AstraZeneca

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AstraZeneca Annual Report and Form 20-F Information 2021

Consolidated Statement of Comprehensive Income

for the year ended 31 December

	Notes	2021 $m	2020 $m	2019 $m
Product Sales	1	**36,541**	25,890	23,565
Collaboration Revenue	1	**876**	727	819
Total Revenue		**37,417**	26,617	24,384
Cost of sales		**(12,437)**	(5,299)	(4,921)
Gross profit		**24,980**	21,318	19,463
Distribution costs		**(446)**	(399)	(339)
Research and development expense	2	**(9,736)**	(5,991)	(6,059)
Selling, general and administrative expense	2	**(15,234)**	(11,294)	(11,682)
Other operating income and expense	2	**1,492**	1,528	1,541
Operating profit		**1,056**	5,162	2,924
Finance income	3	**43**	87	172
Finance expense	3	**(1,300)**	(1,306)	(1,432)
Share of after tax losses in associates and joint ventures	11	**(64)**	(27)	(116)
(Loss)/profit before tax		**(265)**	3,916	1,548
Taxation	4	**380**	(772)	(321)
Profit for the period		**115**	3,144	1,227
Other comprehensive income:				
Items that will not be reclassified to profit or loss:				
Remeasurement of the defined benefit pension liability	22	**626**	(168)	(364)
Net (losses)/gains on equity investments measured at fair value through other comprehensive income		**(187)**	938	(28)
Fair value movements related to own credit risk on bonds designated as fair value through profit and loss		**–**	(1)	(5)
Tax on items that will not be reclassified to profit or loss	4	**105**	(81)	21
		544	688	(376)
Items that may be reclassified subsequently to profit or loss:				
Foreign exchange arising on consolidation	23	**(483)**	443	40
Foreign exchange arising on designated borrowings in net investment hedges	23	**(321)**	573	(252)
Fair value movements on cash flow hedges		**(167)**	180	(101)
Fair value movements on cash flow hedges transferred to profit and loss		**208**	(254)	52
Fair value movements on derivatives designated in net investment hedges	23	**34**	8	35
(Costs)/gains of hedging		**(6)**	9	(47)
Tax on items that may be reclassified subsequently to profit or loss	4	**46**	(39)	38
		(689)	920	(235)
Other comprehensive (loss)/income for the period, net of tax		**(145)**	1,608	(611)
Total comprehensive (loss)/income for the period		**(30)**	4,752	616
Profit attributable to:				
Owners of the Parent		**112**	3,196	1,335
Non-controlling interests	26	**3**	(52)	(108)
Total comprehensive (loss)/income attributable to:				
Owners of the Parent		**(33)**	4,804	723
Non-controlling interests	26	**3**	(52)	(107)
Basic earnings per $0.25 Ordinary Share	5	**$0.08**	$2.44	$1.03
Diluted earnings per $0.25 Ordinary Share	5	**$0.08**	$2.44	$1.03
Weighted average number of Ordinary Shares in issue (millions)	5	**1,418**	1,312	1,301
Diluted weighted average number of Ordinary Shares in issue (millions)	5	**1,427**	1,313	1,301
Dividends declared and paid in the period	25	**3,882**	3,668	3,579

All activities were in respect of continuing operations.

$m means millions of US dollars.

Consolidated Statement of Financial Position
at 31 December

	Notes	2021 $m	2020 $m	2019 $m
Assets				
Non-current assets				
Property, plant and equipment	7	**9,183**	8,251	7,688
Right-of-use assets	8	**988**	666	647
Goodwill	9	**19,997**	11,845	11,668
Intangible assets	10	**42,387**	20,947	20,833
Investments in associates and joint ventures	11	**69**	39	58
Other investments	12	**1,168**	1,108	1,401
Derivative financial instruments	13	**102**	171	61
Other receivables	14	**895**	720	740
Deferred tax assets	4	**4,330**	3,438	2,718
		79,119	47,185	45,814
Current assets				
Inventories	15	**8,983**	4,024	3,193
Trade and other receivables	16	**9,644**	7,022	5,761
Other investments	12	**69**	160	849
Derivative financial instruments	13	**83**	142	36
Intangible assets	10	**105**	–	–
Income tax receivable		**663**	364	285
Cash and cash equivalents	17	**6,329**	7,832	5,369
Assets held for sale	18	**368**	–	70
		26,244	19,544	15,563
Total assets		**105,363**	66,729	61,377
Liabilities				
Current liabilities				
Interest-bearing loans and borrowings	19	**(1,660)**	(2,194)	(1,822)
Lease liabilities	8	**(233)**	(192)	(188)
Trade and other payables	20	**(18,938)**	(15,785)	(13,987)
Derivative financial instruments	13	**(79)**	(33)	(36)
Provisions	21	**(768)**	(976)	(723)
Income tax payable		**(916)**	(1,127)	(1,361)
		(22,594)	(20,307)	(18,117)
Non-current liabilities				
Interest-bearing loans and borrowings	19	**(28,134)**	(17,505)	(15,730)
Lease liabilities	8	**(754)**	(489)	(487)
Derivative financial instruments	13	**(45)**	(2)	(18)
Deferred tax liabilities	4	**(6,206)**	(2,918)	(2,490)
Retirement benefit obligations	22	**(2,454)**	(3,202)	(2,807)
Provisions	21	**(956)**	(584)	(841)
Other payables	20	**(4,933)**	(6,084)	(6,291)
		(43,482)	(30,784)	(28,664)
Total liabilities		**(66,076)**	(51,091)	(46,781)
Net assets		**39,287**	15,638	14,596
Equity				
Capital and reserves attributable to equity holders of the Company				
Share capital	24	**387**	328	328
Share premium account		**35,126**	7,971	7,941
Capital redemption reserve		**153**	153	153
Merger reserve		**448**	448	448
Other reserves	23	**1,444**	1,423	1,445
Retained earnings	23	**1,710**	5,299	2,812
		39,268	15,622	13,127
Non-controlling interests	26	**19**	16	1,469
Total equity		**39,287**	15,638	14,596

The Financial Statements from pages 134 to 201 were approved by the Board and were signed on its behalf by

Pascal Soriot
Director
10 February 2022

Aradhana Sarin
Director

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 2019	317	4,427	153	448	1,440	5,683	12,468	1,576	14,044
Adoption of new accounting standards[1]	–	–	–	–	–	54	54	–	54
Profit for the period	–	–	–	–	–	1,335	1,335	(108)	1,227
Other comprehensive loss[2]	–	–	–	–	–	(612)	(612)	1	(611)
Transfer to other reserves[3]	–	–	–	–	5	(5)	–	–	–
Transactions with owners									
Dividends	–	–	–	–	–	(3,579)	(3,579)	–	(3,579)
Issue of Ordinary Shares	11	3,514	–	–	–	–	3,525	–	3,525
Share-based payments charge for the period (Note 29)	–	–	–	–	–	259	259	–	259
Settlement of share plan awards	–	–	–	–	–	(323)	(323)	–	(323)
Net movement	11	3,514	–	–	5	(2,871)	659	(107)	552
At 31 December 2019	328	7,941	153	448	1,445	2,812	13,127	1,469	14,596
Profit for the period	–	–	–	–	–	3,196	3,196	(52)	3,144
Other comprehensive income[2]	–	–	–	–	–	1,608	1,608	–	1,608
Transfer to other reserves[3, 4]	–	–	–	–	(22)	1,423	1,401	(1,401)	–
Transactions with owners									
Dividends	–	–	–	–	–	(3,668)	(3,668)	–	(3,668)
Issue of Ordinary Shares	–	30	–	–	–	–	30	–	30
Share-based payments charge for the period (Note 29)	–	–	–	–	–	277	277	–	277
Settlement of share plan awards	–	–	–	–	–	(349)	(349)	–	(349)
Net movement	–	30	–	–	(22)	2,487	2,495	(1,453)	1,042
At 31 December 2020	328	7,971	153	448	1,423	5,299	15,622	16	15,638
Profit for the period	**–**	**–**	**–**	**–**	**–**	**112**	**112**	**3**	**115**
Other comprehensive loss[2]	**–**	**–**	**–**	**–**	**–**	**(145)**	**(145)**	**–**	**(145)**
Transfer to other reserves[3]	**–**	**–**	**–**	**–**	**21**	**(21)**	**–**	**–**	**–**
Transactions with owners									
Dividends	**–**	**–**	**–**	**–**	**–**	**(3,882)**	**(3,882)**	**–**	**(3,882)**
Issue of Ordinary Shares	**59**	**27,155**	**–**	**–**	**–**	**–**	**27,214**	**–**	**27,214**
Share-based payments charge for the period (Note 29)	**–**	**–**	**–**	**–**	**–**	**615**	**615**	**–**	**615**
Settlement of share plan awards	**–**	**–**	**–**	**–**	**–**	**(781)**	**(781)**	**–**	**(781)**
Issue of replacement Alexion share awards upon acquisition (Note 27)[5]	**–**	**–**	**–**	**–**	**–**	**513**	**513**	**–**	**513**
Net movement[6]	**59**	**27,155**	**–**	**–**	**21**	**(3,589)**	**23,646**	**3**	**23,649**
At 31 December 2021	**387**	**35,126**	**153**	**448**	**1,444**	**1,710**	**39,268**	**19**	**39,287**

[1] The Group adopted IFRIC 23 'Uncertainty over Income Tax Treatments' from 1 January 2019. The cumulative effect of initially applying the interpretation was recognised as a decrease to income tax payable of $51m and to trade and other payables of $3m, and a corresponding adjustment to the opening balance of Retained earnings of $54m.

[2] Included within Other comprehensive loss of $145m (2020: income of $1,608m; 2019: loss of $611m) is a charge of $6m (2020: gain of $9m; 2019: charge of $47m), relating to Costs of hedging.

[3] Amounts charged or credited to other reserves relate to exchange adjustments arising on goodwill.

[4] The non-controlling interests reserve relating to the minority shareholders of Acerta Pharma, totalling $1,401m, was reclassified into Retained earnings in 2020 (see Note 26).

[5] Replacement share awards were issued as part of the acquisition of Alexion in 2021 (see Note 27).

[6] As part of the acquisition of Alexion in July 2021, a pre-existing non-controlling interest in Caelum Biosciences was recognised (Note 27). This was valued at $150m, the agreed exercise price for the exclusive option to acquire the remaining equity. The option was exercised on 28 September 2021 and the acquisition of Caelum Biosciences closed shortly thereafter on 5 October 2021.

Consolidated Statement of Cash Flows
for the year ended 31 December

	Notes	2021 $m	2020 $m	2019 $m
Cash flows from operating activities				
(Loss)/profit before tax		**(265)**	3,916	1,548
Finance income and expense	3	**1,257**	1,219	1,260
Share of after tax losses of associates and joint ventures	11	**64**	27	116
Depreciation, amortisation and impairment		**6,530**	3,149	3,762
Increase in trade and other receivables		**(961)**	(739)	(898)
Decrease/(increase) in inventories		**1,577**	(621)	(316)
Increase in trade and other payables and provisions		**1,405**	1,721	868
Gains on disposal of intangible assets	2	**(513)**	(1,030)	(1,243)
Gains on disposal of investment in associates and joint ventures	2	**(776)**	–	–
Fair value movements on contingent consideration arising from business combinations	20	**14**	(272)	(614)
Non-cash and other movements	17	**95**	(276)	378
Cash generated from operations		**8,427**	7,094	4,861
Interest paid		**(721)**	(733)	(774)
Tax paid		**(1,743)**	(1,562)	(1,118)
Net cash inflow from operating activities		**5,963**	4,799	2,969
Cash flows from investing activities				
Acquisition of subsidiaries, net of cash acquired	27	**(9,263)**	–	–
Payments upon vesting of employee share awards attributable to business combinations		**(211)**	–	–
Payment of contingent consideration from business combinations	20	**(643)**	(822)	(709)
Purchase of property, plant and equipment		**(1,091)**	(961)	(979)
Disposal of property, plant and equipment		**13**	106	37
Purchase of intangible assets		**(1,109)**	(1,645)	(1,481)
Disposal of intangible assets		**587**	951	2,076
Movement in profit-participation liability	2	**20**	40	150
Purchase of non-current asset investments		**(184)**	(119)	(13)
Disposal of non-current asset investments		**9**	1,381	18
Movement in short-term investments, fixed deposits and other investing instruments		**96**	745	194
Payments to associates and joint ventures	11	**(92)**	(8)	(74)
Disposal of investments in associates and joint ventures		**776**	–	–
Interest received		**34**	47	124
Net cash outflow from investing activities		**(11,058)**	(285)	(657)
Net cash (outflow)/inflow before financing activities		**(5,095)**	4,514	2,312
Cash flows from financing activities				
Proceeds from issue of share capital		**29**	30	3,525
Issue of loans and borrowings		**12,929**	2,968	500
Repayment of loans and borrowings		**(4,759)**	(1,609)	(1,500)
Dividends paid		**(3,856)**	(3,572)	(3,592)
Hedge contracts relating to dividend payments		**(29)**	(101)	4
Repayment of obligations under leases		**(240)**	(207)	(186)
Movement in short-term borrowings		**(276)**	288	(516)
Payments to acquire non-controlling interests		**(149)**	–	–
Net cash inflow/(outflow) from financing activities		**3,649**	(2,203)	(1,765)
Net (decrease)/increase in Cash and cash equivalents in the period		**(1,446)**	2,311	547
Cash and cash equivalents at the beginning of the period		**7,546**	5,223	4,671
Exchange rate effects		**(62)**	12	5
Cash and cash equivalents at the end of the period	17	**6,038**	7,546	5,223

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 UK-adopted International Accounting Standards and with the requirements of the Companies Act 2006 as applicable to companies reporting under those standards. The Consolidated Financial Statements also comply fully with International Financial Reporting Standards (IFRSs) as issued by the International Accounting Standards Board (IASB) and International Accounting Standards as adopted by the European Union.

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.

UK-adopted International Accounting Standards

On 31 December 2020, EU-adopted IFRS was brought into UK law and became UK-adopted International Accounting Standards, with future changes to IFRS being subject to endorsement by the UK Endorsement Board. The Consolidated Financial Statements transitioned to UK-adopted International Accounting Standards for financial periods beginning 1 January 2021. This change constitutes a change in accounting framework. However, there is no impact on recognition, measurement or disclosure in the period reported as a result of the change in framework.

IFRS 9, IFRS 7

The replacement of benchmark interest rates such as LIBOR and other interbank offered rates (IBORs) is a priority for global regulators. Phase 2 amendments to IFRS 9 'Financial Instruments' and IFRS 7 'Financial Instruments: Disclosures' were issued in August 2021 and have been adopted by the Group for 2021 reporting. As at 31 December 2021, the Group held instruments totalling $1,439m that reference USD LIBOR but will either have matured or will have their last LIBOR fixings set before the relevant USD LIBORs cease publication on 30 June 2023. These instruments include floating rate bonds, interest rate swaps and other arrangements. The Group also has $4bn of term bank loans that currently reference US LIBOR but these agreements have a mandatory switch from US LIBOR to an alternative risk free rate on 30 June 2023, should the Group not elect to do so before that date.

Basis for preparation of Financial Statements on a going concern basis

The Group has considerable financial resources available. As at 31 December 2021, the Group has $11.2bn in financial resources (cash and cash equivalent balances of $6.3bn and undrawn committed bank facilities of $4.9bn available until April 2025 with only $1.9bn of borrowings due within one year). All facilities contain no financial covenants and were undrawn at 31 December 2021.

The Directors have considered the impact of COVID-19 on AstraZeneca's operations and mitigations to these risks. Overall, the impact of these items would heighten certain risks, such as those relating to the delivery of the pipeline or launch of new medicines, the execution of AstraZeneca's commercial strategy, the manufacturing and supply of medicines and reliance on third-party goods and services. The Group is continuously monitoring, and mitigating where possible, impacts of these risks.

The Group's revenues are largely derived from sales of medicines covered by patents, which provide a relatively high level of resilience and predictability to cash inflows, although government price interventions in response to budgetary constraints are expected to continue to adversely affect revenues in some of our significant markets. The Group, however, anticipates new revenue streams from both recently launched medicines and those 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.

