalised in the Financial Statements for the year ended 31 December 2018.

The future payments we disclose represent contracted payments and, as such, are not discounted and are not risk adjusted. As detailed in the Risk section from page 220, the development of any pharmaceutical product candidate is a complex and risky process that may fail at any stage in the development process due to a number of factors (including items such as failure to obtain regulatory approval, unfavourable data from key studies, adverse reactions to the product candidate or indications of other safety concerns). The timing of the payments is based on the Group's current best estimate of achievement of the relevant milestone.

Environmental costs and liabilities

The Group's expenditure on environmental protection, including both capital and revenue items, relates to costs that are necessary for implementing internal systems and programmes, and meeting legal and regulatory requirements for processes and products. This includes investment to conserve natural resources and otherwise minimise the impact of our activities on the environment.

They are an integral part of normal ongoing expenditure for carrying out the Group's research, manufacturing and commercial operations and are not separated from overall operating and development costs. There are no known changes in legal, regulatory or other requirements resulting in material changes to the levels of expenditure for 2016, 2017 or 2018.

In addition to expenditure for meeting current and foreseen environmental protection requirements, the Group incurs costs in investigating and cleaning up land and groundwater contamination. In particular, AstraZeneca has environmental liabilities at some currently or formerly owned, leased and third-party sites.

In the US, Zeneca Inc., and/or its indemnitees, have been named as potentially responsible parties (PRPs) or defendants at approximately 13 sites where Zeneca Inc. is likely to incur future environmental investigation, remediation, operation and maintenance costs under federal, state, statutory or common law environmental liability allocation schemes (together, US Environmental Consequences). Similarly, Stauffer Management Company LLC (SMC), which was established in 1987 to own and manage certain assets of Stauffer Chemical Company acquired that year, and/or its indemnitees, have been named as PRPs or defendants at a number of sites where SMC is likely to incur US Environmental Consequences.

AstraZeneca has also given indemnities to third parties for a number of sites outside the US. These environmental liabilities arise from legacy operations that are not currently part of the Group's business and, at most of these sites, remediation, where required, is either completed or nearing completion. AstraZeneca has made provisions for the estimated costs of future environmental investigation, remediation, operation and maintenance activity beyond normal ongoing expenditure for maintaining the Group's R&D and manufacturing capacity and product ranges, where a present obligation exists, it is probable that such costs will be incurred and they can be estimated reliably. With respect to such estimated future costs, there were provisions at 31 December 2018 in the aggregate of $97m (2017: $59m; 2016: $59m), mainly relating to the US. Where we are jointly liable or otherwise have cost-sharing agreements with third parties, we reflect only our share of the obligation. Where the liability is insured in part or in whole by insurance or other arrangements for reimbursement, an asset is recognised to the extent that this recovery is virtually certain.

It is possible that AstraZeneca could incur future environmental costs beyond the extent of our current provisions. The extent of such possible additional costs is inherently difficult to estimate due to a number of factors, including: (1) the nature and extent of claims that may be asserted in the future; (2) whether AstraZeneca has or will have any legal obligation with respect to asserted or unasserted claims; (3) the type of remedial action, if any, that may be selected at sites where the remedy is presently not known; (4) the potential for recoveries from or allocation of liability to third parties; and (5) the length of time that the environmental investigation, remediation and liability allocation process can take. As per our accounting policy on page 158, Provisions for these costs are made when there is a present obligation and where it is probable that expenditure on remedial work will be required and a reliable estimate can be made of the cost. Notwithstanding and subject to the foregoing, we estimate the potential additional loss for future environmental investigation, remediation, remedial operation and maintenance activity above and beyond our provisions to be, in aggregate, between $71m and $118m (2017: $87m and $144m; 2016: $85m and $141m), which relates mainly to the US.

Legal proceedings

AstraZeneca is involved in various legal proceedings considered typical to its business, including actual or threatened litigation and/or actual or potential government investigations relating to employment matters, product liability, commercial disputes, pricing, sales and marketing practices, infringement of IP rights, and the validity of certain patents and competition laws. The more significant matters are discussed below.

Most of the claims involve highly complex issues. Often these issues are subject to substantial uncertainties and, therefore, the probability of a loss, if any, being sustained and an estimate of the amount of any loss is difficult to ascertain. Consequently, for a majority of these claims, it is not possible to make a reasonable estimate of the expected financial effect, if any, that will result from ultimate resolution of the proceedings. In these cases, AstraZeneca discloses information with respect to the nature and facts of the cases.

With respect to each of the legal proceedings described below, other than those for which provision has been made, we are unable to make estimates of the possible loss or range of possible losses at this stage, other than as set forth in this section. We also do not believe that disclosure of the amount sought by plaintiffs, if known, would be meaningful with respect to those legal proceedings. This is due to a number of factors, including (1) the stage of the proceedings (in many cases trial dates have not been set) and the overall length and extent of pre-trial discovery; (2) the entitlement of the parties to an action to appeal a decision; (3) clarity as to theories of liability, damages and governing law; (4) uncertainties in timing of litigation; and (5) the possible need for further legal proceedings to establish the appropriate amount of damages, if any.

While there can be no assurance regarding the outcome of any of the legal proceedings referred to in this Note 29, based on management's current and considered view of each situation, we do not currently expect them to have a material adverse effect on our financial position. This position could of course change over time, not least because of the factors referred to above.

In cases that have been settled or adjudicated, or where quantifiable fines and penalties have been assessed and which are not subject to appeal (or other similar forms of relief), or where a loss is probable and we are able to make a reasonable estimate of the loss, we generally indicate the loss absorbed or make a provision for our best estimate of the expected loss.

Where it is considered that the Group is more likely than not to prevail, legal costs involved in defending the claim are charged to profit as they are incurred.

Where it is considered that the Group has a valid contract which provides the right to reimbursement (from insurance or otherwise) of legal costs and/or all or part of any loss incurred or for which a provision has been established, and we consider recovery to be virtually certain, the best estimate of the amount expected to be received is recognised as an asset.

Assessments as to whether or not to recognise provisions or assets, and of the amounts concerned, usually involve a series of complex judgements about future events and can rely heavily on estimates and assumptions. AstraZeneca believes that the provisions recorded are adequate based on currently available information and that the insurance recoveries recorded will be received. However, given the inherent uncertainties involved in assessing the outcomes of these cases, and in estimating the amount of the potential losses and the associated insurance recoveries, we could in the future incur judgments or insurance settlements that could have a material adverse effect on our results in any particular period.

IP claims include challenges to the Group's patents on various products or processes and assertions of non-infringement of patents. A loss in any of these cases could result in loss of patent protection on the related product. The consequences of any such loss could be a significant decrease in product sales, which could have a material adverse effect on our results. The lawsuits filed by AstraZeneca for patent infringement against companies that have filed ANDAs in the US, seeking to market generic forms of products sold by the Group prior to the expiry of the applicable patents covering these products, typically also involve allegations of non-infringement, invalidity and unenforceability of these patents by the ANDA filers. In the event that the Group is unsuccessful in these actions or the statutory 30-month stay expires before a ruling is obtained, the ANDA filers involved will also have the ability, subject

to FDA approval, to introduce generic versions of the product concerned.

AstraZeneca has full confidence in, and will vigorously defend and enforce, its IP.

Over the course of the past several years, including in 2018, a significant number of commercial litigation claims in which AstraZeneca is involved have been resolved, particularly in the US, thereby reducing potential contingent liability exposure arising from such litigation. Similarly, in part due to patent litigation and settlement developments, greater certainty has been achieved regarding possible generic entry dates with respect to some of our patented products. At the same time, like other companies in the pharmaceutical sector and other industries, AstraZeneca continues to be subject to government investigations around the world.

Patent litigation

Brilinta (ticagrelor)

US patent proceedings

In 2015 and subsequently, in response to Paragraph IV notices from multiple ANDA filers, AstraZeneca filed patent infringement lawsuits in the US District Court for the District of Delaware (the District Court) relating to patents listed in the FDA Orange Book with reference to *Brilinta*. In 2018, AstraZeneca entered into several separate settlements and the District Court entered consent judgments to dismiss several of the litigations. Additional proceedings are ongoing in the District Court. No trial date has been set.

Patent proceedings outside the US

In Canada, in June 2017, Teva Canada Limited (Teva) challenged the patents listed on the Canadian Patent Register with reference to *Brilinta*. In September 2017, Apotex Inc. (Apotex) did the same. AstraZeneca discontinued the proceeding against Teva in June 2018 after Teva withdrew its challenge. The hearing in the Apotex matter is scheduled for May 2019. In October 2018, Taro Pharmaceuticals Inc. (Taro) also challenged the patents. AstraZeneca commenced an infringement action against Taro in November 2018.

In China, in October 2017, the Chinese Patent Office issued a decision invalidating one of AstraZeneca's Chinese substance patents relating to *Brilinta*. AstraZeneca appealed and, in December 2018, the Beijing High People's Court vacated the invalidation decision and remanded the case back to the Chinese Patent Office for further processing in view of the Court's decision. The patent, Chinese Patent No. ZL99815926.3, is due to expire in December 2019.

Calquence (acalabrutinib)

US patent proceedings

In November 2017, Pharmacyclics LLC (Pharmacyclics, a company in the AbbVie group) filed a patent infringement lawsuit in the District Court of Delaware (the District Court) against Acerta Pharma and AstraZeneca relating to *Calquence*. A trial has been scheduled for June 2020.

In April 2018, AstraZeneca and Acerta Pharma filed a complaint in the District Court against Pharmacyclics and AbbVie, Inc. alleging that their drug, *Imbruvica*, infringes a US patent owned by Acerta Pharma. In November 2018, Janssen Biotech, Inc. intervened as a defendant. A trial has been scheduled for January 2021.

Crestor (rosuvastatin calcium)

Patent proceedings outside the US

In Australia, AstraZeneca had taken a provision in respect of damages claims from generic entities and the Commonwealth of Australia in relation to alleged losses suffered in connection with AstraZeneca's enforcement of *Crestor* patents which were subsequently found invalid. In February 2018, AstraZeneca settled the claim from Apotex Pty Ltd (and other related Apotex entities) which was the last generic claim outstanding with respect to this matter. In May 2018, AstraZeneca settled the claim from the Commonwealth of Australia and, as a result, all of the claims related to this matter have now been resolved and the matter is now closed.

In France, patent infringement proceedings are now resolved against Biogaran S.A.S. in relation to the *Crestor* substance patent (European Patent No. EP 0,521,471).