The accounting policy descriptions set out the areas where judgements and estimates need exercising, the most significant of which include the following Key Judgements KJ and Significant Estimates SE:

- revenue recognition – see Revenue Accounting Policy on page 139 KJ and Note 1 on page 145 SE
- expensing of internal development expenses – see Research and Development Policy on page 140 KJ
- impairment reviews of Intangible assets – see Note 10 on page 156 SE
- useful economic life of Intangible assets – see Research and Development Policy on page 140 KJ and Note 10 on page 156 SE
- business combinations and Goodwill (and Contingent consideration arising from business combinations) – see Business Combinations and Goodwill Policy on page 142 KJ, Note 10 on page 156 KJ, Note 20 on page 166 SE and Note 27 on page 178 SE
- litigation liabilities – see Litigation and Environmental Liabilities within Note 30 on page 189 KJ
- operating segments – see Note 6 on page 152 KJ
- employee benefits – see Note 22 on page 168 SE
- taxation – see Taxation Policy on page 141 KJ and Note 30 on page 189 KJ SE.

AstraZeneca has assessed the impact of the uncertainty presented by the COVID-19 pandemic on the Financial Statements, specifically considering the impact on key judgements and significant estimates along with several other areas of increased risk.

A detailed assessment has been performed, focusing on the following areas:

- recoverable value of goodwill, intangible assets and property, plant and equipment
- impact on key assumptions used to estimate contingent consideration liabilities
- key assumptions used in estimating the Group's defined benefit pension obligations
- basis for estimating clinical trial accruals
- key assumptions used in estimating rebates and chargebacks for US Product Sales
- valuations of unlisted equity investments
- expected credit losses associated with changes in credit risk relating to trade and other receivables
- net realisable value of inventories
- fair value of certain financial instruments
- recoverability of deferred tax assets
- effectiveness of hedge relationships.

No material accounting impacts relating to the areas assessed above were recognised in the year.

The Group will continue to monitor these areas of increased judgement, estimation and risk for material changes.

The Group has assessed the impact of climate risk on its financial reporting. The impact assessment was primarily focused on the valuation and useful lives of intangible assets and the identification and valuation of provisions and contingent liabilities, as these are judged to be the key areas that could be impacted by climate risks. No material accounting impacts or changes to judgements or other required disclosures were noted.

Financial risk management policies are detailed in Note 28 to the Financial Statements from page 180.

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

Revenue

Revenue comprises Product Sales and Collaboration Revenue.

Product Sales are revenues arising from contracts with customers. Collaboration Revenue arises from other contracts, however, the recognition and measurement principles of IFRS 15 'Revenue from Contracts with Customers' are applied as set out below.

Revenue excludes 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 variable consideration and include significant 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. Revenue is not recognised in full until it is highly probable that a significant reversal in the amount of cumulative revenue recognised will not occur.

Rebates are amounts payable or credited to a customer, usually based on the quantity or value of Product Sales to the customer for specific products in a certain period. Product sales rebates, which relate to Product Sales that occur over a period of time, are normally issued retrospectively.

At the time Product Sales are invoiced, rebates and deductions that the Group expects to pay, are estimated. These rebates typically arise from sales contracts with government payers, third-party managed care organisations, hospitals, long-term care facilities, group purchasing organisations and various state programmes.

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 Product Sales 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.

The methodology and assumptions used to estimate rebates and returns are monitored and adjusted regularly in the light of contractual and legal obligations, historical trends, past experience and projected market conditions. Once the uncertainty associated with returns is resolved, revenue is adjusted accordingly.

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.

Contracts relating to the supply of *Vaxzevria* during the COVID-19 pandemic include conditions whereby payments are receivable from customers in advance of the delivery of product. Such amounts are held on the balance sheet as contract liabilities until the related revenue is recognised, generally upon product delivery. Certain of these contracts contain further provisions that restrict the use of inventory manufactured in specified supply chains to specified customers, resulting in an enforceable right to payment as the activities are performed. Under IFRS 15, such contracts require revenue to be recognised over time using an appropriate and reasonably measurable method to measure progress. Revenue is recognised on these contracts based on the proportion of product delivered compared to the total contracted volumes.

Collaboration Revenue

Collaboration Revenue includes income from collaborative arrangements where either the Group has sold certain rights associated with those products, but retains a significant ongoing economic interest or has acquired a significant interest from a third party. Significant interest can include ongoing supply of finished goods, participation in sharing of profit arrangements or direct interest from sales of medicines.

These arrangements may include development arrangements, commercialisation arrangements and collaborations. Income may take the form of upfront fees, milestones, profit sharing and royalties and includes sharing of profit arising from sales made as principal by a collaboration partner.

KJ Timing of recognition of clinical and regulatory milestones is considered to be a key judgement. There can be significant uncertainty over whether it is highly probable that there would not be a significant reversal of revenue in respect of specific milestones if these are recognised before they are triggered due to them being subject to the actions of third parties. In general, where the triggering of a milestone is subject to the decisions of third parties (e.g. the acceptance or approval of a filing by a regulatory authority), the Group does not consider that the threshold for recognition is met until that decision is made.

Where Collaboration Revenue arises from the licensing of the Group's own intellectual property, the licences we grant are typically rights to use intellectual property which do not change during the period of the licence and therefore related non-conditional revenue is recognised at the point the license is granted and variable consideration as soon as recognition criteria are met. Those licences are generally unique and therefore when there are other performance obligations in the contract, 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 license 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 an 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 it is highly probable there will not be a significant reversal of cumulative income. The determination requires estimates to be made in relation to future Product Sales.

Where Collaboration Revenue is recorded and there is a related Intangible asset that is licensed as part of the arrangement, 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 licenced.

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 co-collaborator sharing of profit arising from collaborations, and foreign exchange gains and losses arising from business trading activities.

Research and development

Research expenditure is charged to profit and loss in the year in which it is incurred.

KJ 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 charged to profit and loss 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 2021, no amounts have met the 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 consideration for 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.

KJ The determination of useful economic life is considered to be a key judgement. On product launch, the Group makes a judgement as to the expected useful economic life with reference to the expiry of associated patents for the product, expectation around the competitive environment specific to the product and our detailed long-term risk-adjusted sales projections compiled annually across the Group and approved by the Board.

The useful economic life can extend beyond patent expiry dependent upon the nature of the product and the complexity of the development and manufacturing process. Significant sales can often be achieved post patent expiration.

Intangible assets

Intangible assets are stated at cost less amortisation and impairments. 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 10 to the Financial Statements from page 156.

Impairment reviews have been carried out on all Intangible assets that are in development (and not being amortised), all major intangible assets acquired during the year and all other intangible assets that have had indications of impairment during the year. Recoverable amount is determined as the higher of value in use or fair value less costs to sell using a discounted cash flow calculation, where the products' expected cash flows are risk-adjusted over their estimated remaining useful economic life. The determination of the recoverable amounts include significant estimates which are highly sensitive and depend upon key assumptions as detailed in Note 10 to the Financial Statements from page 156.
Sales forecasts and specific allocated costs (which have both been subject to appropriate senior management review and approval) are risk-adjusted and discounted using appropriate rates based on our post-tax weighted average cost of capital or for fair value less costs to sell, a required rate of return for a market participant. Our weighted average cost of capital reflects factors such as our capital structure and our costs of debt and equity.

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 Operating profit.

Government grants

Government grants are recognised in the Consolidated Statement of Comprehensive Income so as to match with the related expenses that they are intended to compensate. Where grants are received in advance of the related expenses, they are initially recognised in the Consolidated Statement of Financial Position under Trade and other payables as deferred income and released to net off against the related expenditure when incurred.

Each contract is assessed to determine whether there are both grant elements and supply of product which need to be separated. In each case, the contracts set out the specified terms for the supply of the product and the provisions for funding for certain costs, primarily research and development associated with the IP. It is considered whether there are any conditions for the funding to be refunded. The consideration in the contract is allocated between the grant and supply elements. The standalone selling price for the supply of products is determined by reference to observed prices with other customers. The amount allocated as a government grant is determined by reference to the specific agreed costs and activities identified in the contract as not directly attributable to the supply of product. Government grants are recorded as an offset to the relevant expense in the Consolidated Statement of Comprehensive Income and are capped to match the relevant costs incurred.

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' and recognises all actuarial gains and losses immediately through Other comprehensive income. 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 significant 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.

KJ 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 future 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 accepted by the tax authorities. This is based upon management's interpretation of applicable laws and regulations and the expectation of how the tax authority will resolve the matter. Once considered probable of not being accepted, management reviews each material tax benefit and reflects the effect of the uncertainty in determining the related taxable result.

Accruals for tax contingencies are measured 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.

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 30 to the Financial Statements from page 189.

Share-based payments

All plans have been classified as equity settled after assessment. 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.

Cash outflows relating to the vesting of share plans for our employees are recognised within operating activities, as they relate to employee remuneration. The cash flows relating to replacement awards issued to employees as part of the Alexion acquisition (see Note 27 from page 178) are classified within investing activities, as they are part of the aggregate cash flows arising from obtaining control of the subsidiary.

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 operating 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

The Group's lease arrangements are principally for property, most notably a portfolio of office premises and employee accommodation, and for a global car fleet, utilised primarily by our sales and marketing teams.

The lease liability and corresponding right-of-use asset arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- fixed payments, less any lease incentives receivable
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date
- the exercise price of a purchase option if the Group is reasonably certain to exercise that option
- payments of penalties for terminating the lease, if the lease term reflects the Group exercising that option, and
- amounts expected to be payable by the Group under residual value guarantees.

Right-of-use assets are measured at cost comprising the following:

- the amount of the initial measurement of lease liability
- any lease payments made at or before the commencement date less any lease incentives received
- any initial direct costs, and
- restoration costs.

Judgements made in calculating the lease liability include assessing whether arrangements contain a lease and determining the lease term. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. Property leases will often include an early termination or extension option to the lease term. Fleet management policies vary by jurisdiction and may include renewal of a lease until a measurement threshold, such as mileage, is reached. Extension and termination options have been considered when determining the lease term, along with all facts and circumstances that may create an economic incentive to exercise an extension option, or not exercise a termination option. Extension periods (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

The lease payments are discounted using incremental borrowing rates, as in the majority of leases held by the Group the interest rate implicit in the lease is not readily identifiable. Calculating the discount rate is an estimate made in calculating the lease liability. This rate is the rate that the Group would have to pay to borrow the funds necessary to obtain an asset of similar value to the right-of-use asset in a similar economic environment with similar terms, security and conditions. To determine the incremental borrowing rate, the Group uses a risk-free interest rate adjusted for credit risk, adjusting for terms specific to the lease including term, country and currency.

The Group is exposed to potential future increases in variable lease payments that are based on an index or rate, which are initially measured as at the commencement date, with any future changes in the index or rate excluded from the lease liability until they take effect. When adjustments to lease payments based on an index or rate take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

Lease payments are allocated between principal and finance cost. The finance cost is charged to the Consolidated Statement of Comprehensive Income over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

Payments associated with short-term leases of Property, plant and equipment and all leases of low-value assets are recognised on a straight-line basis as an expense in the Consolidated Statement of Comprehensive Income. Short-term leases are leases with a lease term of 12 months or less. Low-value leases are those where the underlying asset value, when new, is $5,000 or less and includes IT equipment and small items of office furniture.

Contracts may contain both lease and non-lease components. The Group allocates the consideration in the contract to the lease and non-lease components based on their relative standalone prices.

Right-of-use assets are generally depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis. If the Group is reasonably certain to exercise a purchase option, the right-of-use asset is depreciated over the underlying asset's useful life. 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 motor vehicles and other assets.

There are no material lease agreements under which the Group is a lessor.

Business combinations and goodwill

In assessing whether an acquired set of assets and activities is a business or an asset, management will first elect whether to apply an optional concentration test to simplify the assessment. Where the concentration test is applied, the acquisition will be treated as the acquisition of an asset if substantially all of the fair value of the gross assets acquired (excluding cash and cash equivalents, deferred tax assets, and related goodwill) is concentrated in a single asset or group of similar identifiable assets.

Where the concentration test is not applied, or is not met, a further assessment of whether the acquired set of assets and activities is a business will be performed.

KJ The determination of whether an acquired set of assets and activities is a business or an asset can be judgemental, particularly if the target is not producing outputs. Management uses a number of factors to make this determination, which are primarily focused on whether the acquired set of assets and activities include substantive processes that mean the set is capable of being managed for the purpose of providing a return. Key determining factors include the stage of development of any assets acquired, the readiness and ability of the acquired set to produce outputs and the presence of key experienced employees capable of conducting activities required to develop or manufacture the assets. Typically, the specialised nature of many pharmaceutical assets and processes is such that until assets are substantively ready for production and promotion, there are not the required processes for a set of assets and activities to meet the definition of a business in IFRS 3.

On the acquisition of a business, fair values are attributed to the identifiable assets and liabilities. Attributing fair values is a key judgement; refer to Note 27 to the Financial Statements on page 178 for additional details of the 2021 acquisition. 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 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. 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 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 significant estimate; see Note 20 from page 166. 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.

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. Control is normally evidenced by holding more than 50% of the share capital of the company, however other agreements may be in place that result in control where they give AstraZeneca finance decision-making authority over the relevant activities of the company.

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 or approved products and in Research and development expense 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 the 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 12 on page 160 of the Financial Statements.

Financial instruments
The Group's financial instruments include Lease liabilities, 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. Cash and cash equivalents in the Consolidated Statement of Cash Flows include unsecured bank overdrafts at the balance sheet date where balances often fluctuate between a cash and overdraft position.

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 the Consolidated Statement of Comprehensive Income.

Other investments
Investments are classified as fair value through profit or loss (FVPL), unless the Group makes an irrevocable election at initial recognition for certain non-current equity investments to present changes in Other comprehensive income (FVOCI). 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.

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 and 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 the Consolidated Statement of Comprehensive Income.

Group Accounting Policies
continued

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 the Consolidated Statement of Comprehensive Income.

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 and loss 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, refer to Note 30 to the Financial Statements on page 189.

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 the Consolidated Statement of Comprehensive Income 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 at the relevant risk free rate 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 the Consolidated Statement of Comprehensive Income.

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
At the date of authorisation of these financial statements, certain amendments were in issue relating to the following standards and interpretations but not yet adopted by the Group:

- amendments to IAS 12 'Income Taxes', IAS 8 'Accounting Policies, Changes in Accounting Estimates and Errors', IAS 1 'Presentation of Financial Statements' and IFRS Practice Statement 2 'Making materiality judgements', effective for periods beginning on or after 1 January 2023 – not endorsed by the UK Endorsement Board (UKEB);
- amendments to IAS 37 'Provisions, Contingent Liabilities and Contingent Assets', IAS 16 'Property, Plant and Equipment' and IFRS 3 'Business Combinations', effective for periods beginning on or after 1 January 2022 – not endorsed by the UKEB;
- amendments to IAS 1 'Presentation of Financial Statements', effective for periods beginning on or after 1 January 2024 – not endorsed by the UKEB; and
- amendments to IFRS 16 'Leases', effective for periods beginning on or after 1 April 2021 – endorsed by the UKEB on 12 May 2021.

These amendments and interpretations are not expected to have a significant impact on the Group's net results.

1 Revenue

Product Sales

	2021					2020					2019				
	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	**1,336**	**1,780**	**986**	**913**	**5,015**	1,208	1,566	748	806	4,328	762	1,268	474	685	3,189
Imfinzi	**277**	**1,245**	**485**	**405**	**2,412**	158	1,185	370	329	2,042	30	1,041	179	219	1,469
Lynparza	**384**	**1,087**	**618**	**259**	**2,348**	264	876	435	201	1,776	133	626	287	152	1,198
Calquence	**20**	**1,089**	**111**	**18**	**1,238**	6	511	2	3	522	2	162	–	–	164
Koselugo	**1**	**104**	**3**	**–**	**108**	–	38	–	–	38	–	–	–	–	–
Enhertu	**12**	**–**	**4**	**1**	**17**	–	–	–	–	–	–	–	–	–	–
Orpathys	**16**	**–**	**–**	**–**	**16**	–	–	–	–	–	–	–	–	–	–
Zoladex	**619**	**13**	**147**	**169**	**948**	561	5	140	182	888	492	7	135	179	813
Faslodex	**167**	**30**	**113**	**121**	**431**	180	55	221	124	580	198	328	229	137	892
Iressa	**151**	**11**	**5**	**16**	**183**	221	14	12	21	268	286	17	70	50	423
Casodex	**105**	**–**	**3**	**35**	**143**	133	–	3	36	172	127	–	16	57	200
Arimidex	**106**	**–**	**4**	**29**	**139**	147	–	3	35	185	152	–	28	45	225
Others	**29**	**–**	**5**	**16**	**50**	28	–	4	19	51	29	–	5	60	94
	3,223	**5,359**	**2,484**	**1,982**	**13,048**	2,906	4,250	1,938	1,756	10,850	2,211	3,449	1,423	1,584	8,667
Cardiovascular, Renal & Metabolism:															
Farxiga	**1,195**	**732**	**810**	**263**	**3,000**	686	569	507	197	1,959	471	537	373	162	1,543
Brilinta	**328**	**735**	**346**	**63**	**1,472**	461	732	342	58	1,593	462	710	351	58	1,581
Bydureon	**3**	**321**	**55**	**6**	**385**	4	382	53	9	448	11	459	66	13	549
Onglyza	**179**	**88**	**61**	**32**	**360**	201	166	58	45	470	176	230	70	51	527
Byetta	**12**	**26**	**11**	**6**	**55**	8	37	14	9	68	12	68	19	11	110
Other Diabetes	**18**	**22**	**17**	**2**	**59**	7	25	13	2	47	1	40	9	2	52
Lokelma	**3**	**115**	**13**	**44**	**175**	5	57	4	10	76	–	13	1	–	14
Roxadustat	**174**	**–**	**–**	**–**	**174**	–	–	–	–	–	–	–	–	–	–
Crestor	**775**	**80**	**52**	**189**	**1,096**	748	92	129	211	1,180	806	104	148	220	1,278
Seloken/Toprol-XL	**928**	**1**	**11**	**11**	**951**	782	13	16	10	821	686	37	25	12	760
Atacand	**28**	**4**	**65**	**–**	**97**	175	10	35	23	243	160	12	30	19	221
Others	**137**	**–**	**53**	**6**	**196**	126	–	57	8	191	193	(1)	59	20	271
	3,780	**2,124**	**1,494**	**622**	**8,020**	3,203	2,083	1,228	582	7,096	2,978	2,209	1,151	568	6,906
Respiratory & Immunology:															
Symbicort	**609**	**1,065**	**670**	**384**	**2,728**	567	1,022	694	438	2,721	547	829	678	441	2,495
Fasenra	**20**	**790**	**286**	**162**	**1,258**	12	603	203	131	949	5	482	118	99	704
Pulmicort	**770**	**72**	**73**	**47**	**962**	798	71	73	54	996	1,190	110	81	85	1,466
Daliresp/Daxas	**4**	**207**	**15**	**1**	**227**	4	190	22	1	217	4	184	26	1	215
Breztri	**55**	**115**	**7**	**26**	**203**	14	5	–	9	28	–	–	–	2	2
Bevespi	**4**	**39**	**11**	**–**	**54**	1	44	3	–	48	–	42	–	–	42
Saphnelo	**–**	**8**	**–**	**–**	**8**	–	–	–	–	–	–	–	–	–	–
Others	**287**	**108**	**185**	**14**	**594**	203	6	176	13	398	241	6	204	16	467
	1,749	**2,404**	**1,247**	**634**	**6,034**	1,599	1,941	1,171	646	5,357	1,987	1,653	1,107	644	5,391
Rare Disease:															
Soliris	**170**	**1,068**	**439**	**197**	**1,874**	–	–	–	–	–	–	–	–	–	–
Ultomiris	**9**	**381**	**169**	**129**	**688**	–	–	–	–	–	–	–	–	–	–
Strensiq	**10**	**297**	**36**	**35**	**378**	–	–	–	–	–	–	–	–	–	–
Andexxa	**–**	**50**	**18**	**–**	**68**	–	–	–	–	–	–	–	–	–	–
Kanuma	**7**	**32**	**20**	**3**	**62**	–	–	–	–	–	–	–	–	–	–
	196	**1,828**	**682**	**364**	**3,070**	–	–	–	–	–	–	–	–	–	–
Other:															
Nexium	**705**	**128**	**62**	**431**	**1,326**	757	169	71	495	1,492	748	218	63	454	1,483
Synagis	**35**	**23**	**203**	**149**	**410**	–	47	325	–	372	–	46	312	–	358
FluMist	**2**	**27**	**222**	**2**	**253**	1	70	219	5	295	–	20	93	–	113
Losec/Prilosec	**152**	**1**	**26**	**1**	**180**	152	6	20	5	183	179	10	49	25	263
Seroquel XR/IR	**46**	**12**	**29**	**5**	**92**	55	17	29	16	117	50	34	88	19	191
Others	**14**	**30**	**54**	**8**	**106**	6	55	56	9	126	12	108	64	9	193
	954	**221**	**596**	**596**	**2,367**	971	364	720	530	2,585	989	436	669	507	2,601
COVID-19:															
Vaxzevria	**2,240**	**64**	**1,035**	**578**	**3,917**	–	–	2	–	2	–	–	–	–	–
Evusheld	**19**	**–**	**66**	**–**	**85**	–	–	–	–	–	–	–	–	–	–
	2,259	**64**	**1,101**	**578**	**4,002**	–	–	2	–	2	–	–	–	–	–
Product Sales	**12,161**	**12,000**	**7,604**	**4,776**	**36,541**	8,679	8,638	5,059	3,514	25,890	8,165	7,747	4,350	3,303	23,565

1 Revenue *continued*

SE Rebates and chargebacks in the US

The major market where estimates are seen as significant is the US. 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 revenue in 2021 was 1.5% (2020: 3.5%; 2019: 3.6%). The most significant of these relate to the Medicaid and state programmes with an adjustment in respect of prior year net US Product Sales revenue in 2021 of 0.4% (2020: 1.1%; 2019: 1.3%) and Managed Care and Medicare of 0.7% (2020: 1.5%; 2019: 1.9%).

The adjustment in respect of the prior year net US Product sales revenue, excluding the Rare Disease disease area in 2021 was 1.8%, with Medicaid and state programmes of 0.5% and Managed Care and Medicare of 0.8%.

These values demonstrate the level of sensitivity; further meaningful sensitivity is not able to be provided due to the large volume of variables that contribute to the overall rebates, chargebacks, returns and other revenue accruals.

Collaboration Revenue

	2021 $m	2020 $m	2019 $m
Royalty income	**138**	62	62
Global co-development and commercialisation of *Lynparza* and *Koselugo* with MSD	**400**	460	610
Transfer of rights to *Zoladex* in the US and Canada to TerSera	**–**	35	–
Enhertu: share of gross profits	**193**	94	–
Roxadustat: share of gross profits	**6**	30	–
Nexium: sale of rights	**75**	–	–
Licence agreement for *Crestor* in Spain with Almirall	**–**	–	39
Co-development and commercialisation of MEDI8897 with Sanofi	**–**	–	34
Grant of authorised generic rights to various medicines in Japan	**–**	–	19
Other collaboration revenue	**64**	46	55
	876	727	819

Collaboration Revenue includes some income that does not arise from the satisfaction of performance obligations, in particular profit share entitlements arising from product sales made by collaborators who have licenced intellectual property to AstraZeneca. $200m of Collaboration Revenue in 2021 (2020: $128m; 2019: $nil) relates to such income. Substantially all other Collaboration Revenue relates to performance obligations satisfied in prior periods.

2 Operating profit

Operating profit includes the following significant items:

Cost of sales

In 2021, Cost of sales includes a charge of $2,198m in relation to the release, in line with sales, of fair value uplift to inventory that was recognised under IFRS 3 ‘Business Combinations’ upon the acquisition of Alexion (see Note 27).

During the year $290m (2020: $nil) of government grants were recognised within Cost of sales. Substantially all of the grants recognised relate to funding of manufactured *Vaxzevria* product for the US government, which expired prior to being accepted by the FDA. Historically, AstraZeneca did not receive any substantial government grants prior to the commencement of these programmes in 2020.

Selling, general and administrative expense

In 2021, Selling, general and administrative expense includes a charge of $42m (2020: credit of $51m; 2019: credit of $516m) 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 2021, Selling, general and administrative expense also includes a charge of $5m (2020: credit of $143m; 2019: credit of $58m) resulting from changes in the fair value of contingent consideration arising from the acquisition of Almirall’s respiratory business. These adjustments reflect revised estimates for future sales performance for the products acquired and, as a result, revised estimates for future milestones payable.

In 2021, Selling, general and administrative expense also includes a charge of $48m (2020: credit of $9m; 2019: charge of $610m) relating to a number of legal proceedings including settlements in various jurisdictions in relation to several marketed products.

Research and development expense: Government grants

During the year $531m (2020: $222m) of government grants were recognised within Research and development expense. Substantially all of the grants recognised relate to funding for research and development and related expenses for *Vaxzevria* $309m; (2020: $161m) and AZD7442 $222m;(2020: $61m). Historically, AstraZeneca did not receive any substantial government grants prior to the commencement of these programmes in 2020.

Other operating income and expense

	2021 $m	2020 $m	2019 $m
Royalties			
Income	**63**	149	146
Amortisation	**(1)**	(2)	(4)
Gains on disposal of intangible assets	**513**	1,030	1,243
Gains on disposal of investments in associates and joint ventures	**776**	–	–
Net (losses)/gains on disposal of other non-current assets	**(4)**	25	(21)
Impairment of property, plant and equipment	**–**	(12)	–
Other income[1]	**453**	406	285
Other expense	**(308)**	(68)	(108)
Other operating income and expense	**1,492**	1,528	1,541

[1] Other income in 2021 includes $99m of payments from Allergan in respect of the development of brazikumab (2020: $107m; 2019: $nil).

Royalty amortisation relates to intangible assets recorded in respect of income streams acquired with MedImmune.

Gains on disposal of intangible assets in 2021 includes $317m on disposal of rights to *Crestor* in over 30 countries in Europe, except in the UK and Spain.

Gains on disposal of intangible assets in 2020 includes $350m on disposal of global rights excluding US, India and Japan to established hypertension medicines to Atnahs Pharma, $400m on disposal of rights in over 70 countries to *Atacand* to Cheplapharm and $120m on the sale of an FDA Priority Review Voucher.

Gains on disposal of intangible assets in 2019 includes $515m on disposal of US rights to *Synagis* to Sobi, $243m on disposal of rights to *Losec* globally excluding China, Japan, the US and Mexico to Cheplapharm, $181m on disposal of rights to *Arimidex* and *Casodex* in Europe and certain additional countries to Juvisé Pharmaceuticals and $213m on disposal of commercialisation rights to *Seroquel* and *Seroquel XR* in Europe, Russia, US and Canada to Cheplapharm.

Gains on disposal of investments in associates and joint ventures in 2021 relates to the disposal of the 26.7% ownership in Viela Bio, as part of the acquisition of Viela by Horizon Therapeutics plc. AstraZeneca received cash proceeds and profit of $776m upon closing, with the profit recorded as Other operating income.

As part of the total consideration received in respect of the agreement to sell US rights to *Synagis* in 2019, $150m related to the rights to participate in the future cash flows from the US profits or losses for nirsevimab. A further $40m was received in 2020 and $20m in 2021. The total amount has been recognised as a financial liability as the Group has not fully transferred the risks and rewards of the underlying cash flows arising from nirsevimab to Sobi. This liability is presented in Other payables within Non-current liabilities. The associated cash flow is presented within investing activities as the Group has received the cash in exchange for agreeing to transfer future cash flows relating to an intangible asset. In 2021, as a result of the Probability of Technical/Regulatory Success unwind, an increase of $114m to the Profit Participation Liability has been recorded in Other operating expense.

Restructuring costs

In conjunction with the acquisition of Alexion, the enlarged Group has initiated a comprehensive Post Alexion Acquisition Group Review, aimed at integrating systems, structure and processes, optimising the global footprint and prioritising resource allocations and investments. These activities are expected to be substantially complete by the end of 2025, with a number of planned activities having commenced in late 2021. The Group has also continued to progress other legacy restructuring programmes, including the Global Post-Pandemic New Ways of Working programme that was initiated in 2020 in response to the changing business environment, accelerated by the COVID-19 pandemic.

During 2021, the Group has incurred $1,283m of restructuring costs, of which $1,030m resulted from activities that are part of the Post Alexion Acquisition Group Review. These included $449m within Cost of sales due to the rationalisation of our manufacturing capacity and footprint across certain production sites, $161m within Research and development expense and $81m in Cost of sales due to the de-prioritisation of various development projects within the enlarged Group's pipeline, $144m within Cost of sales in relation to the renegotiation of manufacturing capacity agreements with third parties and $98m, recognised principally in Selling, general and administrative expense, of severance payments and the associated costs of compensating those Alexion employees whose roles were eliminated due to duplication with existing AstraZeneca roles.

Total restructuring costs in 2021 included impairments of property, plant and equipment ($343m) and impairments of software intangibles ($16m).

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 21.

	2021 $m	2020 $m	2019 $m
Cost of sales	**722**	53	73
Research and development expense	**223**	35	101
Selling, general and administrative expense	**338**	162	173
Other operating income and expense	**–**	1	–
Total charge	**1,283**	251	347

2 Operating profit *continued*

	2021 $m	2020 $m	2019 $m
Severance costs	**217**	26	137
Accelerated depreciation and impairment charges[1]	**371**	17	(67)
Other[2]	**695**	208	277
Total charge	**1,283**	251	347

[1] Included within accelerated depreciation and impairment in 2019 is a credit relating to the impairment reversal of two manufacturing sites in Colorado, US. Refer to Note 7 for further details.
[2] Other costs are those incurred in designing and implementing the Group's various restructuring initiatives, including costs of integrating systems, structure and processes as part of our Post Alexion Acquisition Group Review, costs relating to the Alexion acquisition, internal project costs and external consultancy fees.

Financial instruments

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

	2021 $m	2020 $m	2019 $m
Losses on forward foreign exchange contracts	**(21)**	(86)	(112)
(Losses)/gains on receivables and payables	**(42)**	89	66
Total	**(63)**	3	(46)

Impairment charges

Details of impairment charges for 2021, 2020 and 2019 are included in Notes 7 and 10.

3 Finance income and expense

	2021 $m	2020 $m	2019 $m
Finance income			
Returns on fixed deposits and equity securities	**1**	1	1
Returns on short-term deposits	**11**	40	122
Fair value gains on debt and interest rate swaps	**–**	4	7
Discount unwind on other long-term assets	**–**	6	20
Interest income on income tax balances	**31**	36	22
Total	**43**	87	172
Finance expense			
Interest on debt and commercial paper	**(700)**	(669)	(698)
Interest on overdrafts, lease liabilities and other financing costs	**(74)**	(67)	(74)
Net interest on post-employment defined benefit plan net liabilities (Note 22)	**(26)**	(37)	(53)
Net exchange losses	**(20)**	(34)	(30)
Discount unwind on contingent consideration arising from business combinations (Note 20)	**(226)**	(278)	(356)
Discount unwind on other long-term liabilities[1]	**(248)**	(219)	(213)
Fair value losses on debt and interest rate swaps	**(4)**	–	–
Interest expense on income tax balances	**(2)**	(2)	(8)
Total	**(1,300)**	(1,306)	(1,432)
Net finance expense	**(1,257)**	(1,219)	(1,260)

[1] Included within Discount unwind on other long-term liabilities is $161m relating to the Acerta Pharma share purchase liability (2020: $151m; 2019: $136m), see Note 20 for further details.