In Japan, patent invalidity proceedings are now resolved against Nippon Chemiphar Co. Ltd (Nippon) in relation to the *Crestor* substance patent (Japanese Patent No. JP 2648897). The patent was found valid by the Japanese Patent Office in 2016 and an appeal from Nippon has been dismissed.

In the Netherlands, in 2016, Resolution Chemicals Ltd. (Resolution) appealed a lower court's decision that Resolution's rosuvastatin zinc product infringed the supplementary protection certificate related to AstraZeneca's European Patent No. EP 0,521,471 to the Supreme Court of the Netherlands (the Supreme Court). In 2018, the Supreme Court dismissed Resolution's appeal and upheld Resolution's product as infringing AstraZeneca's patent rights in the Netherlands. The matter is now closed.

In Spain, in 2017, AstraZeneca initiated patent infringement proceedings against ratiopharm España, S.A. (ratiopharm) in reference to ratiopharm's rosuvastatin zinc product. In 2018, AstraZeneca settled the proceedings against ratiopharm and the matter is now closed.

Daliresp (roflumilast)

US patent proceedings

In 2015 and subsequently, in response to Paragraph IV notices from multiple ANDA filers, AstraZeneca filed patent infringement lawsuits in the US District Court for the District of New Jersey (the District Court) relating to patents listed in the FDA Orange Book with reference to *Daliresp*. In 2018, AstraZeneca entered into several separate settlements and the District Court entered consent judgments to dismiss several of the litigations. Additional proceedings are ongoing in the District Court. No trial date has been set.

Farxiga (dapagliflozin)

US patent proceedings

In May 2018, AstraZeneca initiated ANDA litigation against Zydus Pharmaceuticals (USA) Inc. (Zydus) in the US District Court for the District of Delaware. In its complaint, AstraZeneca alleged that Zydus' generic version of *Farxiga*, if approved and marketed, would infringe AstraZeneca's US Patents Nos. 6,414,126 and 6,515,117. In June 2018, Zydus filed its answer and counterclaims for non-infringement of AstraZeneca's US Patent Nos. 7,851,502; 7,919,598; 8,221,786; 8,361,972; 8,501,698; 8,685,934; and 8,716,251. Trial is scheduled for February 2021.

Faslodex (fulvestrant)

US patent proceedings

AstraZeneca has filed patent infringement lawsuits in the US District Court for the District of New Jersey (the District Court) relating to four patents listed in the FDA Orange Book with reference to *Faslodex* after receiving a number of Paragraph IV notices relating to multiple ANDAs or NDAs submitted pursuant to 21 U.S.C. § 355(b)(2) seeking FDA approval to market generic versions of *Faslodex* prior to the expiration of AstraZeneca's patents. In July 2016, AstraZeneca settled one of these, the lawsuit brought against Sandoz, Inc (Sandoz), and the District Court entered a consent judgment, which included an injunction preventing Sandoz from launching a generic fulvestrant product until March 2019, or earlier in certain circumstances. Between 2016 and 2018, AstraZeneca resolved all of the remaining lawsuits, and the District Court also entered consent judgments ending those lawsuits. In December 2018, AstraZeneca filed a new patent infringement lawsuit in the District Court relating to all four listed-patents after receiving a new Paragraph IV notice relating to an ANDA seeking FDA approval to market generic versions of *Faslodex* prior to the expiration of AstraZeneca's patents.

Patent proceedings outside the US

In France, in June 2018, the Commercial Court of Nanterre denied AstraZeneca's request for a preliminary injunction against Sandoz SAS (Sandoz) to prevent a potential launch of its generic *Faslodex* in France. Additionally, in June 2018, Sandoz served AstraZeneca with an invalidation writ against European Patent Nos. EP 2,266,573; EP 1,250,138; and EP 1,272,195.

In Italy, in February 2015, Actavis Group Ptc ehf and Actavis Italy S.p.A. filed an action alleging that AstraZeneca's European Patent No. EP 1,250,138 (the '138 patent) was invalid. In July 2018, the Court of Turin determined that the '138 patent is invalid.

In May 2017, the Opposition Division of the European Patent Office (EPO) revoked European Patent No. EP 2,266,573 (the '573 patent). AstraZeneca appealed the decision and, in January 2019, the Board of Appeal of the EPO reversed the earlier decision and upheld the validity of the '573 patent.

Imfinzi (durvalumab)

US patent proceedings

In July 2017, Bristol-Myers Squibb, E.R. Squibb & Sons LLC, Ono Pharmaceutical Co, and Tasuku Honjo filed a patent infringement action in the US District Court in Delaware relating to AstraZeneca's commercialisation of *Imfinzi*. A trial has been scheduled for October 2020.

Losec/Prilosec (omeprazole)

Patent proceedings outside the US

In Canada, in 2004, AstraZeneca brought proceedings against Apotex Inc. (Apotex) for infringement of several patents related to *Losec*. In February 2015, the Federal Court of Canada (the Federal Court) found that Apotex had infringed the *Losec* formulation patent (Canadian Patent No. 1,292,693). In July 2017, after a reference to account for Apotex's profits earned as a result of the infringement, the Federal Court issued its decision describing how the quantification of monies owed to AstraZeneca should proceed. Apotex appealed. In February 2018, AstraZeneca and Apotex entered into a settlement agreement under which Apotex agreed to pay AstraZeneca CAD 435m ($352m), concluding all *Losec* patent litigation in Canada.

Movantik (naloxegol)

US patent proceedings

In December 2018, AstraZeneca initiated ANDA litigation against Apotex Inc. and Apotex Corp., and against MSN Laboratories, in the US District Court for the District of Delaware. In each of its complaints, AstraZeneca alleges that the generic companies' versions of *Movantik*, if approved and marketed, would infringe US Patent No. 9,012,469.

Nexium (esomeprazole magnesium)

Patent proceedings outside the US

In Canada, in July 2014, the Federal Court of Canada found the *Nexium* substance patent (Canadian Patent No. 2,139,653 (the '653 patent)) invalid and not infringed by Apotex Inc. (Apotex). In July 2015, AstraZeneca's appeal was dismissed. AstraZeneca was granted leave to appeal to the Supreme Court of Canada (the Supreme Court). In June 2017, the Supreme Court granted AstraZeneca's appeal and found the '653 patent valid. Apotex appealed the Supreme Court's decision. AstraZeneca commenced proceedings to collect damages. In June 2018, the parties settled all outstanding proceedings. The matter is now closed.

Onglyza (saxagliptin) and *Kombiglyze* (saxagliptin and metformin)

US patent proceedings

In February 2017, the US District Court for the District of Delaware (the District Court) issued a decision upholding the validity of US Patent No. RE44,186 (the '186 patent), listed in the FDA Orange Book with reference to *Onglyza* and/or *Kombiglyze* XR. In August 2017, the US Patent and Trademark Office (USPTO) issued a decision in an inter partes review upholding the challenged claims of the '186 patent. Mylan Pharmaceuticals Inc. (Mylan) appealed the District Court's decision and the USPTO's decision to the US Court of Appeals for the Federal Circuit. In May 2018, AstraZeneca and Mylan settled these two appeals. The matter is now closed.

Pulmicort Respules (budesonide inhalation suspension)

US patent proceedings

In February 2015, the US District Court for the District of New Jersey (the District Court) determined that the asserted claims of US Patent No. 7,524,834, which covered *Pulmicort Respules*, were invalid following challenges brought by Apotex, Inc. and Apotex Corp., Breath Limited, Sandoz, Inc. and Watson Laboratories, Inc. (together, the Generic Challengers). In May 2015, the US Court of Appeals for the Federal Circuit affirmed the District Court's decision. Since 2009, various injunctions were issued in this matter. Damages claims based on those injunctions were filed by the Generic Challengers. In June 2018, AstraZeneca and the Generic Challengers settled these claims. The matter is now closed.

Roxadustat

Patent proceedings outside the US

In Canada, in May 2018, Akebia Therapeutics, Inc. (Akebia) filed an impeachment action in the Federal Court alleging invalidity of several of FibroGen, Inc.'s (FibroGen) method of use patents (Canadian Patent Nos. 2467689; 2468083; and 2526496) related to HIF prolyl hydroxylase inhibitors. AstraZeneca is the exclusive licensee of FibroGen in Canada. AstraZeneca and FibroGen are defending the action.

Symbicort (budesonide/formoterol fumarate dihydrate)

US patent proceedings

In October 2018, AstraZeneca initiated ANDA litigation against Mylan Pharmaceuticals Inc. (MPI), Mylan Laboratories Limited, Mylan Inc., and Mylan N.V. (collectively, Mylan) and, separately, ANDA litigation against Teva Pharmaceuticals USA, Inc. (Teva) in the US District Court for the District of Delaware. In its complaints, AstraZeneca alleges that Mylan's and Teva's generic versions of *Symbicort*, if approved and marketed, would infringe AstraZeneca's US Patents Nos. 7,759,328; 8,143,239; 8,575,137; and 7,967,011. AstraZeneca also filed a similar action against Mylan in the US District Court for the Northern District of West Virginia.

In November 2018, AstraZeneca filed an amended complaint in the Teva action to add Catalent Pharma Solutions LLC (Catalent) as a party. In December 2018, Teva and Catalent responded to the amended complaint and alleged that their proposed generic product does not infringe the asserted patents and/or that the asserted patents are invalid and/or unenforceable. Teva also asserted counterclaims in which it alleged that the proposed generic product does not infringe five additional patents that AstraZeneca did not assert in its complaint, namely US Patents Nos. 7,587,988; 8,528,545; 8,387,615; 8,616,196; and 8,875,699.

In December 2018, AstraZeneca filed an amended complaint in the Mylan Delaware action to add 3M Company as a party. In January 2019, in the Mylan Delaware action, Mylan Laboratories Limited, Mylan Inc., and Mylan N.V. filed a motion to dismiss for failure to state a claim and MPI filed a motion to dismiss for improper venue.

In January 2019, MPI responded to the West Virginia complaint and alleged that its proposed generic product does not infringe the asserted patents and/or that the asserted patents are invalid and/or unenforceable. Mylan also asserted counterclaims to the asserted patents. In January 2019, in the West Virginia action, Mylan Laboratories Limited, Mylan Inc., and Mylan N.V. filed a motion to dismiss for failure to state a claim.