Financial instruments

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

	2021 $m	2020 $m	2019 $m
Interest and fair value adjustments in respect of debt designated at fair value through profit or loss, net of derivatives	**(5)**	(8)	(12)
Interest and changes in carrying values of debt designated as hedged items in fair value hedges, net of derivatives	**(9)**	(6)	(10)
Interest and fair value changes on fixed and short-term deposits, equity securities, other derivatives and tax balances	**16**	42	110
Interest on debt, commercial paper, overdrafts and lease liabilities held at amortised cost	**(738)**	(660)	(662)

Fair value loss of $33m (2020: gain of $33m; 2019: loss of $5m) on interest rate fair value hedging instruments and $29m fair value gain (2020: loss of $32m; 2019: gain of $8m) 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 loss of $19m (2020: gain of $2m; 2019: gain of $4m) on derivatives related to debt instruments designated at fair value through profit or loss and $19m fair value gain (2020: loss of $3m; 2019: loss of $4m) 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.

4 Taxation

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

	2021 $m	2020 $m	2019 $m
Current tax expense			
Current year	**1,200**	981	1,243
Adjustment to prior years	**(5)**	(10)	66
Total	**1,195**	971	1,309
Deferred tax expense			
Origination and reversal of temporary differences	**(1,417)**	(178)	(875)
Adjustment to prior years	**(158)**	(21)	(113)
Total	**(1,575)**	(199)	(988)
Taxation recognised in the profit for the period	**(380)**	772	321

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

	2021 $m	2020 $m	2019 $m
Current and deferred tax			
Items that will not be reclassified to profit or loss:			
Remeasurement of the defined benefit liability	**(117)**	36	81
Net losses/(gains) on equity investments measured at fair value through other comprehensive income	**27**	(180)	(60)
Deferred tax (credit)/charge relating to change of tax rates	**195**	63	–
Total	**105**	(81)	21
Items that may be reclassified subsequently to profit or loss:			
Foreign exchange arising on consolidation	**57**	(61)	34
Foreign exchange arising on designated borrowings in net investment hedges	**(19)**	22	4
Deferred tax charge relating to change of tax rates	**8**	–	–
Total	**46**	(39)	38
Taxation relating to components of other comprehensive income	**151**	(120)	59

The reported tax rate in the year was 143% and reflected the favourable one-off impacts of the non-taxable divestment of the investment in Viela Bio and a reduction of tax liabilities arising from updates to estimates of prior period tax liabilities following settlements with tax authorities and on expiry of statute of limitations partially offset by a tax charge on recalculation of deferred tax balances following substantive enactment of Dutch and UK Corporation Tax rate increases.

The income tax paid for the year was $1,743m.

Taxation has been provided at current rates on the profits earned for the periods covered by the Group Financial Statements. The 2021 prior period current tax adjustment relates mainly to tax accrual to tax return adjustments. The 2020 prior period current tax adjustment relates mainly to net reductions in provisions for tax contingencies and tax accrual to tax return adjustments. The 2019 prior period current tax adjustments relate mainly to net increases in provisions for tax contingencies and tax accrual to tax return adjustments.

The 2021 prior period deferred tax adjustments relate mainly to tax accrual to tax return adjustments and updates to estimates of prior period tax liabilities following settlements with tax authorities. The 2020 prior period deferred tax adjustments relate mainly to tax accrual to tax return adjustments offset by net increases in provisions for tax contingencies. The 2019 prior period deferred tax adjustments relate mainly to tax accrual to return adjustments.

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. Unremitted earnings or differences in the carrying value and tax basis of investments may be liable to additional taxes if distributed as dividends or on a liquidation event. Deferred tax is provided for such differences in relation to Group entities where management is intending to remit earnings in the foreseeable future. The aggregate amount of gross temporary differences associated with investments in subsidiaries, partnerships and branches for which deferred tax liabilities have not been recognised totalled approximately $5,597m at 31 December 2021 (2020: $2,270m; 2019: $1,779m), $3,095m of which has a corresponding deductible temporary difference of the same gross value which is not recognised as it is not probable of reversing in the foreseeable future but on which different tax rates apply. Prior years' amounts have been adjusted to reflect only those unremitted earnings that would be subject to additional taxes.

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. In 2021, the UK Government enacted legislation to increase the main rate of UK statutory Corporation Tax to 25% effective 1 April 2023. In December 2021, the OECD issued model rules for a new global minimum tax framework and the UK has announced the intention to bring these into effect from 2023. Whilst the overarching framework has been published, we are awaiting the legislation and detailed guidance to assess the full implications upon AstraZeneca.

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:

	2021 $m	2020 $m	2019 $m
(Loss)/profit before tax	**(265)**	3,916	1,548
Notional taxation charge at UK corporation tax rate of 19%	**(50)**	744	294
Differences in effective overseas tax rates	**1**	(49)	(49)
Deferred tax charge relating to change in tax rates[1]	**54**	138	39
Unrecognised deferred tax asset[2]	**32**	3	(16)
Items not deductible for tax purposes	**208**	36	92
Items not chargeable for tax purposes	**(163)**	(4)	(13)
Other items[3]	**(299)**	(65)	21
Adjustments in respect of prior periods[4]	**(163)**	(31)	(47)
Total tax (credit)/charge for the year	**(380)**	772	321

[1] The 2021 item relates to substantive enactment of the increase in UK Corporation Tax rate from 19% to 25% effective 1 April 2023 (debit of $12m), the increase in the Dutch Corporate Income Tax rate from 25% to 25.8% effective 1 January 2022 (debit of $39m) and other (debit of $3m). The 2020 item relates to the increase in the 2020 substantively enacted Dutch Corporate Income Tax rate (debit of $151m) and other (debit of $5m). In 2020, it was substantively enacted that the planned reduction in the Dutch Corporate Income Tax rate to 21.7% from 25% effective 1 January 2021 would not take place. In addition, the planned reduction in the UK corporation tax rate to 17% was not enacted with the corporation tax rate remaining at 19% (credit of $18m). The 2019 item relates to the increase in the 2019 substantively enacted Dutch Corporate Income Tax rate (debit of $66m) and other (credit of $27m). In 2019, it was substantively enacted that the Dutch Corporate Income Tax rate for the year ended 31 December 2020 would increase from 22.55% to 25% and effective 1 January 2021 would increase from 20.5% to 21.7%.

[2] The 2021 item includes a $15m debit arising on de-recognition of previously recognised deferred tax assets. The 2020 item includes a $22m credit arising on recognition of previously unrecognised deferred tax assets. The 2019 item includes a $27m credit arising on recognition of previously unrecognised deferred tax assets.

[3] Other items in 2021 relate to a net credit of $299m relating to the reduction of tax liabilities arising from updates to estimates of prior period tax liabilities following settlements with tax authorities and on expiry of the relevant statute of limitations partially offset by a provision for transfer pricing and other contingencies. Other items in 2020 relate to a net credit of $65m relating to the release of tax contingencies following the expiry of the relevant statute of limitations partially offset by a provision for transfer pricing and other contingencies. Other items in 2019 relate to a charge of $309m relating to collaboration and divestment activity, a credit of $70m relating to internal transfers of intellectual property and a net credit of $218m 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 for transfer pricing and other contingencies.

[4] Further details explaining the adjustments in respect of prior periods is set out on page 149.

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 total movement in the net deferred tax balance in the year was $2,396m. The movements are as follows:

	Intangibles, property, plant & equipment[1] $m	Pension and post-retirement benefits $m	Elimination of unrealised profit on inventory $m	Untaxed reserves[2] $m	Losses and tax credits carried forward $m	Accrued expenses and other $m	Total $m
Net deferred tax balance at 1 January 2019	(3,368)	495	980	(557)	1,008	535	(907)
Income statement	1,055	(9)	312	(63)	(480)	173	988
Other comprehensive income	34	79	–	–	–	(30)	83
Equity	–	–	–	–	–	12	12
Exchange	14	(4)	1	22	18	1	52
Net deferred tax balance at 31 December 2019	(2,265)	561	1,293	(598)	546	691	228
Income statement	(226)	(64)	444	(92)	136	1	199
Other comprehensive income	(78)	101	–	(1)	–	72	94
Equity	–	–	–	–	–	(16)	(16)
Exchange	(58)	58	70	(110)	32	23	15
Net deferred tax balance at 31 December 2020	(2,627)	656	1,807	(801)	714	771	520
Income statement	**782**	**(166)**	**(59)**	**(139)**	**307**	**850**	**1,575**
Other comprehensive income	**52**	**83**	**–**	**–**	**–**	**40**	**175**
Equity	**–**	**–**	**–**	**–**	**–**	**14**	**14**
Additions through business combinations[3]	**(3,744)**	**13**	**166**	**–**	**507**	**(1,116)**	**(4,174)**
Exchange	**57**	**(33)**	**(53)**	**78**	**(10)**	**(25)**	**14**
Net deferred tax balance at 31 December 2021[4]	**(5,480)**	**553**	**1,861**	**(862)**	**1,518**	**534**	**(1,876)**

[1] Includes deferred tax of $367m on contingent consideration liabilities in respect of intangibles.

[2] Untaxed reserves relate to taxable profits where the tax liability is deferred to later periods.

[3] The deferred tax liability of $4,174m relates to the acquisition of Alexion (Note 27 from page 178).

[4] The Group recognises deferred tax assets to the extent that it is probable that sufficient future taxable profits will arise, against which these deductible temporary differences can be utilised. The US includes a net deferred tax asset of $245m and the UK includes a net deferred tax asset of $1,070m as at 31 December 2021 which include tax losses and other deductible temporary differences. The Group has performed an assessment of recovery of deferred tax assets and for these entities, the Group has forecasted future taxable profits and considers that it is probable that sufficient future taxable profits will arise against which these deductible temporary differences can be utilised. In arriving at these forecasts, the Group has reviewed the Group level budgets and forecasts and the ability of those entities to generate future income from developing and commercialising products, including local tax laws and the scheduling of reversal of deductible temporary differences and losses are forecast to be utilised within ten years. It is considered that these sources of income are sufficiently predictable or diversified to support a recognition period in excess of five years. A sensitivity assessment has been performed which shows that there is minimal impact on timing of reversal. Assessing the availability of future taxable income to support recognition of deferred tax assets is considered a key judgement and changes in Group forecasts will impact the recoverability of deferred tax assets. To the extent that this is not the case, no deferred tax asset is recognised and details of unrecognised deferred tax assets are included in the table below.

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	Elimination of unrealised profit on inventory $m	Untaxed reserves $m	Losses and tax credits carried forward $m	Accrued expenses and other $m	Total $m
Deferred tax assets at 31 December 2019	1,091	591	1,543	–	608	959	4,792
Deferred tax liabilities at 31 December 2019	(3,356)	(30)	(250)	(598)	(62)	(268)	(4,564)
Net deferred tax balance at 31 December 2019	(2,265)	561	1,293	(598)	546	691	228
Deferred tax assets at 31 December 2020	1,061	690	2,286	–	852	1,130	6,019
Deferred tax liabilities at 31 December 2020	(3,688)	(34)	(479)	(801)	(138)	(359)	(5,499)
Net deferred tax balance at 31 December 2020	(2,627)	656	1,807	(801)	714	771	520
Deferred tax assets at 31 December 2021	**1,476**	**574**	**1,910**	**–**	**1,571**	**1,735**	**7,266**
Deferred tax liabilities at 31 December 2021	**(6,956)**	**(21)**	**(49)**	**(862)**	**(53)**	**(1,201)**	**(9,142)**
Net deferred tax balance at 31 December 2021	**(5,480)**	**553**	**1,861**	**(862)**	**1,518**	**534**	**(1,876)**

Analysed in the Consolidated Statement of Financial Position, after offset of balances within countries, as follows:

	2021 $m	2020 $m	2019 $m
Deferred tax assets	**4,330**	3,438	2,718
Deferred tax liabilities	**(6,206)**	(2,918)	(2,490)
Net deferred tax balance	**(1,876)**	520	228

Unrecognised deferred tax assets

Deferred tax assets (DTA) of $719m (2020: $428m; 2019: $441m) have not been recognised in respect of deductible temporary differences because it is not probable that future taxable profit will be available against which the Group can utilise the benefits there from.

	2021 Temporary differences $m	**2021 Unrecognised DTA $m**	2020 Temporary differences $m	2020 Unrecognised DTA $m	2019 Temporary differences $m	2019 Unrecognised DTA $m
Trading and capital losses expiring:						
Within 10 years	**4**	**1**	2	–	33	9
More than 10 years	**53**	**11**	–	–	1	–
Indefinite	**300**	**79**	234	63	218	62
	357	**91**	236	63	252	71
Tax credits and State tax losses expiring:						
Within 10 years		**101**		36		44
More than 10 years		**441**		255		259
Indefinite		**86**		74		67
		628		365		370
Total		**719**		428		441

5 Earnings per $0.25 Ordinary Share

	2021	2020	2019
Profit for the year attributable to equity holders ($m)	**112**	3,196	1,335
Basic earnings per Ordinary Share	**$0.08**	$2.44	$1.03
Diluted earnings per Ordinary Share	**$0.08**	$2.44	$1.03
Weighted average number of Ordinary Shares in issue for basic earnings (millions)	**1,418**	1,312	1,301
Dilutive impact of share options outstanding (millions)	**9**	1	–
Diluted weighted average number of Ordinary Shares in issue (millions)	**1,427**	1,313	1,301

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

6 Segment information

Following the acquisition of Alexion, the Group has reviewed its assessment of reportable segments under IFRS 8 'Operating Segments' and concluded that the Group continues to have one reportable segment.

KJ This determination is considered to be a Key Judgement and this judgement has been taken with reference to the following factors:

1 The level of integration across the different functions of the Group's pharmaceutical business:
AstraZeneca is engaged in a single business activity of pharmaceuticals and the Group does not have multiple operating segments. AstraZeneca's pharmaceuticals 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.

2 The identification of the Chief Operating Decision Maker (CODM) and the nature and extent of the financial information reviewed by the CODM:
The SET, established and chaired by the CEO, is the vehicle through which the CEO exercises the authority delegated to him from the Board for the management, development and performance of AstraZeneca as a whole. 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, manufacturing and supply and enabling functions. All significant operating decisions are undertaken 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 ability of the enterprise to develop, produce, deliver and commercialise a wide range of pharmaceutical products are central to 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. The focus of additional financial information reviewed is at brand sales and gross margin level within specific geographies. Expenditure analysis is completed for the science units, operations and enabling functions; there is no allocation of these centrally managed group costs to the individual product or brands. The bonus of SET members' continues to be derived from the Group scorecard outcome as discussed in our Directors' Remuneration Report.

3 How resources are allocated:
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 Late Stage Product Committees.

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 Non-current assets, Total assets, assets acquired, net operating assets, and Property, plant and equipment owned by the same companies. Product Sales by geographic market are included in the area/country where the legal entity resides and from which those sales were made.

	Total Revenue		
	2021 $m	2020 $m	2019 $m
UK	**3,245**	1,741	1,822
Rest of Europe			
France	**915**	653	578
Germany	**1,486**	937	704
Italy	**577**	431	396
Spain	**578**	398	359
Sweden	**2,322**	1,026	834
Others	**1,949**	1,391	1,291
	7,827	4,836	4,162
The Americas			
Canada	**772**	596	466
US	**12,047**	8,955	8,047
Others	**1,203**	761	814
	14,022	10,312	9,327
Asia, Africa & Australasia			
Australia	**547**	282	266
China	**6,002**	5,345	4,867
Japan	**3,395**	2,567	2,522
Others	**2,379**	1,534	1,418
	12,323	9,728	9,073
Total Revenue	**37,417**	26,617	24,384

Total Revenue outside of the UK totalled $34,172m for the year ended 31 December 2021 (2020: $24,876m; 2019: $22,562m).

	Operating profit/(loss)			(Loss)/profit before tax		
	2021 $m	2020 $m	2019 $m	**2021 $m**	2020 $m	2019 $m
UK	**(950)**	824	466	**(1,477)**	518	93
Rest of Europe	**2,999**	2,838	1,502	**2,682**	2,356	1,006
The Americas	**(1,936)**	758	(8)	**(2,401)**	297	(474)
Asia, Africa & Australasia	**943**	742	964	**931**	745	923
Continuing operations	**1,056**	5,162	2,924	**(265)**	3,916	1,548

	Non-current assets[1]			Total assets		
	2021 $m	2020 $m	2019 $m	**2021 $m**	2020 $m	2019 $m
UK	**7,692**	7,900	6,874	**16,615**	17,851	15,302
Rest of Europe	**39,171**	15,821	15,245	**48,383**	19,738	18,182
The Americas	**26,570**	18,501	19,663	**34,301**	23,640	23,380
Asia, Africa & Australasia	**1,254**	1,354	1,253	**6,064**	5,500	4,513
Continuing operations	**74,687**	43,576	43,035	**105,363**	66,729	61,377

	Assets acquired[2]			Net operating assets[3]		
	2021 $m	2020 $m	2019 $m	**2021 $m**	2020 $m	2019 $m
UK	**810**	1,611	2,255	**3,239**	5,244	4,206
Rest of Europe	**26,527**	505	386	**40,161**	10,242	9,201
The Americas	**10,810**	286	236	**24,786**	15,697	15,929
Asia, Africa & Australasia	**94**	116	120	**736**	607	1,432
Continuing operations	**38,241**	2,518	2,997	**68,922**	31,790	30,768

[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) and include those acquired through business combinations (Note 27).
[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		
	2021 $m	2020 $m	2019 $m
UK	**2,542**	2,227	1,920
Ireland	**969**	–	–
Sweden	**1,593**	1,755	1,488
US	**2,660**	2,662	2,758
Rest of the world	**1,419**	1,607	1,522
Continuing operations	**9,183**	8,251	7,688

Geographic markets

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

	2021 $m	2020 $m	2019 $m
UK	**1,206**	611	458
Rest of Europe	**6,792**	4,446	3,891
The Americas	**14,893**	10,004	9,032
Asia, Africa & Australasia	**13,650**	10,829	10,184
Continuing operations	**36,541**	25,890	23,565

Product Sales are recognised when control of the goods has been transferred to a third party. A significant proportion of this is upon delivery of the products to wholesalers. One wholesaler (2020: one; 2019: one) individually represented greater than 10% of Product Sales. The value of Product Sales to this wholesaler was $4,862m (2020: $3,321m; 2019: $3,078m).

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 2019	5,366	7,096	2,177	14,639
Capital expenditure	8	48	940	996
Transfer of assets into use	403	620	(1,023)	–
Disposals and other movements	(236)	(324)	(11)	(571)
Exchange adjustments	(9)	(57)	3	(63)
At 31 December 2019	5,532	7,383	2,086	15,001
Capital expenditure	10	42	874	926
Transfer of assets into use	137	462	(599)	–
Disposals and other movements	(48)	(615)	(18)	(681)
Exchange adjustments	220	466	135	821
At 31 December 2020	5,851	7,738	2,478	16,067
Additions through business combinations (Note 27)	**542**	**339**	**254**	**1,135**
Capital expenditure	**9**	**31**	**1,112**	**1,152**
Transfer of assets into use	**236**	**611**	**(847)**	**–**
Disposals and other movements	**(92)**	**(469)**	**(200)**	**(761)**
Exchange adjustments	**(169)**	**(347)**	**(69)**	**(585)**
At 31 December 2021	**6,377**	**7,903**	**2,728**	**17,008**
Depreciation and impairment				
At 1 January 2019	2,504	4,714	–	7,218
Depreciation charge for the year	209	438	–	647
Impairment (reversal)/charge	(67)	14	–	(53)
Disposals and other movements	(120)	(313)	–	(433)
Exchange adjustments	(21)	(45)	–	(66)
At 31 December 2019	2,505	4,808	–	7,313
Depreciation charge for the year	227	462	–	689
Impairment (reversal)/charge	(1)	2	12	13
Disposals and other movements	(42)	(606)	(12)	(660)
Exchange adjustments	137	324	–	461
At 31 December 2020	2,826	4,990	–	7,816
Depreciation charge for the year	**231**	**493**	**–**	**724**
Impairment (reversal)/charge	**(1)**	**121**	**223**	**343**
Disposals and other movements	**(74)**	**(428)**	**(223)**	**(725)**
Exchange adjustments	**(105)**	**(228)**	**–**	**(333)**
At 31 December 2021	**2,877**	**4,948**	**–**	**7,825**
Net book value				
At 31 December 2019	3,027	2,575	2,086	7,688
At 31 December 2020	3,025	2,748	2,478	8,251
At 31 December 2021	**3,500**	**2,955**	**2,728**	**9,183**

Impairment charges in 2021 totalling $343m were recognised for Plant and equipment and Assets in course of construction due to the rationalisation of our manufacturing capacity and footprint across certain production sites as a result of restructuring programmes, including the Post Alexion Acquisition Group Review (see Note 2). These charges have been recognised in Cost of sales. The revised carrying value of the impacted assets is nil, under fair value less costs to sell.

Impairment charges in 2019 were recognised for Land and buildings and Plant and equipment as a result of the announcement of the closure of the Wedel manufacturing site and the cessation of specific operations in Algeria. These charges were recognised in Cost of sales in 2019. Impairment reversals were recognised in 2019 of $23m in relation to the Longmont, Colorado manufacturing site (sold in March 2019) and the Boulder, Colorado manufacturing site of $70m (sold in May 2020). These assets had been fully impaired during 2018.

Included within other movements in 2019 is a transfer of $70m from Land and buildings to Assets held for sale in relation to the Boulder manufacturing site.

	2021 $m	2020 $m	2019 $m
The net book value of land and buildings comprised:			
Freeholds	**2,985**	2,583	2,657
Leaseholds	**515**	442	370

8 Leases

Right-of-use assets

	Land and buildings $m	Motor vehicles $m	Other $m	Total right-of-use assets $m
Cost				
At 1 January 2019	–	–	–	–
Opening balance	580	124	18	722
Additions – separately acquired	85	85	3	173
Disposals and other movements	(44)	(7)	1	(50)
Exchange adjustments	6	–	–	6
At 31 December 2019	627	202	22	851
Additions – separately acquired	87	89	15	191
Disposals and other movements	–	(27)	(2)	(29)
Exchange adjustments	21	8	1	30
At 31 December 2020	735	272	36	1,043
Additions through business combinations (Note 27)	**255**	**8**	**–**	**263**
Additions – separately acquired	**145**	**98**	**2**	**245**
Disposals and other movements	**25**	**(44)**	**(4)**	**(23)**
Exchange adjustments	**(27)**	**(13)**	**(1)**	**(41)**
At 31 December 2021	**1,133**	**321**	**33**	**1,487**
Depreciation and impairment				
At 1 January 2019	–	–	–	–
Depreciation charge for the year	130	70	7	207
Impairment charge	4	–	–	4
Disposals and other movements	(3)	(6)	1	(8)
Exchange adjustments	1	–	–	1
At 31 December 2019	132	64	8	204
Depreciation charge for the year	131	75	9	215
Disposals and other movements	(24)	(26)	(4)	(54)
Exchange adjustments	8	4	–	12
At 31 December 2020	247	117	13	377
Depreciation charge for the year	**144**	**85**	**6**	**235**
Disposals and other movements	**(54)**	**(42)**	**–**	**(96)**
Exchange adjustments	**(11)**	**(6)**	**–**	**(17)**
At 31 December 2021	**326**	**154**	**19**	**499**
Net book value				
At 31 December 2019	495	138	14	647
At 31 December 2020	488	155	23	666
At 31 December 2021	**807**	**167**	**14**	**988**

Lease Liability

	2021 $m	2020 $m	2019 $m
The present value of lease liabilities is as follows:			
Within one year	**(233)**	(192)	(188)
Later than one year and not later than five years	**(544)**	(389)	(368)
Later than five years	**(210)**	(100)	(119)
Total lease liabilities	**(987)**	(681)	(675)

The interest expense on lease liabilities included within finance costs was $22m (2020: $21m; 2019: $22m). The expense relating to short-term leases was $4m (2020: $2m; 2019: $1m). The expense relating to leases of Low-value assets that are not shown above as short-term leases was $1m (2020: $1m; 2019: $1m). The expense relating to variable lease payments not included in lease liabilities was $4m (2020: income of $1m; 2019: $nil). Income recognised from subleasing was $3m (2020: $7m; 2019: $4m).

The total cash outflow for leases in 2021 was $262m (2020: $228m; 2019: $208m).

9 Goodwill

	2021 $m	2020 $m	2019 $m
Cost			
At 1 January	**12,164**	11,982	12,022
Additions through business combinations (Note 27)	**8,287**	–	–
Exchange and other adjustments	**(140)**	182	(40)
At 31 December	**20,311**	12,164	11,982
Amortisation and impairment losses			
At 1 January	**319**	314	315
Exchange and other adjustments	**(5)**	5	(1)
At 31 December	**314**	319	314
Net book value			
At 31 December	**19,997**	11,845	11,668

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 pharmaceuticals.

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 2021 (and 31 December 2020 and 31 December 2019). No goodwill impairment was identified.

10 Intangible assets

	Product, marketing and distribution rights $m	Other intangibles $m	Software development costs $m	Total $m
Cost				
At 1 January 2019	39,136	2,526	1,839	43,501
Additions – separately acquired	1,835	99	67	2,001
Disposals	(35)	–	(151)	(186)
Exchange and other adjustments	(282)	24	26	(232)
At 31 December 2019	40,654	2,649	1,781	45,084
Additions – separately acquired	1,454	2	136	1,592
Disposals	(970)	(66)	(636)	(1,672)
Exchange and other adjustments	1,539	57	7	1,603
At 31 December 2020	42,677	2,642	1,288	46,607
Additions through business combinations (Note 27)	**26,455**	**430**	**70**	**26,955**
Additions – separately acquired	**587**	**6**	**119**	**712**
Transferred to Assets held for sale (Note 18)	**(1,266)**	**(47)**	**–**	**(1,313)**
Disposals	**(801)**	**(402)**	**(23)**	**(1,226)**
Exchange and other adjustments	**(1,062)**	**(18)**	**(22)**	**(1,102)**
At 31 December 2021	**66,590**	**2,611**	**1,432**	**70,633**
Amortisation and impairment losses				
At 1 January 2019	17,907	2,035	1,600	21,542
Amortisation for year	1,808	52	68	1,928
Impairment charges	1,034	–	2	1,036
Impairment reversals	(3)	–	–	(3)
Disposals	(29)	–	(147)	(176)
Exchange and other adjustments	(112)	10	26	(76)
At 31 December 2019	20,605	2,097	1,549	24,251
Amortisation for year	1,872	59	61	1,992
Impairment charges	405	–	–	405
Impairment reversals	(165)	–	–	(165)
Disposals	(899)	(66)	(636)	(1,601)
Exchange and other adjustments	746	38	(6)	778
At 31 December 2020	22,564	2,128	968	25,660
Amortisation for year	**2,908**	**172**	**63**	**3,143**
Impairment charges	**2,067**	**–**	**18**	**2,085**
Transferred to Assets held for sale (Note 18)	**(931)**	**(14)**	**–**	**(945)**
Disposals	**(797)**	**(402)**	**(21)**	**(1,220)**
Exchange and other adjustments	**(535)**	**(21)**	**(26)**	**(582)**
At 31 December 2021	**25,276**	**1,863**	**1,002**	**28,141**
Net book value				
At 31 December 2019	20,049	552	232	20,833
At 31 December 2020	20,113	514	320	20,947
At 31 December 2021	**41,314**	**748**	**430**	**42,492**

	2021 $m	2020 $m	2019 $m
Net book value			
Current intangible assets	**105**	–	–
Non-current intangible assets	**42,387**	20,947	20,833
At 31 December	**42,492**	20,947	20,833

Other intangibles consist mainly of research and device technologies and the Alexion brand name.

Included within Additions – separately acquired are amounts of $124m (2020: $835m; 2019: $1,093m), relating to deferred payments and other non-cash consideration for the acquisition of Product, marketing and distribution rights, which are not reflected in the current year Consolidated Statement of Cash Flows. Disposals include amounts related to fully depreciated assets that are no longer in use by the Group.

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 2019				
Cost of sales	87	–	–	87
Research and development expense	–	29	–	29
Selling, general and administrative expense	1,721	19	68	1,808
Other operating income and expense	–	4	–	4
Total	1,808	52	68	1,928
Year ended 31 December 2020				
Cost of sales	66	–	–	66
Research and development expense	–	29	–	29
Selling, general and administrative expense	1,806	28	61	1,895
Other operating income and expense	–	2	–	2
Total	1,872	59	61	1,992
Year ended 31 December 2021				
Cost of sales	**66**	**–**	**–**	**66**
Research and development expense	**–**	**33**	**–**	**33**
Selling, general and administrative expense	**2,842**	**138**	**63**	**3,043**
Other operating income and expense	**–**	**1**	**–**	**1**
Total	**2,908**	**172**	**63**	**3,143**

Net impairment charges/(reversals) 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 2019				
Research and development expense	609	–	–	609
Selling, general and administrative expense	425	–	2	427
Other operating income and expense	(3)	–	–	(3)
Total	1,031	–	2	1,033
Year ended 31 December 2020				
Research and development expense	55	–	–	55
Selling, general and administrative expense	185	–	–	185
Total	240	–	–	240
Year ended 31 December 2021				
Research and development expense	**1,464**	**–**	**–**	**1,464**
Selling, general and administrative expense	**603**	**–**	**18**	**621**
Total	**2,067**	**–**	**18**	**2,085**

10 Intangible assets *continued*

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 loss or reversal. Where testing is required, the recoverable amount of the assets is estimated in order to determine the extent of the impairment loss or reversal. Where it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the Cash Generating Unit (CGU) to which it belongs. The Group considers that as the intangible assets are linked to individual products and that product cash flows are considered to be largely independent of other product cash flows, the CGU for intangibles is at the product level. Group level budgets and forecasts include forecast capital investment and operational impacts related to sustainability projects, and form the basis for the value in use models used for impairment testing.

An asset's recoverable amount is determined as the higher of an asset's or CGU's fair value less costs to sell or value in use, in both cases using discounted cash flow calculations where the asset's expected post-tax cash flows are risk-adjusted over their estimated remaining period of expected economic benefit. Where the value in use approach is used, the risk-adjusted cash flows are discounted using AstraZeneca's post-tax weighted average cost of capital (7% for 2021, 2020 and 2019). There is no material difference in the approach taken to using pre-tax cash flows and a pre-tax rate compared to post-tax cash flows and a post-tax rate, as required by IAS 36. Where fair value less costs to sell is used to determine recoverable value, the discount rate is assessed with reference to a market participant; this is not usually materially different to the AstraZeneca post-tax weighted average cost of capital rate of 7%.

SE The estimates used in calculating the recoverable amount are considered significant estimates, 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 (to derive peak year sales)
- amount and timing of projected future cash flows
- sales erosion curves following patent expiry.

For assets held at fair value less costs to sell, we make appropriate adjustments to reflect market participant assessments.

In 2021, the Group recorded impairment charges of $603m in respect of launched products, including *Bydureon* ($469m, revised carrying amount of $50m) under value in use model, roxadustat ($121m, revised carrying amount of $215m) under value in use model and other launched products totalling $13m. As these assets have been impaired in the current year, there is limited headroom in the recoverable amount calculation and they are inherently sensitive to any changes in assumptions, which could give rise to future impairments.

Impairment charges recorded against products in development, based on fair value less costs to sell, totalled $1,464m, principally Ardea ($1,172m) which was fully impaired following the decision to discontinue development of verinurad. The remaining impairments relate to full impairments of various products in development, due to either management's decision to discontinue development as part of a Group-wide portfolio prioritisation review, or due to the outcome of research activities.

In 2020, the Group recorded impairment charges of $350m in respect of launched products, including *Duaklir* ($200m, revised carrying amount of $210m) under fair value less costs to sell, *Bydureon* ($102m, revised carrying amount of $581m) under value in use model, and other launched products totalling $48m. The fair value less costs to sell valuation model for *Duaklir* was based on discounted cash flows, and was categorised at Level 3 in the fair value hierarchy. Key assumptions in this model were forecast future revenue and costs of production. Impairment charges recorded against products in development totalled $55m.

In 2019, the Group recorded impairment charges of $425m in respect of launched products *Bydureon* ($154m, revised carrying amount of $747m) under value in use model, *Qtern* ($89m, revised carrying amount of $233m) under value in use model, *Eklira*/*Tudorza* ($84m, revised carrying amount of $192m) under value in use model, *FluMist* ($52m, revised carrying amount of $172m) under fair value less costs to sell and $46m relating to other launched products. Impairment charges recorded against products in development related to *Epanova* ($533m) and other intangible assets ($76m).