Product liability litigation

Byetta/Bydureon (exenatide)

In the US, Amylin Pharmaceuticals, LLC, a wholly-owned subsidiary of AstraZeneca, and/or AstraZeneca are among multiple defendants in various lawsuits filed in federal and state courts involving claims of physical injury from treatment with *Byetta* and/or *Bydureon*. The lawsuits allege several types of injuries including pancreatitis, pancreatic cancer, thyroid cancer, and kidney cancer. A multidistrict litigation was established in the US District Court for the Southern District of California (the District Court) in regard to the alleged pancreatic cancer cases in federal courts. Further, a co-ordinated proceeding has been established in Los Angeles, California in regard to the various lawsuits in California state courts.

In November 2015, the District Court granted the defendants' motion for summary judgment and dismissed all claims alleging pancreatic cancer that accrued prior to 11 September 2015. In November 2017, the US Court of Appeals for the Ninth Circuit vacated the District Court's order and remanded for further discovery. In November 2018, the Court of Appeal for the State of California annulled the judgment from the California state co-ordinated proceeding and remanded for further discovery.

Farxiga (dapagliflozin) and *Xigduo* (dapagliflozin/metformin HCl)

In the US, AstraZeneca has been named as a defendant in lawsuits involving plaintiffs claiming physical injury, including diabetic ketoacidosis and kidney injury/failure, from treatment with *Farxiga* and/or *Xigduo* XR. In April 2017, the Judicial Panel on Multidistrict Litigation ordered transfer of any currently pending cases as well as any similar, subsequently filed cases to a co-ordinated and consolidated pre-trial multidistrict litigation proceeding in the US District Court for the Southern District of New York.

Nexium (esomeprazole magnesium) and *Losec/Prilosec* (omeprazole)

In the US, AstraZeneca is defending various lawsuits brought in federal and state courts involving multiple plaintiffs claiming that they have been diagnosed with various injuries following treatment with proton pump inhibitors,

including *Nexium* and *Prilosec*. In May 2017, counsel for a group of such plaintiffs claiming that they have been diagnosed with kidney injuries filed a motion with the Judicial Panel on Multidistrict Litigation (JPML) seeking the transfer of any currently pending federal court cases as well as any similar, subsequently filed cases to a co-ordinated and consolidated pre-trial multidistrict litigation (MDL) proceeding. In August 2017, the JPML granted the motion and consolidated the pending federal court cases in an MDL proceeding in federal court in New Jersey for pre-trial purposes.

In Canada, in July and August 2017, AstraZeneca was served with three putative class action lawsuits. Two of the lawsuits seek authorisation to represent individual residents in Canada who allegedly suffered kidney injuries from the use of proton pump inhibitors, including *Nexium* and *Losec*, and the third, pending in Quebec, seeks authorisation to represent such individual residents in Quebec.

Onglyza (saxagliptin) and
Kombiglyze (saxagliptin and metformin)
In the US, AstraZeneca is defending various lawsuits alleging heart failure, cardiac injuries, and/or death from treatment with *Onglyza* or *Kombiglyze*. In February 2018, the Judicial Panel on Multidistrict Litigation ordered the transfer of various pending federal actions to the Eastern District of Kentucky (the District) for consolidated pre-trial proceedings with the federal actions pending in the District. The previously disclosed California state court co-ordinated proceeding remains pending in California.

Seroquel (quetiapine fumarate)
In the US, in June 2018, AstraZeneca was named in a lawsuit filed in Illinois involving one plaintiff alleging Brugada Syndrome from treatment with *Seroquel*. In September 2018, the US District Court for the Southern District of Illinois entered judgment in favour of AstraZeneca and terminated AstraZeneca as a party to the action.

In the US, in November 2017, AstraZeneca was named as one of several defendants in a lawsuit filed in Missouri involving one plaintiff alleging, among other things, wrongful death from treatment with *Seroquel*. This matter was resolved and is now concluded.

Commercial litigation

Amplimmune
In the US, in June 2017, AstraZeneca was served with a lawsuit filed by the stockholders' agents for Amplimmune, Inc. (Amplimmune) in Delaware State Court that alleged, among other things, breaches of contractual obligations relating to a 2013 merger agreement between AstraZeneca and Amplimmune.

Array BioPharma
In the US, in December 2017, AstraZeneca was served with a complaint filed in New York State court by Array BioPharma, Inc. (Array) that alleged, among other things, breaches of contractual obligations relating to a 2003 collaboration agreement between AstraZeneca and Array.

Nexium settlement anti-trust litigation
In the US, AstraZeneca was a defendant in a multidistrict litigation class action and individual lawsuit alleging that AstraZeneca's settlements of certain patent litigation in the US relating to *Nexium* violated US anti-trust law and various state laws. A trial in the US District Court for the District of Massachusetts returned a verdict in favour of AstraZeneca, and the federal appeals for this verdict were subsequently concluded. Two lawsuits with similar allegations were filed in Pennsylvania state court by various indirect purchasers of *Nexium*. These cases had been stayed pending the outcome of the federal court litigation, but AstraZeneca was informed in June 2018 that both matters were administratively closed by the state court. This matter is accordingly concluded.

Ocimum lawsuit
In the US, in December 2015, AstraZeneca was served with a complaint filed by Ocimum Biosciences, Ltd. (Ocimum) in the Superior Court for the State of Delaware that alleges, among other things, breaches of contractual obligations and misappropriation of trade secrets, relating to a now terminated 2001 licensing agreement between AstraZeneca and Gene Logic, Inc. (Gene Logic), the rights to which Ocimum purports to have acquired from Gene Logic.

Toprol-XL (metoprolol succinate)
Aralez litigation
In the US, in October 2016, AstraZeneca completed its sale of certain assets related to the US rights to *Toprol-XL* and AstraZeneca's authorised generic metoprolol succinate product to Aralez Pharmaceuticals Trading DAC (Aralez). In the US, in August 2018, Aralez commenced voluntary insolvency proceedings and filed voluntary petitions for relief under Chapter 11 of the US Bankruptcy Code in the US Bankruptcy Court for the Southern District of New York. Aralez listed AstraZeneca as an unsecured creditor in the US Bankruptcy Proceedings with a claim of $14m. AstraZeneca filed a proof of claim asserting an unsecured claim of approximately $65m. In October 2018, Aralez filed a motion in the Bankruptcy Court seeking to sell the US rights to *Toprol-XL* and its authorised generic. AstraZeneca filed an objection to the proposed sale. A hearing on the proposed sale is scheduled for 20-21 February 2019.

Other commercial litigation
Anti-Terrorism Act Civil Lawsuit
In the US, in October 2017, AstraZeneca and certain other pharmaceutical and/or medical device companies were named as defendants in a complaint filed in federal court in the District of Columbia by US nationals (or their estates, survivors, or heirs) who were killed or wounded in Iraq between 2005 and 2011. The plaintiffs allege that the defendants violated the US Anti-Terrorism Act and various state laws by selling pharmaceuticals and medical supplies to the Iraqi Ministry of Health.

Telephone Consumer Protection Act litigation
In the US, in December 2016, AstraZeneca and several other entities were served with a complaint filed in the US District Court for the Southern District of Florida that alleges, among other things, violations of the Telephone Consumer Protection Act caused by the sending of unsolicited advertisements by facsimile. This matter has been dismissed.

Government investigations/proceedings

Iraq Ministry of Health Anti-Corruption Probe
In July 2018, AstraZeneca, along with other companies, received an inquiry from the DOJ pursuant to the Foreign Corrupt Practices Act in connection with an anti-corruption investigation relating to activities in Iraq, including interactions with the Iraqi government. AstraZeneca is cooperating with the inquiry.

Crestor (rosuvastatin calcium)
Qui tam litigation
In the US, in January and February 2014, AstraZeneca was served with lawsuits filed in the US District Court for the District of Delaware under the *qui tam* (whistleblower) provisions of the federal False Claims Act and related state statutes, alleging that AstraZeneca directed certain employees to promote *Crestor* off-label and provided unlawful remuneration to physicians in connection with the promotion of *Crestor*. The DOJ and all US states have declined to intervene in the lawsuits. This litigation is ongoing.

Texas Attorney General litigation
In the US, in January 2015, AstraZeneca was served with a lawsuit in which the Texas Attorney General's office intervened in a state whistleblower action pending in Travis County Court, Texas. The lawsuit alleged that AstraZeneca engaged in inappropriate promotion of *Crestor* and improperly influenced the formulary status of *Crestor*. In July 2018, this matter was resolved and is now concluded.

Seroquel IR (quetiapine fumarate) and
Seroquel XR (quetiapine fumarate)
Qui tam litigation in New York
In the US, in September 2015, AstraZeneca was served with a lawsuit filed in US Federal Court in New York under the *qui tam* (whistleblower) provisions of the federal and certain state False Claims Acts. The lawsuit alleges that AstraZeneca misrepresented the safety profile of, and improperly promoted, *Seroquel*. In July 2018, this matter was resolved and is now concluded.

Qui tam litigation in Delaware
In the US, in April 2014, AstraZeneca was served with lawsuits filed in the US District Court for the District of Delaware under the *qui tam* (whistleblower) provisions of the federal False Claims Act and related state statutes, alleging that AstraZeneca directed certain employees to promote *Seroquel* off-label and provided unlawful remuneration to physicians in connection with the promotion of *Seroquel*. In July 2018, this matter was resolved and is now concluded.

Texas Attorney General litigation
In the US, in October 2014, the Texas Attorney General's Office intervened in a state whistleblower action pending in Travis County Court, Texas. The lawsuit alleged that

AstraZeneca engaged in inappropriate promotion and made improper payments intended to influence the formulary status of *Seroquel*. In July 2018, this matter was resolved and is now concluded.

Synagis (palivizumab)

Litigation in New York

In the US, in June 2011, MedImmune received a demand from the US Attorney's Office for the Southern District of New York requesting certain documents related to the sales and marketing activities of *Synagis*. In July 2011, MedImmune received a similar court order to produce documents from the Office of the Attorney General for the State of New York Medicaid and Fraud Control Unit pursuant to what the government attorneys advised was a joint investigation. MedImmune has cooperated with these inquiries. In March 2017, MedImmune was served with a lawsuit filed in US Federal Court in New York by the Attorney General for the State of New York alleging that MedImmune inappropriately provided assistance to a single specialty care pharmacy. In September 2018, the US Federal Court in New York denied MedImmune's motion to dismiss the lawsuit brought by the Attorney General for the State of New York.

In June 2017, MedImmune was served with a lawsuit in US Federal Court in New York by a relator under the *qui tam* (whistleblower) provisions of the federal and certain state False Claims Acts. The lawsuit was originally filed under seal in April 2009 and alleges that MedImmune made false claims about *Synagis*. In November 2017, MedImmune was served with an amended complaint in which relator set forth additional false claims allegations relating to *Synagis*. In September 2018, the US Federal Court in New York dismissed the relator's lawsuit.