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. Impairment reversals of $165m were recorded in 2020 in respect of launched products, including *FluMist* ($147m, revised carrying amount of $300m, driven by expanded vaccination efforts increasing global demand), and other launched products of $18m. No impairment reversals were recorded against launched products in 2021 or 2019.

No impairment reversals were recorded against products in development in 2021 (2020: $nil; 2019: $3m).

Sensitivities

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.

SE Were the useful economic lives to be adjusted to reduce them all by one year, the net book value would be reduced by $868m. If the useful economic lives were to be extended by one year, the net book value would increase by $481m.

Significant assets

	Carrying value $m	Remaining amortisation period
C5 franchise (*Soliris*/*Ultomiris*) intangible assets arising from the acquisition of Alexion	17,724	6 to 15 years
Intangible assets arising from the acquisition of Acerta Pharma	5,299	11 years
Strensiq, Kanuma and *Andexxa* intangible assets arising from the acquisition of Alexion	5,019	11 to 17 years
Intangible asset products in development arising from the acquisition of Alexion[1]	2,760	Not amortised
Intangible assets arising from the acquisition of ZS Pharma	2,381	10 years
Enhertu intangible assets acquired from Daiichi Sankyo	1,684	12 years
Other intangible assets (DS-1062) acquired from Daiichi Sankyo[1]	1,050	Not amortised
Farxiga/Forxiga intangible assets acquired from BMS	739	5 years
Intangible assets arising from the restructuring of a historical joint venture with MSD	666	5 to 8 years
Intangible assets arising from the acquisition of Pearl Therapeutics	611	7 to 8 years
RSV franchise assets arising from the acquisition of MedImmune	611	4 years
Monalizumab intangible assets acquired from Innate Pharma[1]	340	Not amortised

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

The acquisition of intangible assets relating to DS-1062 in 2020 was assessed under the optional concentration test in IFRS 3 and was determined to be an asset acquisition, as substantially all of the value of the gross assets acquired was concentrated in a single asset.

KJ In assessing whether the intangible assets and associated processes acquired from Daiichi Sankyo in 2019 were a business, we determined that they were not at a stage of readiness to be able to obtain regulatory approval and manufacture and commercialise at scale. The transaction was treated as an asset acquisition.

11 Investments in associates and joint ventures

	2021 $m	2020 $m	2019 $m
At 1 January	**39**	58	89
Additions	**92**	8	74
Share of after tax losses	**(64)**	(27)	(116)
Exchange and other adjustments	**2**	–	11
At 31 December	**69**	39	58

On 29 January 2021, AstraZeneca entered into an agreement with IHP Holdings Limited to create and run an online platform (iHospital) offering consultations with physicians, repeat prescriptions and e-pharmacy in China. The agreement resulted in the formation of a new entity, IHP HK Holdings Limited. AstraZeneca contributed $30m in initial funds and holds a 50% interest in the associate entity.

On 1 December 2020, AstraZeneca and China International Capital Corporation (CICC) entered into an agreement to set up a Global Healthcare Industrial Fund to drive healthcare system innovation by leveraging local capital and accelerating China-related innovation incubation. The agreement resulted in the formation of a new entity, Wuxi AstraZeneca-CICC Venture Capital Partnership (Limited Partnership). AstraZeneca holds a 22% interest in the associate entity and contributed $1m in initial funds in 2020, with a further contribution of $45m made in 2021.

On 23 September 2021, AstraZeneca entered into an agreement with VaxEquity Limited to collaborate and develop self-amplifying RNA technology with the aim of generating treatments for target diseases. AstraZeneca has contributed $14m in initial funds and holds a 40% interest in the associate entity.

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 Bio, including MEDI-551, which is an advanced Phase IIb/III asset, and a number of other clinical and pre-clinical assets. AstraZeneca contributed $142m in initial funds and held an initial 45% interest in the joint venture. Viela Bio completed an IPO on 7 October 2019 with AstraZeneca investing $8m. After the IPO, AstraZeneca's holding was reduced to 29%. In May 2020, Viela Bio completed a follow-on financing reducing AstraZeneca's holding to 26.7% with one member on a board size of seven. Given the shareholding and board representation, the investment was treated as an associate. In February 2021, AstraZeneca agreed to divest its 26.7% ownership in Viela Bio, as part of the acquisition of Viela Bio by Horizon Therapeutics plc. AstraZeneca received cash proceeds and profit of $776m upon closing with the profit recorded as Other operating income. Prior to divestment, the Group provided transitional research and development services to Viela Bio, comprising $nil (2020: $3m; 2019: $13m) of services provided directly by the Group and $1m (2020: $15m; 2019: $24m) of passed-through third-party costs incurred by the Group on behalf of Viela Bio.

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 address unmet medical needs globally, and to bring innovative new medicines to patients in China more quickly. The agreement resulted in the formation of a joint venture entity based in China, Dizal (Jiangsu) Pharmaceutical Co., Limited (Dizal). AstraZeneca contributed $55m in initial funds and held an initial 48% interest in the joint venture. An additional contribution of $25m was made in 2019. In July 2020, Dizal completed a follow-on financing reducing AstraZeneca's holding to 30%. Dizal completed an IPO in December 2021, reducing AstraZeneca's holding to 27% with two members on a board size of eleven. Given the shareholding and board representation, the investment continues to be treated as an associate.

10 Intangible assets *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 (Centus). Since its establishment, AstraZeneca has contributed $130m in cash to the joint venture entity and has a 50% interest in the joint venture. At the end of the year Centus had net assets of $4m, of which AstraZeneca's share is $2m, and the investment is held at $nil value.

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 (Archigen). Since its establishment, AstraZeneca has contributed $131m in cash to the joint venture entity and has a 50% interest in the joint venture. At the end of the year Archigen had net assets of $3m, of which AstraZeneca's share is $2m, and the investment is held at $nil value.

All investments are accounted for using the equity method. At 31 December 2021, unrecognised losses in associates and joint ventures totalled $73m (2020: $56m; 2019: $3m) which have not been recognised due to the investment carrying value reaching $nil value.

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

	2021 $m	2020 $m	2019 $m
Non-current assets	**215**	324	298
Current assets	**506**	552	447
Total liabilities	**(99)**	(105)	(89)
Net assets	**622**	771	656
Amount attributable to AstraZeneca	**65**	38	64
Exchange adjustments	**4**	1	(6)
Carrying value of investments in associates and joint ventures	**69**	39	58

12 Other investments

	2021 $m	2020 $m	2019 $m
Non-current investments			
Equity securities at fair value through Other comprehensive income	**1,168**	1,108	1,339
Fixed income securities at fair value through profit and loss	**–**	–	62
Total	**1,168**	1,108	1,401
Current investments			
Fixed income securities at fair value through profit and loss	**16**	118	811
Fixed deposits	**53**	42	38
Total	**69**	160	849

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 that the Group holds to sell.

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.

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 (i.e. as prices) or indirectly (i.e. derived from prices)
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

	2021 FVPL $m	**2021 FVOCI $m**	2020 FVPL $m	2020 FVOCI $m	2019 FVPL $m	2019 FVOCI $m
Level 1	**16**	**1,064**	118	891	873	1,112
Level 2	**–**	**–**	–	–	–	–
Level 3	**–**	**104**	–	217	–	227
Total	**16**	**1,168**	118	1,108	873	1,339

During 2020, AstraZeneca sold a proportion of its equity portfolio receiving consideration of $1,381m, a large proportion of which related to the disposal of its full holding in Moderna Therapeutics, Inc. All related gains were accounted through Other comprehensive income.

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 based on the cost of investment 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:

	2021 FVOCI $m	2020 FVOCI $m	2019 FVOCI $m
At 1 January	**217**	227	166
Additions	**1**	96	5
Revaluations	**–**	63	56
Net transfers (out)/in	**(113)**	(103)	2
Disposals	**–**	(86)	(5)
Impairments and exchange adjustments	**(1)**	20	3
At 31 December	**104**	217	227

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

13 Derivative financial instruments

	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	43	–	–	–	43
Cross currency swaps designated in a net investment hedge	4	–	–	(1)	3
Cross currency swaps designated in a cash flow hedge	4	–	–	(17)	(13)
Cross currency swaps designated in a fair value hedge[1]	10	–	–	–	10
Other derivatives	–	36	(36)	–	–
31 December 2019	61	36	(36)	(18)	43

	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	45	–	–	–	45
Cross currency swaps designated in a net investment hedge	19	–	–	(2)	17
Cross currency swaps designated in a cash flow hedge	107	43	–	–	150
Cross currency swaps designated in a fair value hedge[1]	–	43	–	–	43
Forward FX designated in a cash flow hedge[2]	–	8	(3)	–	5
Other derivatives	–	48	(30)	–	18
31 December 2020	171	142	(33)	(2)	278

	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	**25**	**–**	**–**	**–**	**25**
Cross currency swaps designated in a net investment hedge	**62**	**–**	**–**	**(2)**	**60**
Cross currency swaps designated in a cash flow hedge	**–**	**–**	**–**	**(43)**	**(43)**
Forward FX designated in a cash flow hedge[2]	**–**	**13**	**–**	**–**	**13**
Other derivatives	**15**	**70**	**(79)**	**–**	**6**
31 December 2021	**102**	**83**	**(79)**	**(45)**	**61**

[1] 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 swap matured in November 2021 when the related bond matured.

[2] Forward FX designated in a cash flow hedge relates to contracts hedging anticipated CNY, EUR, GBP, JPY and SEK transactions occurring in the quarter immediately after the balance sheet date.

All derivatives are held at fair value and fall within Level 2 of the fair value hierarchy as defined in Note 12, except for an equity warrant which falls within Level 3 (valued at $15m, held within Non-current assets). 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 the 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:

	2021	2020	2019
Derivatives	**(0.5)% to 3.6%**	(0.5)% to 2.4%	(0.5)% to 2.7%

14 Non-current other receivables

	2021 $m	2020 $m	2019 $m
Prepayments	**391**	395	392
Accrued income	**61**	56	10
Other receivables	**443**	269	338
Non-current other receivables	**895**	720	740

Prepayments include $92m (2020: $121m; 2019: $125m) in relation to our research collaboration with Moderna. Other receivables include $nil (2020: $nil; 2019: $118m) of outstanding payments relating to the out-licence of *Duaklir* and *Tudorza* to Circassia in 2017 and $44m (2020: $56m; 2019: $53m) owed by FibroGen for promotional activity in China pursuant to the roxadustat collaboration.

15 Inventories

	2021 $m	2020 $m	2019 $m
Raw materials and consumables	**1,755**	1,262	830
Inventories in process	**5,216**	1,331	1,272
Finished goods and goods for resale	**2,012**	1,431	1,091
Inventories	**8,983**	4,024	3,193

The Group recognised $9,640m (2020: $3,110m; 2019: $2,708m) of inventories as an expense within Cost of sales during the year.

Inventory write-offs in the year amounted to $552m (2020: $149m; 2019: $231m).

16 Current trade and other receivables

	2021 $m	2020 $m	2019 $m
Amounts due within one year			
Trade receivables	**6,054**	3,829	3,606
Less: Amounts provided for doubtful debts (Note 28)	**(23)**	(23)	(21)
	6,031	3,806	3,585
Other receivables	**1,808**	1,278	1,083
Prepayments	**1,512**	1,735	865
Government grants receivable	**–**	53	–
Accrued income	**293**	150	228
Trade and other receivables	**9,644**	7,022	5,761

Trade receivables includes $1,865m (2020: $1,250m; 2019: $892m) measured at FVOCI classified ‘hold to collect and sell’ as they are due from customers that the Group has the option to factor.

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

17 Cash and cash equivalents

	2021 $m	2020 $m	2019 $m
Cash at bank and in hand	**1,461**	1,182	755
Short-term deposits	**4,868**	6,650	4,614
Cash and cash equivalents	**6,329**	7,832	5,369
Unsecured bank overdrafts	**(291)**	(286)	(146)
Cash and cash equivalents in the cash flow statement	**6,038**	7,546	5,223

The Group holds $nil (2020: $nil; 2019: $1m) of Cash and cash equivalents which is required to meet insurance solvency, capital and security requirements.

AstraZeneca invests in constant net asset value funds and low volatility 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 and loss, although the fair value will be materially the same as amortised cost.

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

	2021 $m	2020 $m	2019 $m
Changes in fair value of put option (Acerta Pharma)	**–**	–	172
Share-based payments charge for the period	**615**	277	259
Settlement of share plan awards	**(570)**	(349)	(323)
Pension contributions	**(174)**	(172)	(175)
Pension charges recorded in operating profit	**136**	84	59
Long-term provision charges recorded in operating profit	**270**	66	506
Non-cash intangible additions	**–**	(120)	–
Foreign exchange and other	**(182)**	(62)	(120)
Total operating activities non-cash and other movements	**95**	(276)	378

18 Assets held for sale

Assets held for sale of $368m (2020: $nil; 2019: $70m) comprise intangible assets relating to the rights to certain respiratory assets acquired from Almirall and Actavis (including *Tudorza* and *Duaklir*). AstraZeneca agreed to dispose of the global rights to *Tudorza* and *Duaklir* to Covis Pharma GmbH on 1 November 2021 with completion of the transaction subject to certain closing conditions and regulatory clearances. The associated contingent consideration liability of $126m is held within current Other payables at 31 December 2021 (see Note 20). The transaction closed and control of the assets transferred on 4 January 2022.

In 2019, Assets held for sale comprised tangible assets relating to the Boulder Manufacturing Centre, which was subsequently sold in May 2020.

19 Interest-bearing loans and borrowings

		Repayment dates	**2021 $m**	2020 $m	2019 $m
Current liabilities					
Bank overdrafts		On demand	**291**	286	146
Other short-term borrowings excluding overdrafts			**3**	84	8
Bank collateral			**93**	288	71
Lease liabilities			**233**	192	188
2.375% Callable bond	US dollars	2020	**–**	–	1,597
0.25% Callable bond	euros	2021	**–**	614	–
0.875% Non-callable bond	euros	2021	**–**	919	–
Floating rate notes	US dollars	2022	**250**	–	–
2.375% Callable bond	US dollars	2022	**999**	–	–
Other loans (including commercial paper)		Within one year	**24**	3	–
Total			**1,893**	2,386	2,010
Non-current liabilities					
Lease liabilities			**754**	489	487
0.25% Callable bond	euros	2021	**–**	–	559
0.875% Non-callable bond	euros	2021	**–**	–	837
Floating rate notes	US dollars	2022	**–**	250	250
2.375% Callable bond	US dollars	2022	**–**	996	996
0.3% Callable bond	US dollars	2023	**1,397**	–	–
2023 Floating bank loan	US dollars	2023	**1,998**	–	–
Floating rate notes	US dollars	2023	**400**	400	400
3.5% Callable bond	US dollars	2023	**848**	847	846
7% Guaranteed debentures	US dollars	2023	**320**	339	335
0.75% Callable bond	euros	2024	**1,014**	1,102	1,003
0.7% Callable bond	US dollars	2024	**1,598**	–	–
2024 Floating bank loan	US dollars	2024	**1,997**	–	–
3.375% Callable bond	US dollars	2025	**1,988**	1,985	1,983
0.7% Callable bond	US dollars	2026	**1,193**	1,192	–
1.2% Callable bond	US dollars	2026	**1,245**	–	–
3.125% Callable bond	US dollars	2027	**745**	744	743
1.25% Callable bond	euros	2028	**896**	973	885
1.75% Callable bond	US dollars	2028	**1,244**	–	–
4% Callable bond	US dollars	2029	**994**	993	992
0.375% Callable bond	euros	2029	**898**	–	–
1.375% Callable bond	US dollars	2030	**1,292**	1,291	–
2.25% Callable bond	US dollars	2031	**746**	–	–
5.75% Non-callable bond	pounds sterling	2031	**470**	475	457
6.45% Callable bond	US dollars	2037	**2,724**	2,722	2,721
4% Callable bond	US dollars	2042	**988**	988	987
4.375% Callable bond	US dollars	2045	**980**	980	980
4.375% Callable bond	US dollars	2048	**737**	737	737
2.125% Callable bond	US dollars	2050	**486**	486	–
3% Callable bond	US dollars	2051	**734**	–	–
Other loans	US dollars		**202**	5	19
Total			**28,888**	17,994	16,217
Total interest-bearing loans and borrowings[1,2]			**30,781**	20,380	18,227

[1] All loans and borrowings above are unsecured apart from $24m of current and $188m of non-current in 2021, both included within Other loans.

[2] The $2bn USD 2023 floating rate loan and $2bn USD 2024 floating rate loan pay interest linked to 1 month LIBOR. The Group has the right to switch these loans to compounded daily USD Secured Overnight Funding Rate (SOFR) with five days notice. The loans will automatically switch to compounded SOFR on 30 June 2023 if the Group has not already switched before this date. All other floating rate debt is not impacted by LIBOR reference as it either uses non-LIBOR fixings or will mature before the relevant LIBOR rate is withdrawn.

	Total loans and borrowings 2021 $m	Total loans and borrowings 2020 $m	Total loans and borrowings 2019 $m
At 1 January	**20,380**	18,227	19,113
Adoption of new accounting standards – Lease liabilities	**–**	–	720
Changes from financing cash flows			
Issue of loans and borrowings	**12,929**	2,968	500
Repayment of loans and borrowings	**(4,759)**	(1,609)	(1,500)
Movement in short-term borrowings	**(276)**	288	(516)
Repayment of obligations under leases	**(240)**	(207)	(186)
Total changes in cash flows arising on financing activities from borrowings	**7,654**	1,440	(1,702)
Movement in overdrafts	**31**	138	(13)
New lease liabilities	**503**	174	173
Additions through business combinations	**2,523**	–	–
Exchange	**(378)**	363	(62)
Other movements	**68**	38	(2)
At 31 December	**30,781**	20,380	18,227

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 $m	Amortised cost $m	Total carrying value $m	Fair value $m
2019						
Overdrafts	–	–	–	146	146	146
Lease liabilities due within one year	–	–	–	188	188	188
Lease liabilities due after more than one year	–	–	–	487	487	487
Loans due within one year	–	–	–	1,676	1,676	1,684
Loans due after more than one year	339	335	2,447	12,609	15,730	18,044
Total at 31 December 2019	339	335	2,447	15,106	18,227	20,549
2020						
Overdrafts	–	–	–	286	286	286
Lease liabilities due within one year	–	–	–	192	192	192
Lease liabilities due after more than one year	–	–	–	489	489	489
Loans due within one year	371	–	614	923	1,908	1,922
Loans due after more than one year	–	339	2,075	15,091	17,505	20,936
Total at 31 December 2020	371	339	2,689	16,981	20,380	23,825
2021						
Overdrafts	**–**	**–**	**–**	**291**	**291**	**291**
Lease liabilities due within one year	**–**	**–**	**–**	**233**	**233**	**233**
Lease liabilities due after more than one year	**–**	**–**	**–**	**754**	**754**	**754**
Loans due within one year	**–**	**–**	**–**	**1,369**	**1,369**	**1,378**
Loans due after more than one year	**–**	**320**	**1,910**	**25,904**	**28,134**	**30,596**
Total at 31 December 2021	**–**	**320**	**1,910**	**28,551**	**30,781**	**33,252**

[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 which matured on 24 November 2021. The accumulated amount of fair value hedge adjustments to the bond was a loss of $10m.
[2] Instruments designated at fair value through profit or loss include the US dollar 7% guaranteed debentures repayable in 2023.

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 12. 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 12, with the exception of overdrafts and lease liabilities, where fair value approximates to carrying values.

During the year, changes to credit risk caused minimal changes to the fair value of bonds designated at fair value through profit or loss. A gain of $29m 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:

	2021	2020	2019
Loans and borrowings	**0.1% to 0.6%**	(0.5)% to 0.1%	(0.5)% to 1.6%

20 Trade and other payables

	2021 $m	2020 $m	2019 $m
Current liabilities			
Trade payables	**2,824**	2,350	1,774
Value-added and payroll taxes and social security	**463**	390	323
Rebates, chargebacks, returns and other revenue accruals	**5,298**	4,772	4,410
Clinical trial accruals	**1,047**	699	736
Other accruals	**5,649**	3,905	4,026
Collaboration Revenue contract liabilities	**12**	12	28
Vaccine contract liabilities	**1,003**	1,616	–
Deferred government grant income	**67**	253	–
Contingent consideration	**849**	647	897
Acerta Pharma share purchase liability (Note 26)	**920**	–	–
Other payables	**806**	1,141	1,793
Total	**18,938**	15,785	13,987
Non-current liabilities			
Accruals	**25**	56	34
Collaboration Revenue contract liabilities	**26**	38	50
Contingent consideration	**2,016**	2,676	3,242
Acerta Pharma share purchase/put option liability (Note 26)	**1,538**	2,297	2,146
Other payables	**1,328**	1,017	819
Total	**4,933**	6,084	6,291

Included within Rebates, chargebacks, returns and other revenue accruals are contract liabilities of $99m (2020: $77m; 2019: $97m). The revenue recognised in the year for contract liabilities is $70m, comprising $58m relating to other revenue accruals and $12m Collaboration Revenue contract liabilities. Significant markets where Rebates, chargebacks, returns and other revenue accruals are seen relate to the US where the liability at 31 December 2021 amounted to $3,172m (2020: $3,126m; 2019: $3,385m) and China where the liability at 31 December 2021 amounted to $814m (2020: $740m; 2019: $452m).

Trade payables includes $44m (2020: $248m; 2019: $492m) due to suppliers that have signed up to a supply chain financing programme, under which the suppliers can elect on an invoice-by-invoice basis to receive a discounted early payment from the relationship 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 relationship 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 2021, the payables met the criteria of Trade payables.

Vaccine contract liabilities relate to amounts received from customers, primarily government bodies, in advance of supply of product. Substantially all of the Vaccine contract liabilities are expected to be recognised as revenue during the next financial year. The revenue recognised in the year related to Vaccine contract liabilities held at the beginning of the year was $1,389m.

Deferred government grant income relates to government grants received or receivable but for which the related expenses have not been incurred.

Included within current Other payables are liabilities to Daiichi Sankyo totalling $nil (2020: $146m; 2019: $795m) resulting from the collaboration agreement in relation to *Enhertu* entered into in March 2019 and $324m (2020: $324m; 2019: $nil) in relation to DS-1062 entered into in July 2020. Additionally, included within non-current Other payables are liabilities totalling $100m (2020: $100m; 2019: $241m) as a result of the *Enhertu* collaboration agreement and $nil (2020: $323m; 2019: $nil) as a result of the DS-1062 collaboration agreement.

In November 2020, *Calquence* received marketing approval in the EU, which removed all remaining conditionality in respect of the Acerta Pharma put and call options regarding the non-controlling interest; the option was exercised in April 2021 (see Note 26). Based on the latest assessment of the expected timing and amount of the Acerta Pharma put option redemption, no remeasurement was required in 2021 or in 2020. In 2019, remeasurement of the liability resulted in an increase in the liability for the year before the effect of interest costs, with the remeasurement taken to Selling, general and administrative expense (see Note 2). In October 2019, an amendment to the share purchase and option agreement (SPOA) with the sellers of Acerta Pharma (originally entered into in December 2015) came into effect, changing certain terms of the SPOA on both the timing and also reducing the maximum consideration that would be required to be made to acquire the remaining outstanding shares of Acerta Pharma if the options were exercised. The payments will be made in similar annual instalments commencing at the earliest from 2022 through to 2024. The changes to the terms have been reflected in the assumptions used to calculate the amortised cost of the liability as at 31 December 2021 of $2,458m (2020: $2,297m; 2019: $2,146m). Interest arising from amortising the liability is included within Finance expense (see Note 3). The associated cash flows will be disclosed as financing activities within the Consolidated Statement of Cash Flows.

With the exception of Contingent consideration payables of $2,865m (2020: $3,323m; 2019: $4,139m) which are held at fair value within Level 3 of the fair value hierarchy as defined in Note 12, all other financial liabilities are held at amortised cost with carrying value being a reasonable approximation of fair value.

Contingent consideration

	2021 $m	2020 $m	2019 $m
At 1 January	**3,323**	4,139	5,106
Settlements	**(643)**	(822)	(709)
Revaluations	**14**	(272)	(614)
Reclassification to Other payables	**(55)**	–	–
Discount unwind (Note 3)	**226**	278	356
At 31 December	**2,865**	3,323	4,139

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 expense and include an increase of $42m in 2021 (2020: a decrease of $51m; 2019: a decrease of $516m) 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).

The discount rate used for the Contingent consideration balances range from 3% to 9%. The most significant Contingent consideration balance is the Global Diabetes Alliance and this is discounted at 8%.

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 therapy area and expected pricing for launched products, may cause the calculated fair value of the above contingent consideration to vary materially in future years.

SE The contingent consideration balance relating to BMS's share of Global Diabetes Alliance of $2,544m (2020: $2,932m; 2019: $3,300m) would increase/decrease by $254m with an increase/decrease in sales of 10% as compared with the current estimates.

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	180
Amplimmune	2013	Milestones	150
Almirall[1]	2014	Milestones and royalties	420

[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.

21 Provisions

	Severance $m	Environmental $m	Employee benefits $m	Legal $m	Other provisions $m	Total $m
At 1 January 2019	226	97	119	198	251	891
Charge for year	158	31	18	618	236	1,061
Cash paid	(115)	(39)	(13)	(147)	(24)	(338)
Reversals	(30)	(1)	–	(28)	(17)	(76)
Exchange and other movements	2	8	6	1	9	26
At 31 December 2019	241	96	130	642	455	1,564
Transfers in	–	–	–	–	258	258
Charge for year	116	34	15	16	95	276
Cash paid	(62)	(30)	(48)	(295)	(56)	(491)
Reversals	(89)	–	(2)	(14)	(27)	(132)
Exchange and other movements	8	–	33	(1)	45	85
At 31 December 2020	214	100	128	348	770	1,560
Additions through business combinations (Note 27)	**–**	**–**	**41**	**73**	**27**	**141**
Charge for year	**238**	**23**	**46**	**109**	**456**	**872**
Cash paid	**(172)**	**(32)**	**(49)**	**(285)**	**(84)**	**(622)**
Reversals	**(62)**	**–**	**–**	**(5)**	**(175)**	**(242)**
Exchange and other movements	**(6)**	**(1)**	**29**	**(1)**	**(6)**	**15**
At 31 December 2021	**212**	**90**	**195**	**239**	**988**	**1,724**

	2021 $m	2020 $m	2019 $m
Due within one year	**768**	976	723
Due after more than one year	**956**	584	841
Total	**1,724**	1,560	1,564

21 Provisions *continued*

Severance provisions arise predominantly in connection with global restructuring initiatives which involve rationalisation of the global supply chain, the sales and marketing organisation, IT and business support infrastructure, and R&D.

During 2021, in conjunction with the acquisition of Alexion, the enlarged Group has initiated a comprehensive Post Alexion Acquisition Group Review, aimed at integrating systems, structure and processes, optimising the global footprint and prioritising resource allocations and investments. The Group has also continued to progress other legacy restructuring programmes, including the Global Post-Pandemic New Ways of Working programme that was initiated in 2020 in response to the changing business environment, accelerated by the COVID-19 pandemic.

Employee costs in connection with the initiatives are recognised in severance provisions when a detailed formal plan has been communicated to those employees affected. Final severance costs are often subject to the completion of the requisite consultations on the areas impacted, with the majority of the cost expected to be paid within one year. AstraZeneca endeavours to support employees affected by restructuring initiatives to seek alternative roles within the organisation. Where the employee is successful, any severance provisions will be released.

Details of the Environmental and Legal provisions totalling $90m (2020: $100m; 2019: $96m) and $239m (2020: $348m; 2019: $642m), respectively, and ongoing matters are provided in Note 30. The legal issues are often subject to substantial uncertainties with regard to the timing and final amounts of any payments. As such, once established these provisions remain in Provisions until settlement is reached and uncertainty resolved, with no transfer to Trade and other payables prior to payment. A significant proportion of the total legal provision relates to matters settled, but not paid, in previous periods. These uncertainties can also cause reversal in previously established provisions once final settlement is reached.

The majority of Employee benefit provisions relate to Executive Deferred Compensation Plans.

Other provisions comprise amounts relating to specific contractual or constructive obligations and disputes. Included within Other provisions are amounts associated with long-standing product liability settlements that arose prior to the merger of Astra and Zeneca, which given the nature of the provision, the amounts are expected to be settled over many years. Also included in Other provisions is an amount of $185m (2020: $258m; 2019: $nil), in relation to third-party liability and other risks (including incurred but not yet reported claims) arising on the Group's captive insurance arrangements. The Group revised its presentation of these provisions in 2020; prior to this, the balance had been presented within current Other payables. The claims are considered to be uncertain as to timing and amount and therefore treatment as a provision was deemed more appropriate. Charges to Other provisions in 2021 include $243m in relation to the Post Alexion Acquisition Group Review restructuring programme.

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

22 Post-retirement and other defined benefit schemes

Background

This section predominantly covers defined benefit arrangements like post-retirement pension and medical plans which make up the vast bulk of the Group's liabilities. However, it also incorporates other benefits which fall under IAS 19 rules and which require an actuarial valuation, including but not limited to: Lump Sum plans, Long Service Awards and defined contribution pension plans which have some defined benefit characteristics (e.g. a minimum guaranteed level of benefit).

The Group and most of its subsidiaries offer retirement plans which cover the majority of employees. 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 DB plans are 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 DB members of the UK Pension Fund. The number of active members in the Fund continues to decline and is now 497 employees. In November 2017, the Group closed the qualified and non-qualified US DB pension plans to future accrual (and removed any salary link) from 31 December 2017.

The major DB 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 by the Group and local fiduciaries, who take into account the strength of the Group's covenant, local regulation, cash flows, and the solvency and maturity of the pension scheme.

Financing Principles and Funding Framework

Ninety per cent of the Group's total DB obligations (or 71% of net obligations) at 31 December 2021 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, as disclosed in prior years. There were no fundamental changes to these principles during 2021.

The Group has developed a long-term funding framework to implement these principles. This framework targets either full funding on a low-risk funding measure or buy-out with an external insurer as the pension funds mature, with affordable long-term de-risking of investment strategy along the way. Unless local regulation dictates otherwise, this framework determines the cash contributions payable.

UK

The UK Pension Fund represents approximately 61% of the Group's DB obligations at 31 December 2021. The financing principles are modified in light of the UK regulatory requirements (summarised below) and resulting discussions with the Trustee.

Role of Trustee and Regulation

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 investment strategy 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.

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.

The Pension Scheme Act 2021 became effective in the UK from 1 October 2021. A section of this Act places additional legal requirements on companies who sponsor UK defined benefit pension schemes, with a focus on the ongoing security of these benefits. The Group has considered the implications of the Act and developed a framework to ensure it meets its responsibilities on an ongoing basis.

There have been two UK High Court Rulings relating to Guaranteed Minimum Pensions (GMP) equalisation in 2018 and 2020. Following the publication of guidance around implementation in 2021, the Trustee, with input from the Group, has begun the process of equalising benefits, with implementation likely to be in 2023. An estimate of the impact of these changes has already been recognised in 2018 and 2020.

Funding requirements

UK legislation requires that DB pension schemes are funded prudently. On a triennial basis, the Trustee and the Group must agree on a set of assumptions used to value the liabilities as a part of an actuarial valuation. Together with the asset valuation, this facilitates the calculation of a funding level and of the contributions required (if any) to ensure the UK Pension Fund is fully funded over an appropriate time period and on a suitably prudent measure. The technical provisions assumptions used to value the liabilities for the triennial actuarial valuation are usually set more prudently than the assumptions used to prepare an accounting valuation of the liabilities, which are set under IAS 19 rules to be a 'best estimate'.