Florida Attorney General investigation

In May 2012, MedImmune received a *subpoena duces tecum* from the Office of Attorney General for the State of Florida Medicaid and Fraud Control Unit requesting certain documents related to the sales and marketing activities of *Synagis*. MedImmune accepted receipt of the request and has co-ordinated with the Florida government to provide the appropriate responses and cooperate with any related investigation. AstraZeneca is unaware of the nature or focus of the investigation, however, based on the requests, it appears to be similar to the inquiry from the State of New York (which is described above).

Toprol-XL (metoprolol succinate)

Louisiana Attorney General litigation

In the US, in March 2015, AstraZeneca was served with a state court complaint filed by the Attorney General for the State of Louisiana (the State) alleging that, in connection with enforcement of its patents for *Toprol-XL*, it had engaged in unlawful monopolisation and unfair trade practices, causing the State government to pay increased prices for *Toprol-XL*. In February 2016, a Louisiana state court (the Trial Court) granted AstraZeneca's motion to dismiss the lawsuit, but the State appealed and, in April 2018, the Louisiana Court of Appeals for the First Circuit (the Appellate Court) reversed the dismissal and remanded the case back to the Trial Court for further proceedings. In May 2018, AstraZeneca filed a writ with the Louisiana Supreme Court seeking review of the Appellate Court's decision. In September 2018, the Louisiana Supreme Court denied that writ and declined to review the Appellate Court's decision.

Multi-product litigation

Litigation in Washington State

In the US, in September 2018, a lawsuit against AstraZeneca and several other defendants was unsealed in the US District Court for the Western District of Washington. The complaint alleges that the defendants violated various laws, including state and federal false claims acts, by offering clinical educator and reimbursement support programmes. In September 2018, the government moved to dismiss the lawsuit against AstraZeneca and similar lawsuits filed against other companies by relator, Health Choice Alliance.

Other government investigations/proceedings

US Congressional Inquiry

In January 2019, AstraZeneca received a letter from E. Cummings, Chairman of the US House of Representatives Committee on Oversight and Reform seeking information related to pricing practices for *Crestor*. Requests were also sent to 11 other pharmaceutical manufacturers. AstraZeneca intends to cooperate with the inquiry.

Additional government inquiries

As is true for most, if not all, major prescription pharmaceutical companies, AstraZeneca is currently involved in multiple inquiries into drug marketing and pricing practices. In addition to the investigations described above, various law enforcement offices have, from time to time, requested information from the Group. There have been no material developments in those matters.

Tax

Where tax exposures can be quantified, an accrual is made based on best estimates and management's judgement. Details of the movements in relation to material tax exposures are discussed below. As accruals can be built up over a long period of time but the ultimate resolution of tax exposures usually occurs at a point in time, and given the inherent uncertainties in assessing the outcomes of these exposures (which sometimes can be binary in nature), we could, in future periods, experience adjustments to these accruals that have a material positive or negative effect on our results in any particular period.

AstraZeneca faces a number of audits and reviews in jurisdictions around the world and, in some cases, is in dispute with the tax authorities. The issues under discussion are often complex and can require many years to resolve. Accruals for tax contingencies require management to make estimates and judgements with respect to the ultimate outcome of a tax audit, and actual results could vary from these estimates.

Transfer pricing and other international tax contingencies

The total net accrual included in the Group Financial Statements to cover the worldwide exposure to transfer pricing audits is $212m, a decrease of $23m compared with 2017 mainly due to a reduction in accruals for transfer pricing contingencies as a result of the conclusion of tax authority review.

Management continues to believe that AstraZeneca's positions on all its transfer pricing audits and disputes are robust, and that AstraZeneca is appropriately provided, including the assessment where corresponding relief will be available. For transfer pricing audits where AstraZeneca and the tax authorities are in dispute, AstraZeneca estimates the potential for reasonably possible additional losses above and beyond the amount provided to be up to $357m (2017: $30m; 2016: $184m) including associated interest. However, management believes that it is unlikely that these additional losses will arise. It is possible that some of these contingencies may reduce in the future to the extent that any tax authority challenge is unsuccessful, or matters lapse following expiry of the relevant statutes of limitation resulting in a reduction in the tax charge in future periods.

Other tax contingencies

Included in the tax accrual is $730m relating to a number of other tax contingencies, a decrease of $201m mainly due to releases following expiry of statute of limitations and on conclusion of tax authority review, exchange rate effects, partially offset by the impact of an additional year of transactions relating to contingencies for which accruals had already been established. For these tax exposures, AstraZeneca estimates the potential for reasonably possible additional losses above and beyond the amount provided to be up to $253m (2017: $nil; 2016: $nil) including associated interest. It is, however, possible that some of these contingencies may reduce in the future if any tax authority challenge is unsuccessful or matters lapse following expiry of the relevant statutes of limitation resulting in a reduction in the tax charge in future periods.

In addition to the above tax exposures, the European Commission (EC) announced in 2017 that it had opened a State aid investigation into the UK's Controlled Foreign Company (CFC) Group Financing Exemption. The EC's decision is anticipated in 2019 although any decision would be subject to appeal.

Timing of cash flows and interest

It is not possible to estimate the timing of tax cash flows in relation to each outcome. However, it is anticipated that a number of significant disputes may be resolved over the next one to two years.

Included within Trade and other payables is an amount of interest arising on tax contingencies of $116m.

30 Operating leases

Total rentals under operating leases charged to profit were as follows:

	2018 $m	2017 $m	2016 $m
Operating leases	**188**	175	174

The Group has revised the presentation of operating leases from 2017 to include operating leases that have been identified during the transition to IFRS 16 as having previously been omitted from this disclosure. This resulted in an increase in 2017 from $137m to $175m.

The future minimum lease payments under operating leases that have initial or remaining terms in excess of one year at 31 December 2018 were as follows:

	2018 $m	2017 $m	2016 $m
Obligations under leases comprise:			
Not later than one year	**188**	151	98
Later than one year and not later than five years	**360**	345	247
Later than five years	**136**	118	96
Total future minimum lease payments	**684**	614	441

The Group has revised the presentation of operating leases from 2017 to include operating leases that have been identified during the transition to IFRS 16 as having previously been omitted from this disclosure. This resulted in an increase in 2017 from $523m to $614m.

31 Statutory and other information

	2018 $m	2017 $m	2016 $m
Fees payable to PricewaterhouseCoopers LLP and its associates:			
Group audit fee	**3.8**	3.0	–
Fees payable to PricewaterhouseCoopers LLP and its associates for other services:			
The audit of subsidiaries pursuant to legislation	**9.4**	5.7	–
Attestation under s404 of Sarbanes-Oxley Act 2002	**2.0**	2.0	–
Audit-related assurance services	**0.8**	0.4	–
Tax compliance services	**0.1**	–	–
Other assurance services	**0.9**	–	–
Fees payable to PricewaterhouseCoopers Associates in respect of the Group's pension schemes:			
The audit of subsidiaries' pension schemes	**0.4**	–	–
	17.4	11.1	–

$3.2m of fees payable in 2018 are in respect of the 2017 Group audit and audit of subsidiaries.

Related party transactions

The Group had no material related party transactions which might reasonably be expected to influence decisions made by the users of these Financial Statements.

Key management personnel compensation

Key management personnel are defined for the purpose of disclosure under IAS 24 'Related Party Disclosures' as the members of the Board and the members of the SET.

	2018 $'000	2017 $'000	2016 $'000
Short-term employee benefits	**32,523**	28,274	23,725
Post-employment benefits	**2,387**	2,469	2,407
Share-based payments	**23,605**	16,452	20,377
	58,515	47,195	46,509

Total remuneration is included within employee costs (see Note 28).

32 Subsequent events

In December 2018, an internal decision was taken to close two biologics manufacturing sites in Colorado, USA. The Group assessed the recoverable value of the site assets including Property, plant and equipment and inventory, and have recorded an impairment of $252m within land and buildings and a provision against inventories of $75m at 31 December 2018. The announcement to those impacted of these closures was made subsequent to year end.

On 10 January 2019, the Company entered into a floating rate $500m committed bank loan agreement, which was drawn in full on 4 February 2019. The loan is repayable in December 2019 although can be partially or fully repaid in advance but, in that event, is not available to be redrawn.

On 23 January 2019, AstraZeneca completed the sale of its US rights to *Synagis*, and of a right to participate in the payments from the US profits and losses for MEDI8897, to Swedish Orphan Biovitrum AB (Sobi). Under the terms of the agreement, AstraZeneca has received total upfront consideration including cash of $966m and ordinary shares in Sobi with an initial fair value of c.$600m, equating to an ownership interest of 8%. The majority of consideration is attributable to the sale of US rights to *Synagis*.

Consideration attributable to the sale of US rights to *Synagis* will be treated as Other operating income and expense in the Group in 2019, net of the derecognition of $893m of the related intangible asset, which has been transferred to assets held for sale at 31 December 2018.

The right to participate in payments from the US profits and losses for MEDI8897 will be treated as a financial liability at amortised cost, recognised initially at fair value. The valuation of this financial liability was not finalised at the date of signing of these Financial Statements. Any difference between the amount of consideration received and the fair value recognised will be recognised within Other operating income and expense in 2019.

Group Subsidiaries and Holdings

In accordance with section 409 of the Companies Act 2006 a full list of subsidiaries, partnerships, associates, joint ventures and joint arrangements, the country of incorporation, registered office address, and the effective percentage of equity owned as at 31 December 2018 are disclosed below. Unless otherwise stated the share capital disclosed comprises ordinary shares which are indirectly held by AstraZeneca PLC.

Unless otherwise stated the accounting year ends of subsidiaries are 31 December. The Group Financial Statements consolidate the Financial Statements of the Company and its subsidiaries at 31 December 2018.

At 31 December 2018	Group Interest
Wholly owned subsidiaries	
Argentina	
AstraZeneca S.A.	100%
Nicolas de Vedia 3616, Piso 8, Ciudad Autónoma de Buenos Aires, Argentina	
Australia	
AstraZeneca Holdings Pty Limited	100%
AstraZeneca PTY Limited	100%
Pharmaceutical Manufacturing Company Pty Limited	100%
Pharmaceutical Manufacturing Division Pty Limited	100%
66 Talavera Road, Macquarie Park, NSW 2113, Australia	
Austria	
AstraZeneca Österreich GmbH	100%
A-1030 Wien, Landstraßer Hauptstraße 1A, Austria	
Belgium	
AstraZeneca S.A. / N.V.	100%
Alfons Gossetlaan 40 bus 201 at 1702 Groot-Bijgaarden, Belgium	
Brazil	
AstraZeneca do Brasil Limitada	100%
Rod. Raposo Tavares, KM 26, 9, Cotia, Brazil	
Bulgaria	
AstraZeneca Bulgaria EOOD	100%
36 Dragan Tzankov Blvd., District Izgrev, Sofia, 1057, Bulgaria	
Canada	
AstraZeneca Canada Inc.[1]	100%
Suite 5000, 1004 Middlegate Road, Ontario, L4Y 1M4, Canada	
Cayman Islands	
AZ Reinsurance Limited	100%
18 Forum Lane, 2nd Floor, Camana Bay, Grand Cayman, P.O.BOX 69, Cayman Islands	
Chile	
AstraZeneca S.A.	100%
AstraZeneca Farmaceutica Chile Limitada	100%
Av. Isidora Goyenechea 3477, 2nd Floor, Las Condes, Santiago, Chile	
China	
AstraZeneca Pharmaceuticals Co., Limited	100%
No. 2, Huangshan Road, Wuxi New District, China	
AstraZeneca (Wuxi) Trading Co. Ltd	100%
Building E (Building No. 5), Huirong Commercial Plaza, East Jinghui Road, Xinwu District, Wuxi, China	
AstraZeneca Investment (China) Co., Ltd	100%
No. 199 Liangjing Road, China (Shanghai) Pilot Free Trade Zone, Shanghai, China	
AstraZeneca Pharmaceutical (China) Co. Ltd	100%
No. 88 Yaocheng Avenue, Taizhou, Jiangsu Province, China	
AstraZeneca Pharmaceuticals Technologies (Beijing) Co., Ltd	100%
Unit 2203, 22F, No 8, Jianguomenwai Avenue, Chaoyang District, Beijing, China	
Colombia	
AstraZeneca Colombia S.A.S.	100%
Carrera 7 No. 71-21, Torre A, Piso 19, Bogota, D.C., Colombia	
Costa Rica	
AstraZeneca CAMCAR Costa Rica, S.A.	100%
Escazu, Guachipelin, Centro Corporativo Plaza Roble, Edificio Los Balcones, Segundo Nivel, San Jose, Costa Rica	
Croatia	
AstraZeneca d.o.o.	100%
Radnicka cesta 80, 10000 Zagreb, Croatia	
Czech Republic	
AstraZeneca Czech Republic, s.r.o.	100%
U Trezorky 921/2, 158 00 Prague 5, Czech Republic	
Denmark	
AstraZeneca A/S	100%
Arne Jacobsens Allé 13, DK-2300, Copenhagen S, Denmark	
Egypt	
AstraZeneca Egypt for Pharmaceutical Industries JSC	100%
Villa 133, Road 90 North, New Cairo, Egypt	
AstraZeneca Egypt for Trading LLC	100%
14C Ahmed Kamel Street, New Maadi, Cairo, Egypt	
Drimex LLC	100%
Villa 47, Road 270, New Maadi, Cairo 11435, Egypt	
Estonia	
AstraZeneca Eesti OÜ	100%
Valukoja 8, Ülemiste City, Tallinn 11415, Estonia	
Finland	
AstraZeneca OY.	100%
Itsehallintokuja 4, Espoo, 02600, Finland	
France	
AstraZeneca S.A.S.	100%
AstraZeneca Finance S.A.S.	100%
AstraZeneca Holding France S.A.S.	100%
Tour Carpe Diem-31, Place des Corolles, 92400 Courbevoie, France	
AstraZeneca Dunkerque Production SCS	100%
224 Avenue de la Dordogne, 59640 Dunkerque, France	
Germany	
AstraZeneca Holding GmbH	100%
AstraZeneca GmbH	100%
Tinsdaler Weg 183, Wedel, D-22880, Germany	
Sofotec GmbH	100%
Benzstrasse 1-3, 61352, Bad Homburg v.d. Hohe, Germany	
Definiens AG[2]	100%
Bernhard-Wicki-Straße 5, 80636, Munich, Germany	
Greece	
AstraZeneca S.A.	100%
Theotokopoulou 4 & Astronafton, Athens, 151 25, Greece	
Hong Kong	
AstraZeneca Hong Kong Limited	100%
Unit 1 – 3, 11/F., 18 King Wah Road, North Point, Hong Kong	
Hungary	
AstraZeneca Kft	100%
1st floor, 4 building B, Alíz str., Budapest, 1117, Hungary	
India	
AstraZeneca India Private Limited[3]	100%
Block A, Neville Tower, 11th Floor, Ramanujan IT SEZ, Taramani, Chennai, Tamil Nadu, PIN 600113, India	
Iran	
AstraZeneca Pars Company	100%
Suite 1, 1st Floor No. 39, Alvand Ave., Argantin Sq., Tehran 1516673114, Iran	
Ireland	
AstraZeneca Pharmaceuticals (Ireland) Designated Activity Company	100%
4th Floor, South Bank House, Barrow Street, Dublin, 4, Republic of Ireland	
Israel	
AstraZeneca (Israel) Ltd	100%
6 Hacharash St., Hod Hasharon 4524075, Israel	
Italy	
Simesa SpA	100%
AstraZeneca SpA	100%
Palazzo Ferraris, via Ludovico il Moro 6/c 20080, Basiglio (Milan), Italy	
Japan	
AstraZeneca K.K.	100%
3-1, Ofuka-cho, Kita-ku, Osaka, 530-0011, Japan	
Kenya	
AstraZeneca Pharmaceuticals Limited	100%
L.R. No.1/1327, Avenue 5, 1F, Rose Avenue, Nairobi, Kenya	

Group Subsidiaries and Holdings
continued

At 31 December 2018	Group Interest

Latvia

AstraZeneca Latvija SIA	100%
Skanstes iela 50, Riga, LV-1013, Latvia	

Lithuania

AstraZeneca Lietuva UAB	100%
Jasinkio 16A, Vilnius, LT-03163, Lithuania	

Luxembourg

AstraZeneca Luxembourg S.A.	100%
Am Brill 7 B – L-3961 Ehlange – Grand Duchy du Luxembourg, Luxembourg	

Malaysia

AstraZeneca Asia-Pacific Business Services Sdn Bhd	100%
Level 8, Unit 8.01-8.05 Menara UAC, Jalan PJU 7/5, Mutiara Damansara, 47800 Petaling Jaya, Selangor, Malaysia	
AstraZeneca Sdn Bhd	100%
Lot 6.05, Level 6, KPMG Tower, 8 First Avenue, Bandar Utama, 47800 Petaling Jaya, Selangor Darul Ehsan, Malaysia	

Mexico

AstraZeneca, S.A. de C.V.	100%
Av. Periferico Sur 4305 interior 5, Colonia Jardines en la Montana, Mexico City, Tlalpan Distrito Federal, CP 14210, Mexico	
AstraZeneca Health Care Division, S.A. de C.V.	100%
Avenida Lomas Verdes 67 Colonia Lomas Verdes, Naucalpan de Juarez, CP 53120, Mexico	

Morocco

AstraZeneca Maroc SARLAU	100%
92 Boulevard Anfa ETG 2, Casablanca 20000, Morocco	

The Netherlands

AstraZeneca B.V.	100%
AstraZeneca Continent B.V.	100%
AstraZeneca Gamma B.V.	100%
AstraZeneca Holdings B.V.	100%
AstraZeneca Jota B.V.	100%
AstraZeneca Rho B.V.	100%
AstraZeneca Sigma B.V.	100%
AstraZeneca Treasury B.V.	100%
AstraZeneca Zeta B.V.	100%
Prinses Beatrixlaan 582, 2595BM, The Hague, The Netherlands	
MedImmune Pharma B.V.	100%
Lagelandseweg 78, 6545 CG Nijmegen, The Netherlands	

New Zealand

AstraZeneca Limited	100%
Pharmacy Retailing (NZ) Limited t/a Healthcare Logistics, 58 Richard Pearse Drive, Mangere, Auckland, 1142, New Zealand	

Nigeria

AstraZeneca Nigeria Limited	100%
11A, Alfred Olaiya Street, Awuse Estate, Off Salvation Street, Opebi, Ikeja, Lagos, Nigeria	

At 31 December 2018	Group Interest

Norway

AstraZeneca AS	100%
Fredrik Selmers vei 6 NO-0663 Oslo, Norway	

Pakistan

AstraZeneca Pharmaceuticals Pakistan (Private) Limited[4]	100%
Office No 1, 2nd Floor, Sasi Arcade, Block 7, Main Clifton Road, Karachi, Pakistan	

Panama

AstraZeneca CAMCAR, S.A.	100%
Bodega #1, Parque Logistico MIT, Carretera Hacia Coco Solo, Colon, Panama	

Peru

AstraZeneca Peru S.A.	100%
Av. El Derby 055, Torre 2. Piso 5. Of. 503. Santiago de Surco, Lima, Peru	

Philippines

AstraZeneca Pharmaceuticals (Phils.) Inc.	100%
16th Floor, Inoza Tower, 40th Street, Bonifacio Global City, Taguig 1634, Philippines	

Poland

AstraZeneca Pharma Poland Sp.z.o.o.	100%
Postepu 14, 02-676, Warszawa, Poland	

Portugal

Astra Alpha Produtos Farmaceuticos Lda	100%
AstraZeneca Produtos Farmaceuticos Lda	100%
Novastra Promoção e Comércio Farmacêutico Lda	100%
Novastuart Produtos Farmaceuticos Lda	100%
Stuart-Produtos Farmacêuticos Lda	100%
Zeneca Epsilon – Produtos Farmacêuticos Lda	100%
Zenecapharma Produtos Farmaceuticos Lda	100%
Rua Humberto Madeira, No 7, Queluz de Baixo, 2730-097, Barcarena, Portugal	

Puerto Rico

IPR Pharmaceuticals, Inc.	100%
Road 188, San Isidro Industrial Park, Canóvanas, Puerto Rico 00729	

Romania

AstraZeneca Pharma S.R.L.	100%
12 Menuetului Street, Bucharest Business Park, Building D, West Wing, 1st Floor, Sector 1, Bucharest, 013713, Romania	

Russia

AstraZeneca Industries, LLC	100%
AstraZeneca Pharmaceuticals, LLC	100%
125284, Begovaya Str, 3, Block 1, Moscow, Russian Federation	

Singapore

AstraZeneca Singapore Pte Limited	100%
10 Kallang Avenue #12-10, Aperia Tower 2, 339510, Singapore	

At 31 December 2018	Group Interest

South Africa

AstraZeneca Pharmaceuticals (Pty) Limited	100%
17 Georgian Crescent West, Northdowns Office Park, Bryanston, 2041, South Africa	

South Korea

AstraZeneca Korea Co. Ltd	100%
17th Floor, Luther Building, 42, Olympic-ro 35da-gil Songpa-gu, Seoul, South Korea	

Spain

AstraZeneca Farmaceutica Spain S.A.	100%
AstraZeneca Farmaceutica Holding Spain, S.A.	100%
Laboratorio Beta, S.A.	100%
Laboratorio Lailan, S.A.	100%
Laboratorio Odin, S.A.	100%
Laboratorio Tau S.A.	100%
Parque Norte, Edificio Álamo, C/Serrano Galvache no 56., 28033 Madrid, Spain	

Sweden

Astra Export & Trading Aktiebolag	100%
Astra Lakemedel Aktiebolag	100%
AstraZeneca AB	100%
AstraZeneca Biotech AB	100%
AstraZeneca BioVentureHub AB	100%
AstraZeneca Holding Aktiebolag[5]	100%
AstraZeneca International Holdings Aktiebolag[6]	100%
AstraZeneca Nordic AB	100%
AstraZeneca Pharmaceuticals Aktiebolag	100%
AstraZeneca Södertälje 2 AB	100%
Stuart Pharma Aktiebolag	100%
Tika Lakemedel Aktiebolag	100%
SE-151 85 Södertälje, Sweden	
Aktiebolaget Hassle	100%
Symbicom Aktiebolag[6]	100%
431 83 Molndal, Sweden	
Astra Tech International Aktiebolag	100%
Box 14, 431 21 Molndal, Sweden	

Switzerland

AstraZeneca AG	100%
Neuhofstrasse 34, 6340 Baar, Switzerland	
Spirogen Sarl[6]	100%
Rue du Grand-Chêne 5, CH-1003 Lausanne, Switzerland	

Taiwan

AstraZeneca Taiwan Limited[7]	100%
21st Floor, Taipei Metro Building 207, Tun Hwa South Road, SEC 2 Taipei, Taiwan, Republic of China	

Thailand

AstraZeneca (Thailand) Limited	100%
Asia Centre 19th floor, 173/20, South Sathorn Rd, Khwaeng Thungmahamek, Khet Sathorn, Bangkok, 10120, Thailand	

Tunisia

AstraZeneca Tunisie SaRL	100%
Lot n°1.5.5 les jardins du lac, bloc B les berges du lac Tunis, Tunisia	

At 31 December 2018	Group Interest
Turkey	
AstraZeneca Ilac Sanayi ve Ticaret Limited Sirketi	100%
YKB Plaza, B Blok, Kat:3-4, Levent/Beşiktaş, Istanbul, Turkey	
Zeneca Ilac Sanayi Ve Ticaret Anonim Sirketi	100%
Büyükdere Cad., Y.K.B. Plaza, B Blok, Kat:4, Levent/ Beşiktaş, Istanbul, Turkey	
Ukraine	
AstraZeneca Ukraina LLC	100%
13, Pymonenko Street, building 1, Kiev, 04050, Ukraine	
United Arab Emirates	
AstraZeneca FZ-LLC	100%
P.O. Box 505070, Block D, Dubai Healthcare City, Oud Mehta Road, Dubai, United Arab Emirates	
United Kingdom	
Ardea Biosciences Limited	100%
Arrow Therapeutics Limited	100%
Astra Pharmaceuticals Limited	100%
AstraPharm[6]	100%
AstraZeneca China UK Limited	100%
AstraZeneca Death In Service Trustee Limited	100%
AstraZeneca Employee Share Trust Limited	100%
AstraZeneca Finance Limited	100%
AstraZeneca Intermediate Holdings Limited[5]	100%
AstraZeneca Investments Limited	100%
AstraZeneca Japan Limited	100%
AstraZeneca Nominees Limited	100%
AstraZeneca Quest Limited	100%
AstraZeneca Share Trust Limited	100%
AstraZeneca Sweden Investments Limited	100%
AstraZeneca Treasury Limited[6]	100%
AstraZeneca UK Limited	100%
AstraZeneca US Investments Limited[5]	100%
AZENCO2 Limited	100%
AZENCO4 Limited	100%
Cambridge Antibody Technology Group Limited	100%
KuDOS Horsham Limited	100%
KuDOS Pharmaceuticals Limited	100%
Zenco (No 8) Limited	100%
Zeneca Finance (Netherlands) Company	100%
1 Francis Crick Avenue, Cambridge Biomedical Campus, Cambridge, CB2 0AA, United Kingdom	
MedImmune Limited	100%
Milstein Building, Granta Park, Cambridge, CB21 6GH, United Kingdom	
MedImmune U.K. Limited	100%
Plot 6, Renaissance Way, Boulevard Industry Park, Liverpool, L24 9JW, United Kingdom	

At 31 December 2018	Group Interest
United States	
Amylin Pharmaceuticals, LLC[8]	100%
AstraZeneca Collaboration Ventures, LLC[8]	100%
AstraZeneca Pharmaceuticals LP[9]	100%
Atkemix Nine Inc.	100%
Atkemix Ten Inc.	100%
BMS Holdco, Inc.	100%
Corpus Christi Holdings Inc.	100%
Omthera Pharmaceuticals, Inc.	100%
Stauffer Management Company LLC[8]	100%
Zeneca Holdings Inc.	100%
Zeneca Inc.	100%
Zeneca Wilmington Inc.[5]	100%
1800 Concord Pike, Wilmington, DE 19803, United States	
ZS Pharma Inc.	100%
1100 Park Place, Suite 300, San Mateo, CA 94403, United States	
AlphaCore Pharma, LLC[8]	100%
333 Parkland Plaza, Suite 5, Ann Arbor, MI 48103, United States	
Amylin Ohio LLC[8]	100%
8814 Trade Port Drive, West Chester, OH 45011, United States	
Ardea Biosciences, Inc.	100%
4939 Directors Place, San Diego, CA 92121, United States	
AZ-Mont Insurance Company	100%
76 St Paul Street, Suite 500, Burlington, VT 05401, United States	
Definiens Inc.	100%
1808 Aston Avenue, Suite 190, Carlsbad, CA 92008, United States	
MedImmune Biologics, Inc.	100%
MedImmune, LLC[8]	100%
MedImmune Ventures, Inc.	100%
One MedImmune Way, Gaithersburg, MD 20878, United States	
Optein, Inc.	100%
2711 Centerville Road, Suite 400, Wilmington, DE 1989, United States	
Pearl Therapeutics, Inc.	100%
200 Cardinal Way, Redwood City, CA 94063, United States	
Uruguay	
AstraZeneca S.A.[7]	100%
Yaguarón 1407 of 1205, Montevideo, Uruguay	
Venezuela	
AstraZeneca Venezuela S.A.	100%
Gotland Pharma S.A.	100%
Av. La Castellana, Torre La Castellana, Piso 5, Oficina 5-G, 5-H, 5-I, Urbanización La Castellana, Municipio Chacao, Estado Bolivariano de Miranda, Venezuela	
Vietnam	
AstraZeneca Vietnam Company Limited	100%
18th Floor, A&B Tower, 76 Le Lai, Ben Thanh Ward, District 1, Ho Chi Minh City, Vietnam	

At 31 December 2018	Group Interest
Subsidiaries where the effective interest is less than 100%	
Algeria	
SPA AstraZeneca Al Djazair[10]	65.77%
No 20 Zone Macro Economique, dar El Medina-Hydra, Alger, Algeria	
India	
AstraZeneca Pharma India Limited[5]	75%
Block N1, 12th Floor, Manyata Embassy Business Park, Rachenahalli, Outer Ring Road, Bangalore-560 045, India	
Indonesia	
P.T. AstraZeneca Indonesia	95%
Perkantoran Hijau Arkadia Tower F, 3rd Floor, Jl. T.B. Simatupang Kav. 88, Jakarta, 12520, Indonesia	
The Netherlands	
Acerta Pharma B.V.	55%
Aspire Therapeutics B.V.	55%
Kloosterstraat 9, 5349 AB, Oss, The Netherlands	
United States	
Acerta Pharma LLC[8]	55%
121 Oyster Point Boulevard, South San Francisco, CA 94080, United States	
Joint Ventures	
Hong Kong	
WuXi MedImmune Biopharmaceutical Co., Limited	50%
Room 1902, 19/F, Lee Garden One, 33 Hysan Avenue, Causeway Bay, Hong Kong	
United Kingdom	
Archigen Biotech Limited[10]	50%
Centus Biotherapeutics Limited[10]	50%
1 Francis Crick Avenue, Cambridge Biomedical Campus, Cambridge, CB2 0AA, United Kingdom	
United States	
Montrose Chemical Corporation of California	50%
Suite 380, 600 Ericksen Ave N/E, Bainbridge Island, United States	
Significant Holdings	
Australia	
Armaron Bio Ltd[11]	22.07%
MPR Group, HWT Tower, Level 19, 40 City Rd, Southbank, VIC 3006, Australia	
China	
Dizal (Jiangsu) Pharmaceutical Co., Ltd.[12]	48.3%
Suite 4105, Building E (Building No.5) of Huirong Plaza, East Jinghui Road, Xinwu District, Wuxi, Jiangsu Province, China	
United Kingdom	
Apollo Therapeutics LLP[8]	25%
Stevenage Biosciences Catalyst, Gunnels Wood Road, Stevenage, Hertfordshire, SG1 2FX, United Kingdom	

Group Subsidiaries and Holdings
continued

At 31 December 2018	Group Interest
United States	
C.C. Global Chemicals Company[9]	37.5%
PO Box 7, MS2901, Texas, TX76101-0007, United States	
Viela Bio, Inc.[13]	40.9%
One MedImmune Way, Fifth Floor, Suite Area Two, Gaithersburg, MD 20878, United States	
Associated Holdings	
Australia	
Adherium Limited	4.64%
Collins Square, Tower Four, Level 18, 727 Collins Street, Melbourne VIC 3008, Australia	
France	
Innate Pharma S.A.	9.8%
117 Avenue de Luminy, 13009 Marseille, France	
Switzerland	
ADC Therapeutics Sàrl[14]	7.23%
Biopôle, Route de la Corniche 3B, 1066 Epalinges, Switzerland	
United Kingdom	
Circassia Pharmaceuticals PLC	19.9%
The Magdalen Centre, Robert Robinson Avenue, Oxford Science Park, Oxford, Oxfordshire, OX4 4GA, United Kingdom	
Datapharm Communications Limited[8,15]	12.5%
Ground Floor, Pascal Place, Randalls Way, Leatherhead, Surrey, KT22 7TW, United Kingdom	
Mereo Biopharma Group PLC	0.69%
4th Floor, One, Cavendish Place, London, W1G 0QF, United Kingdom	
Silence Therapeutics PLC	0.17%
27 Eastcastle Street, London, W1W 8DH, United Kingdom	
United States	
AbMed Corporation[16]	18%
65 Cummings Park Drive, Woburn, MA 01801, United States	
Affinita Biotech, Inc.[17]	16.23%
329 Oyster Point Blvd., 3rd Floor, South San Francisco, CA 94080, United States	
Albireo Pharma, Inc.	4.25%
10 Post Office Square, Suite 502 South, Boston, MA 02109, United States	
Arcutis, Inc.[18]	2.22%
70 Willow Road, Suite 200, Menlo Park, CA 94025, United States	
Aristea Therapeutics, Inc.[19]	15%
16652 Maverick Lane, Poway, CA 92064, United States	
Biodesix Inc.[20]	0.05%
2970 Wilderness Place, Suite 100, Boulder, CO 80301, United States	

At 31 December 2018	Group Interest
Biohaven Pharmaceutical Holding Company Ltd.	0.25%
234 Church Street, New Haven, CT 06510, United States	
BlinkBio, Inc.	0.38%
P.O. Box 1966, Jupiter, FL 33468, United States	
Cerapedics, Inc.[21]	7.09%
11025 Dover St #1600, Broomfield, CO 80021, United States	
Corvidia Corporation[22]	11.98%
35 Gatehouse Drive, Waltham, MA 02451, United States	
Elusys Therapeutics, Inc.[23]	7.51%
25 Riverside Drive, Unit One, Pine Brook, NJ 07058, United States	
Entasis Therapeutics Holdings Inc.	16.53%
35 Gatehouse Drive, Waltham, MA 02451, United States	
FibroGen, Inc.	0.65%
409 Illinois St., San Francisco, CA 94158, United States	
G1 Therapeutics, Inc.	7.93%
79 T.W. Alexander Drive, 4401 Research Commons, Suite 105, Research Triangle Park, NC 7709, United States	
Hydra Biosciences Inc.	4.27%
405 Concord Avenue, PO Box 147, Belmont, MA 02478, United States	
Millendo Therapeutics, Inc.	3.08%
301 North Main Street, Suite 100, Ann Arbor, MI 48104, United States	
Moderna, Inc.	7.75%
200 Technology Square, Cambridge, MA 02139, United States	
Myotherix Inc.[11]	8.27%
2600 Tenth St., #435, Berkeley, CA 94710, United States	
Nano Precision Medical, Inc.	4.83%
5858 Horton St Suite 393, Emeryville, CA 94608, United States	
PhaseBio Pharmaceuticals, Inc.	12.26%
One Great Valley, Parkway, Suite 30, Malvern, PA 19355, United States	
Rani Therapeutics, LLC[24]	0.97%
2051 Ringwood Ave, San Jose, CA 95116, United States	
Regulus Therapeutics Inc.	3.35%
10614 Science Center Dr., San Diego, CA 92121, United States	
Rocket Pharmaceuticals Inc.	1.07%
350 Fifth Avenue, Suite 7530, New York, NY 10118, United States	

[1] Ownership held in ordinary and class B special shares.
[2] Ownership held in common shares, preferred shares 2003, preferred shares 2003 ex (A), preferred shares 2003 ex (B), preferred shares Series D, preferred shares Series E and preferred shares Series F.
[3] Accounting year end is 31 March.
[4] Accounting year end is 30 June.
[5] Directly held by AstraZeneca PLC.
[6] Ownership held in Ordinary A shares and Ordinary B shares.
[7] Ownership held in common shares and special shares.
[8] Ownership held as membership interest.
[9] Ownership held as partnership interest.
[10] Ownership held in class A shares.
[11] Ownership held in class B preference shares.
[12] Voting rights and percentages vary depending on the subject matter and business to be voted on.
[13] Ownership held in common stock and series A-1 preferred stock.
[14] Ownership held in class B preference shares, class C preference shares, class D preference shares and class E preference shares.
[15] A company limited by guarantee.
[16] Ownership held in common shares and series A preferred shares.
[17] Ownership held in Class A voting and Class A non-voting shares.
[18] Ownership held in series B preferred stock.
[19] Ownership held in series A-1 preferred stock.
[20] Ownership held in series A preferred stock.
[21] Ownership held in class C preference shares and class D preference shares.
[22] Ownership held in series A preferred stock and series B preferred stock.
[23] Ownership held in class D preference shares.
[24] Ownership held in class C-1 preference shares.

Company Balance Sheet
at 31 December

AstraZeneca PLC

	Notes	2018 $m	2017 $m
Fixed assets			
Fixed asset investments	1	**33,244**	31,482
Current assets			
Debtors – other		**–**	11
Debtors – amounts owed by Group undertakings		**4,466**	7,995
		4,466	8,006
Creditors: Amounts falling due within one year			
Non-trade creditors	2	**(383)**	(325)
Interest-bearing loans and borrowings	3	**(999)**	(1,397)
		(1,382)	(1,722)
Net current assets		**3,084**	6,284
Total assets less current liabilities		**36,328**	37,766
Creditors: Amounts falling due after more than one year			
Amounts owed to Group undertakings	3	**(283)**	(283)
Interest-bearing loans and borrowings	3	**(17,013)**	(15,197)
		(17,296)	(15,480)
Net assets		**19,032**	22,286
Capital and reserves			
Called-up share capital	4	**317**	317
Share premium account		**4,427**	4,393
Capital redemption reserve		**153**	153
Other reserves		**2,533**	2,549
Profit and loss account		**11,602**	14,874
Shareholders' funds		**19,032**	22,286

$m means millions of US dollars.

The Company's profit for the year was $266m (2017: $3,109m).

The Company Financial Statements from page 205 to 209 were approved by the Board and were signed on its behalf by

Pascal Soriot
Director

Marc Dunoyer
Director

14 February 2019

Company's registered number 02723534

Company Statement of Changes in Equity
for the year ended 31 December

	Share capital $m	Share premium account $m	Capital redemption reserve $m	Other reserves $m	Profit and loss account $m	Total equity $m
At 1 January 2017	316	4,351	153	2,583	15,307	22,710
Total comprehensive income for the period						
Profit for the period	–	–	–	–	3,109	3,109
Amortisation of loss on cash flow hedge	–	–	–	–	1	1
Total comprehensive income for the period	–	–	–	–	3,110	3,110
Transactions with owners, recorded directly in equity						
Dividends	–	–	–	–	(3,543)	(3,543)
Capital contributions for share-based payments	–	–	–	(34)	–	(34)
Issue of Ordinary Shares	1	42	–	–	–	43
Total contributions by and distributions to owners	1	42	–	(34)	(3,543)	(3,534)
At 31 December 2017	317	4,393	153	2,549	14,874	22,286
Total comprehensive income for the period						
Profit for the period	**–**	**–**	**–**	**–**	**266**	**266**
Amortisation of loss on cash flow hedge	**–**	**–**	**–**	**–**	**1**	**1**
Total comprehensive income for the period	**–**	**–**	**–**	**–**	**267**	**267**
Transactions with owners, recorded directly in equity						
Dividends	**–**	**–**	**–**	**–**	**(3,539)**	**(3,539)**
Capital contributions for share-based payments	**–**	**–**	**–**	**(16)**	**–**	**(16)**
Issue of Ordinary Shares	**–**	**34**	**–**	**–**	**–**	**34**
Total contributions by and distributions to owners	**–**	**34**	**–**	**(16)**	**(3,539)**	**(3,521)**
At 31 December 2018	**317**	**4,427**	**153**	**2,533**	**11,602**	**19,032**

At 31 December 2018, $11,602m (2017: $14,874m) of the Profit and loss account reserve was available for distribution, subject to filing these Financial Statements with Companies House. Included in Other reserves is a special reserve of $157m (2017: $157m), arising on the redenomination of share capital in 1999. The other reserves arose from the cancellation of share premium by the Company in 1993.

Included within Other reserves at 31 December 2018 is $692m (2017: $708m) in respect of cumulative share-based payment awards.

Company Accounting Policies

Basis of presentation of financial information

These financial statements were prepared in accordance with FRS 101 'Reduced Disclosure Framework'.

In preparing these financial statements, the Company applied the recognition, measurement and disclosure requirements of International Financial Reporting Standards as adopted by the EU (Adopted IFRSs), but makes amendments where necessary in order to comply with the Companies Act 2006 and has set out below where advantage of the FRS 101 disclosure exemptions has been taken.

In these financial statements, the Company has applied the exemptions available under FRS 101 in respect of the following disclosures:

- Statement of Cash Flows and related notes
- disclosures in respect of transactions with wholly owned subsidiaries
- disclosures in respect of capital management
- the effects of new but not yet effective IFRSs
- disclosures in respect of the compensation of Key Management Personnel.

As the Group Financial Statements (presented on pages 135 to 193) include the equivalent disclosures, the Company has also taken the exemptions under FRS 101 available in respect of the following disclosures:

- IFRS 2 'Share-based Payment' in respect of Group settled share-based payments
- certain disclosures required by IFRS 13 'Fair Value Measurement' and the disclosures required by IFRS 7 'Financial Instrument Disclosures'.

No individual profit and loss account is prepared as provided by section 408 of the Companies Act 2006.

The accounting policies set out below have, unless otherwise stated, been applied consistently to all periods presented in these financial statements.

Basis of accounting

The Company Financial Statements are prepared under the historical cost convention, in accordance with the Companies Act 2006.

The following paragraphs describe the main accounting policies, which have been applied consistently.

Foreign currencies

Profit and loss account items in foreign currencies are translated into US dollars at average rates for the relevant accounting periods. Monetary assets and liabilities are translated at exchange rates prevailing at the date of the Company Balance Sheet. Exchange gains and losses on loans and on short-term foreign currency borrowings and deposits are included within net interest payable. Exchange differences on all other transactions are taken to operating profit.

Taxation

The current tax payable is based on taxable profit for the year. Taxable profit differs from reported profit because taxable profit excludes items that are either never taxable or tax deductible or items that are taxable or tax deductible in a different period. The Company's current tax assets and liabilities are calculated using tax rates that have been enacted or substantively enacted by the reporting date.

Deferred tax is provided using the balance sheet liability method, providing for temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax assets are recognised to the extent that it is probable that taxable profit will be available against which the asset can be utilised. This requires judgements to be made in respect of the availability of future taxable income.

No deferred tax asset or liability is recognised in respect of temporary differences associated with investments in subsidiaries and branches where the Company is able to control the timing of reversal of the temporary differences and it is probable that the temporary differences will not reverse in the foreseeable future.

The Company's deferred tax assets and liabilities are calculated using tax rates that are expected to apply in the period when the liability is settled or the asset realised based on tax rates that have been enacted or substantively enacted by the reporting date.

Accruals for tax contingencies require management to make judgements of potential exposures in relation to tax audit issues. Tax benefits are not recognised unless the tax positions will probably be sustained based upon management's interpretation of applicable laws and regulations and the likelihood of settlement.

Once considered probable of not being sustained, management reviews each material tax benefit to assess whether a provision should be taken against full recognition of the benefit on the basis of potential settlement through negotiation and/or litigation. Accruals for tax contingencies are measured using the single best estimate of likely outcome approach.

Investments

Fixed asset investments, including investments in subsidiaries, are stated at cost and reviewed for impairment if there are indications that the carrying value may not be recoverable.

Share-based payments

The issuance by the Company to employees of its subsidiaries of a grant of awards over the Company's shares, represents additional capital contributions by the Company to its subsidiaries. An additional investment in subsidiaries results in a corresponding increase in shareholders' equity. The additional capital contribution is based on the fair value of the grant issued, allocated over the underlying grant's vesting period, less the market cost of shares charged to subsidiaries in settlement of such share awards.

Financial instruments

Interest-bearing loans are initially measured at fair value (with direct transaction costs being amortised over the life of the loan) and are subsequently measured at amortised cost using the effective rate method at each reporting date. Changes in carrying value are recognised in profit.

Litigation

Through the normal course of business, the AstraZeneca Group is involved in legal disputes, the settlement of which may involve cost to the Company. Provision is made where an adverse outcome is probable and associated costs can be estimated reliably. In other cases, appropriate descriptions are included.

Notes to the Company Financial Statements

1 Fixed asset investments

	Investments in subsidiaries		
	Shares $m	**Loans $m**	**Total $m**
At 1 January 2018	**15,996**	**15,486**	**31,482**
Additions	**–**	**2,974**	**2,974**
Transfer to current assets	**–**	**(999)**	**(999)**
Capital reimbursement	**(16)**	**–**	**(16)**
Exchange	**–**	**(174)**	**(174)**
Amortisation	**–**	**15**	**15**
Impairment	**(38)**	**–**	**(38)**
At 31 December 2018	**15,942**	**17,302**	**33,244**

A list of subsidiaries is included on pages 201 to 204.

2 Non-trade creditors

	2018 $m	2017 $m
Amounts due within one year		
Short-term borrowings	**211**	199
Other creditors	**165**	119
Amounts owed to Group undertakings	**7**	7
	383	325

3 Loans

		Repayment dates	**2018 $m**	2017 $m
Amounts due within one year				
Interest-bearing loans and borrowings (unsecured)				
Floating rate notes	US dollars	2018	**–**	399
1.75% Callable bond	US dollars	2018	**–**	998
1.95% Callable bond	US dollars	2019	**999**	–
			999	1,397
Amounts due after more than one year				
Amounts owed to Group undertakings (unsecured)				
7.2% Loan	US dollars	2023	**283**	283
Interest-bearing loans and borrowings (unsecured)				
1.95% Callable bond	US dollars	2019	**–**	999
2.375% Callable bond	US dollars	2020	**1,594**	1,591
0.875% Non-callable bond	euros	2021	**854**	890
0.25% Callable bond	euros	2021	**570**	594
Floating rate note	US dollars	2022	**250**	249
2.375% Callable bond	US dollars	2022	**994**	992
3.5% Callable bond	US dollars	2023	**845**	–
Floating rate note	US dollars	2023	**400**	–
0.75% Callable bond	euros	2024	**1,022**	1,067
3.375% Callable bond	US dollars	2025	**1,980**	1,978
3.125% Callable bond	US dollars	2027	**743**	742
1.25% Callable bond	euros	2028	**903**	941
4% Callable bond	US dollars	2029	**992**	–
5.75% Non-callable bond	Pounds sterling	2031	**443**	468
6.45% Callable bond	US dollars	2037	**2,721**	2,720
4% Callable bond	US dollars	2042	**987**	987
4.375% Callable bond	US dollars	2045	**979**	979
4.375% Callable bond	US dollars	2048	**736**	–
Total amounts due after more than one year			**17,296**	15,480
Total loans			**18,295**	16,877

	2018 $m	2017 $m
Loans are repayable:		
After five years from balance sheet date	**11,506**	10,165
From two to five years	**4,196**	4,316
From one to two years	**1,594**	999
Within one year	**999**	1,397
Total unsecured	**18,295**	16,877

With the exception of the 2018, 2022 and 2023 floating rate notes, all loans are at fixed interest rates. Accordingly the fair values of the loans will change as market rates change. However, since the loans are held at amortised cost, changes in interest rates and the credit rating of the Company do not have any effect on the Company's net assets. IFRS 9 has been adopted from 1 January 2018. The recoverability of all inter-company loans has been assessed in accordance with IFRS 9. No impairment was identified and thus, no provision has been made. The inter-company balances are considered to have low credit risk and the loss allowance is therefore limited to 12 month expected credit losses. In 2018 there have been no credit losses.

4 Share capital

Details of share capital movements in the year are included in Note 23 to the Group Financial Statements.

5 Contingent liabilities

The Company is named as a party to legal proceedings in the Array BioPharma Inc. commercial litigation, which is described more fully in Note 29 to the Group Financial Statements.

Other

The Company has guaranteed the external borrowing of a subsidiary in the amount of $286m (2017: $286m).

6 Statutory and other information

The Directors were paid by another Group company in 2018 and 2017.

7 Subsequent events

On 10 January 2019, the Company entered into a floating rate $500m committed bank loan agreement, which was drawn in full on 4 February 2019. The loan is repayable in December 2019, although can be partially or fully paid in advance, but in that event, it is not available to be withdrawn.

Group Financial Record

For the year ended 31 December	2014 $m	2015 $m	2016 $m	2017 $m	**2018 $m**
Revenue and profits					
Product Sales	26,095	23,641	21,319	20,152	**21,049**
Externalisation Revenue	452	1,067	1,683	2,313	**1,041**
Cost of sales	(5,842)	(4,646)	(4,126)	(4,318)	**(4,936)**
Distribution costs	(324)	(339)	(326)	(310)	**(331)**
Research and development expense	(5,579)	(5,997)	(5,890)	(5,757)	**(5,932)**
Selling, general and administrative costs	(13,000)	(11,112)	(9,413)	(10,233)	**(10,031)**
Other operating income and expense	335	1,500	1,655	1,830	**2,527**
Operating profit	2,137	4,114	4,902	3,677	**3,387**
Finance income	78	46	67	113	**138**
Finance expense	(963)	(1,075)	(1,384)	(1,508)	**(1,419)**
Share of after tax losses in associates and joint ventures	(6)	(16)	(33)	(55)	**(113)**
Profit before tax	1,246	3,069	3,552	2,227	**1,993**
Taxation	(11)	(243)	(146)	641	**57**
Profit for the period	1,235	2,826	3,406	2,868	**2,050**
Other comprehensive income for the period, net of tax	(1,506)	(338)	(1,778)	639	**(1,059)**
Total comprehensive income for the period	(271)	2,488	1,628	3,507	**991**
Profit attributable to:					
Owners of the Parent	1,233	2,825	3,499	3,001	**2,155**
Non-controlling interests	2	1	(93)	(133)	**(105)**
Earnings per share					
Basic earnings per $0.25 Ordinary Share	$0.98	$2.23	$2.77	$2.37	**$1.70**
Diluted earnings per $0.25 Ordinary Share	$0.98	$2.23	$2.76	$2.37	**$1.70**
Dividends	$2.80	$2.80	$2.80	$2.80	**$2.80**
Return on revenues					
Operating profit as a percentage of Total Revenue	8.0%	16.7%	21.3%	16.4%	**15.3%**
Ratio of earnings to fixed charges	6.1	11.3	8.9	4.4	**3.7**

At 31 December	2014 $m	2015 $m	2016 $m	2017 $m	**2018 $m**
Statement of Financial Position					
Property, plant and equipment, goodwill and intangible assets	38,541	40,859	46,092	45,628	**41,087**
Other investments and non-current receivables	2,138	1,896	2,070	2,387	**1,594**
Deferred tax assets	1,219	1,294	1,102	2,189	**2,379**
Current assets	16,697	16,007	13,262	13,150	**15,591**
Total assets	58,595	60,056	62,526	63,354	**60,651**
Current liabilities	(17,330)	(14,869)	(15,256)	(16,383)	**(16,292)**
Deferred tax liabilities	(1,796)	(2,665)	(3,956)	(3,995)	**(3,286)**
Other non-current liabilities	(19,823)	(24,013)	(26,645)	(26,334)	**(27,029)**
Net assets	19,646	18,509	16,669	16,642	**14,044**
Share capital	316	316	316	317	**317**
Reserves attributable to equity holders of the Company	19,311	18,174	14,538	14,643	**12,151**
Non-controlling interests	19	19	1,815	1,682	**1,576**
Total equity and reserves	19,646	18,509	16,669	16,642	**14,044**

For the year ended 31 December	2014 $m	2015 $m	2016 $m	2017 $m	**2018 $m**
Cash flows					
Net cash inflow/(outflow) from:					
Operating activities	7,058	3,324	4,145	3,578	**2,618**
Investing activities	(7,032)	(4,239)	(3,969)	(2,328)	**963**
Financing activities	(2,705)	878	(1,324)	(2,936)	**(2,044)**
	(2,679)	(37)	(1,148)	(1,686)	**1,537**

For the purpose of computing the ratio of earnings to fixed charges, earnings consist of the income from continuing ordinary activities before taxation of Group companies and income received from companies owned 50% or less, plus fixed charges. Fixed charges consist of interest on all indebtedness, amortisation of debt discount and expense, and that portion of rental expense representative of the interest factor.