The last full actuarial valuation of the UK Pension Fund was carried out by a qualified actuary as at 31 March 2019. It was finalised in June 2020 and in early 2021, the Pensions Regulator acknowledged the outcome and no issues were raised. The funding assumptions used in this actuarial valuation were set out in the Group's prior year report. The next actuarial valuation is due to take place as at 31 March 2022, with a likely timescale for completion in early to mid-2023.

Aspects of the triennial actuarial valuation are governed by a long-term funding agreement, effective since October 2016 and which sets out a path to full funding on a low-risk measure. Under this agreement, if a deficit exists, the Group will grant a charge in favour of the Trustee over land and buildings on the Cambridge Biomedical Campus, effective upon practical completion of the site, or from 30 September 2022 (whichever is earlier). This charge is not currently in force. When effective, the charge would only crystallise in the event of the Group's insolvency. This charge will provide long-term security in respect of future UK Pension Fund contributions and will be worth up to £350m.

In relation to deficit recovery contributions, a lump sum contribution of £39m was made in March 2021, with a further £39m contribution due before 31 March 2022. In addition, a contribution of £29m was also made in March 2021, with a final contribution of £30m due before 31 March 2022, 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 of approximately £126m which was due in 2017. This contribution will be paid in five instalments (with interest) from March 2018 to March 2022 and to date, four instalments have been paid. The letter of credit underwriting these payments will reduce in value as each annual payment is made.

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. In particular, the Trustee has no unilateral right to wind up the Fund without Company consent nor does it have the power to unilaterally use surplus to augment benefits prior to wind-up. As such, there are no adjustments required in respect of IFRIC14 'IAS 19 – The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction'.

On current bases, it is expected that ongoing contributions (excluding those in respect of past service deficit contributions) during the year ending 31 December 2022 for the UK scheme will be approximately $19m.

United States and Sweden

The US and Sweden plans account for 11% and 18%, respectively, of the Group's defined benefit obligations. The US and Sweden pension plans are governed by Fiduciary Bodies with responsibility for the investment policies of the assets. These plans are funded in line with the Group's financing principles and local regulations.

The US defined benefit pension plans were actuarially revalued at 31 December 2021, when plan obligations were $1,257m and plan assets were $1,198m. This includes obligations in respect of the non-qualified plan which is unfunded. The qualified US pension plan is fully funded on an IAS 19 basis and has a positive funding balance on the local statutory measure. As such, no contributions are required, and the investment strategy is largely de-risked.

The Swedish defined benefit pension plans were actuarially valued at 31 December 2021, when plan obligations were estimated to amount to $2,373m and plan assets were $1,234m. It should be noted that the Swedish plans have a funding surplus on the local GAAP accounting basis and this influences contribution policy. A deficit recovery contribution of $39m is expected to be paid in 2022.

On current bases, it is expected that ongoing contributions (excluding those in respect of past service deficit contributions) during the year ending 31 December 2022 for the United States and Sweden will be approximately $10m.

22 Post-retirement and other defined benefit schemes *continued*

Other defined benefit plans

The Group provides benefit plans other than pensions which have to be reported under IAS 19. These include Lump Sum plans, Long Service Awards and defined contribution pension plans which have a guaranteed minimum benefit. However, the largest category of these 'other' non-pension plans are healthcare benefits.

In the US, and to a lesser extent in certain other countries, the Group's employment practices include the provision of healthcare and life assurance benefits for eligible retired employees. As at 31 December 2021, some 2,831 retired employees and covered dependants currently benefit from these provisions and some 1,691 current employees will be eligible on their retirement. The Group 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.

In the US, there was a change to the level of benefit provision for members aged 65 and over within the Group's healthcare plans, effective from 1 January 2021. The changes were communicated to the membership in September 2020 and resulted in an estimated liability reduction of $64m which was recognised as a past service credit for the year ending 31 December 2020. Following these changes, the plans became fully funded on an IAS 19 basis and are projected to have a small surplus. As a result, the investment strategy has been fully de-risked.

The cost of post-retirement benefits other than pensions for the Group in 2021 was $1m (2020: $1m; 2019: $3m). Plan assets were $215m and plan obligations were $170m at 31 December 2021. 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 for the major defined benefit schemes operated by the Group to 31 December 2021. 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 reflect the changes which have the most material impact on the results of the Group and were as follows:

				2020
	UK	US	Sweden	Rest of Group[4]
Inflation assumption	2.9%	–	1.5%	1.6%
Rate of increase in salaries	–[1]	–	3.0%	3.1%
Rate of increase in pensions in payment	2.8%	–	1.5%	1.6%
Discount rate – defined benefit obligation	1.4%	2.5%	1.2%	0.7%
Discount rate – interest cost	1.1%	1.8%	1.0%	0.5%
Discount rate – service cost	1.4%	1.7%	1.2%	0.8%

				2021
	UK	**US**	**Sweden**	**Rest of Group[4]**
Inflation assumption	**3.3%**	**–**	**2.3%**	**2.2%**
Rate of increase in salaries	**–[1]**	**–**	**3.8%**	**3.7%**
Rate of increase in pensions in payment	**3.1%**	**–**	**2.3%**	**2.2%**
Discount rate – defined benefit obligation[2]	**1.9%**	**2.8%**	**1.8%**	**1.2%**
Discount rate – interest cost[3]	**1.9%**	**2.2%**	**1.6%**	**1.0%**
Discount rate – service cost[3]	**1.9%**	**n/a**	**1.9%**	**1.4%**

[1] Pensionable pay frozen at 30 June 2010 levels following UK fund changes.
[2] Group defined benefit obligation as at 31 December 2021 calculated using discount rates based on market conditions as at 31 December 2021.
[3] 2021 interest costs and service costs calculated using discount rates based on market conditions as at 31 December 2020.
[4] Rest of Group reflects the assumptions in Germany as these have the most material impact on the Group.

The weighted average duration of the post-retirement scheme obligations is approximately 16 years in the UK, 11 years in the US, 19 years in Sweden and 17 years for the Rest of the Group (including Germany).

Demographic assumptions

The mortality assumptions are based on country-specific mortality tables. These are compared to actual experience and adjusted where sufficient data are 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 and female members retiring in 2021 and male and female members expected to retire in 2041 (2020: 2020 and 2040 respectively).

	Life expectancy assumption for a male member retiring at age 65				Life expectancy assumption for a female member retiring at age 65			
Country	**2021**	**2041**	2020	2040	**2021**	**2041**	2020	2040
UK	**22.5**	**23.7**	22.4	23.7	**23.9**	**25.2**	23.9	25.1
US	**21.9**	**23.2**	21.8	24.5	**23.3**	**24.9**	23.2	26.1
Sweden	**21.9**	**23.6**	21.9	23.6	**24.5**	**25.6**	24.5	25.6

In the UK, the Group adopted the CMI 2020 Mortality Projections Model with a 1% long-term improvement rate. No other demographic assumptions have changed since they were updated in 2019 following the actuarial valuation. The Group has continued to assume that 30% of members (2020: 30%) will transfer out of the defined benefit section of the AstraZeneca Pension Fund at the point of retirement.

The assumption used for the US plans was updated in 2021 to use the mortality tables (MP-2021) that were published during the year.

Risks associated with the Group's defined benefit pension schemes

The UK defined benefit plan accounts for 61% 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 evolve to further improve the expected risk/return profile as opportunities arise. The Trustee has hedged approximately 75% 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 96% of total assets and protects to some degree against falls in long-term interest rates (approximately 91% hedged at the end of 2020). 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	The majority of the DBO is indexed in line with price inflation (mainly inflation as measured by the UK Retail Price Index (RPI) 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%). It was confirmed in November 2020, the intention to align RPI with Consumer Price Index including Housing (CPIH) from 2030. Other things being equal, this will lead to lower liability valuations.	The UK Pension Fund holds RPI index-linked gilts and derivative instruments such as swaps. The inflation hedge of the UK Pension Fund is set at approximately 76% of total assets and protects to some degree against higher-than-expected inflation increases on the DBO (approximately 83% hedged at the end of 2020). 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 $2.4bn of the UK Pension Fund's liabilities. A one-year increase in life expectancy would result in a $390m increase in pension fund obligations, which would be partially offset by a $203m increase in the value of the longevity swap and hence the pension fund assets. The impact of the COVID-19 pandemic on long-term mortality assumptions is not yet known. The Group will conduct a mortality review once robust data is available.

Other risks

There are a number of other risks of administering the UK Pension Fund including counterparty risks from using derivatives (mitigated by using a specialist investment manager to oversee 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 way, with the local fiduciary bodies investing in a diversified manner and employing a framework to hedge interest rate risk.

Local fiduciary boards are aware of Environmental, Social and Governance (ESG) risks as they pertain to investment policy, and where local regulation allows, have policies in place to monitor and manage such risks and comply with local legislation and disclosure requirements.

Assets and obligations of defined benefit schemes

The assets and obligations of the defined benefit schemes operated by the Group at 31 December 2021, as calculated in accordance with IAS 19, are shown below. 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.

22 Post-retirement and other defined benefit schemes *continued*

Scheme assets

2020

	UK		US		Sweden		Rest of Group		Total		
	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Total $m
Government bonds[1]	1,929	–	321	–	–	–	52	–	2,302	–	2,302
Corporate bonds[2]	–	–	878	–	–	–	30	–	908	–	908
Derivatives[3]	–	(170)	–	–	–	333	1	–	1	163	164
Investment funds: Listed Equities[4]	–	1,771	93	90	–	119	72	5	165	1,985	2,150
Investment funds: Absolute Return/Multi Strategy[4]	–	2,463	–	72	–	668	12	–	12	3,203	3,215
Investment funds: Corporate Bonds/Credit[4]	–	969	–	80	–	211	39	12	39	1,272	1,311
Cash and cash equivalents	64	153	31	–	–	7	–	4	95	164	259
Other	–	–	–	5	–	–	(1)	355	(1)	360	359
Total fair value of scheme assets[5]	1,993	5,186	1,323	247	–	1,338	205	376	3,521	7,147	10,668

2021

	UK		**US**		**Sweden**		**Rest of Group**		**Total**		
	Quoted $m	**Unquoted $m**	**Quoted $m**	**Unquoted $m**	**Quoted $m**	**Unquoted $m**	**Quoted $m**	**Unquoted $m**	**Quoted $m**	**Unquoted $m**	**Total $m**
Government bonds[1]	**2,500**	**–**	**303**	**–**	**–**	**–**	**75**	**–**	**2,878**	**–**	**2,878**
Corporate bonds[2]	**–**	**–**	**877**	**–**	**–**	**–**	**16**	**–**	**893**	**–**	**893**
Derivatives[3]	**–**	**(237)**	**2**	**(1)**	**–**	**259**	**(1)**	**–**	**1**	**21**	**22**
Investment funds: Listed Equities[4]	**–**	**1,427**	**–**	**–**	**–**	**134**	**55**	**6**	**55**	**1,567**	**1,622**
Investment funds: Absolute Return/Multi Strategy[4]	**–**	**2,342**	**–**	**–**	**–**	**647**	**8**	**–**	**8**	**2,989**	**2,997**
Investment funds: Corporate Bonds/Credit[4]	**–**	**1,006**	**–**	**–**	**–**	**192**	**53**	**11**	**53**	**1,209**	**1,262**
Cash and cash equivalents	**34**	**261**	**227**	**–**	**–**	**2**	**–**	**2**	**261**	**265**	**526**
Other	**–**	**–**	**–**	**5**	**–**	**–**	**1**	**358**	**1**	**363**	**364**
Total fair value of scheme assets[5]	**2,534**	**4,799**	**1,409**	**4**	**–**	**1,234**	**207**	**377**	**4,150**	**6,414**	**10,564**

[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. More detail is given in the section Risks associated with the Group's defined benefit pensions on page 171. Valuations are determined by independent third parties.
[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), Corporate Bonds/Credit (a range of investment grade and non-investment grade credit) and Absolute Return/Multi Strategy (multi-asset exposure both across and within traditional and alternative asset classes). The price of the funds is set by independent administrators/custodians employed by the investment managers and based on the value of the underlying assets held in the fund. Details of pricing methodology is set out within internal control reports provided for each fund. Prices are updated daily, weekly or monthly depending upon the frequency of the fund's dealing.
[5] Included in scheme assets is $nil (2020: $nil) of the Group's own assets.

Scheme obligations

2020

	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Present value of scheme obligations in respect of:					
Active membership	(598)	(99)	(953)	(468)	(2,118)
Deferred membership	(1,887)	(787)	(783)	(504)	(3,961)
Pensioners	(5,940)	(715)	(789)	(347)	(7,791)
Total value of scheme obligations	(8,425)	(1,601)	(2,525)	(1,319)	(13,870)

2021

	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**
Present value of scheme obligations in respect of:					
Active membership	**(532)**	**(81)**	**(926)**	**(523)**	**(2,062)**
Deferred membership	**(1,709)**	**(693)**	**(718)**	**(465)**	**(3,585)**
Pensioners	**(5,700)**	**(630)**	**(729)**	**(312)**	**(7,371)**
Total value of scheme obligations	**(7,941)**	**(1,404)**	**(2,373)**	**(1,300)**	**(13,018)**

Net deficit in the scheme

	2020				
	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Total fair value of scheme assets	7,179	1,570	1,338	581	10,668
Total value of scheme obligations	(8,425)	(1,601)	(2,525)	(1,319)	(13,870)
Deficit in the scheme as recognised in the Consolidated Statement of Financial Position	(1,246)	(31)	(1,187)	(738)	(3,202)

	2021				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**
Total fair value of scheme assets	**7,333**	**1,413**	**1,234**	**584**	**10,564**
Total value of scheme obligations	**(7,941)**	**(1,404)**	**(2,373)**	**(1,300)**	**(13,018)**
Deficit in the scheme as recognised in the Consolidated Statement of Financial Position	**(608)**	**9**	**(1,139)**	**(716)**	**(2,454)**

Fair value of scheme assets

	2021					2020				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
At beginning of year	**7,179**	**1,570**	**1,338**	**581**	**10,668**	6,464	1,506	1,123	512	9,605
Interest income on scheme assets	**75**	**27**	**12**	**4**	**118**	111	39	14	5	169
Expenses	**(7)**	**–**	**–**	**–**	**(7)**	(6)	(2)	–	(1)	(9)
Actuarial gains/(losses)	**372**	**(22)**	**62**	**3**	**415**	501	148	84	27	760
Exchange and other adjustments	**(77)**	**(5)**	**(132)**	**1**	**(213)**	299	–	162	38	499
Employer contributions	**122**	**19**	**5**	**28**	**174**	131	14	2	25	172
Participant contributions	**2**	**–**	**–**	**2**	**4**	2	–	–	2	4
Benefits paid	**(333)**	**(176)**	**(51)**	**(35)**	**(595)**	(323)	(135)	(47)	(27)	(532)
Scheme assets' fair value at end of year	**7,333**	**1,413**	**1,234**	**584**	**10,564**	7,179	1,570	1,338	581	10,668

The actual return on the plan assets was a gain of $533m (2020: gain of $929m).

Movement in post-retirement scheme obligations

	2021					2020				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Present value of obligations in scheme at beginning of year	**(8,425)**	**(1,601)**	**(2,525)**	**(1,319)**	**(13,870)**	(7,580)	(1,592)	(2,160)	(1,080)	(12,412)
Current service cost	**(18)**	**(2)**	**(69)**	**(34)**	**(123)**	(18)	(1)	(59)	(26)	(104)
Past service (cost)/credit	**(4)**	**–**	**(1)**	**–**	**(5)**	(9)	64	(2)	(24)	29
Participant contributions	**(2)**	**–**	**–**	**(2)**	**(4)**	(2)	–	–	(2)	(4)
Benefits paid	**333**	**176**	**51**	**35**	**595**	323	135	47	27	532
Interest expense on post-retirement scheme obligations	**(87)**	**(28)**	**(22)**	**(8)**	**(145)**	(130)	(40)	(26)	(10)	(206)
Actuarial gains/(losses)	**199**	**46**	**(43)**	**9**	**211**	(637)	(167)	(28)	(96)	(928)
Exchange and other adjustments	**63**	**5**	**236**	**19**	**323**	(372)	–	(297)	(108)	(777)
Present value of obligations in scheme at end of year	**(7,941)**	**(1,404)**	**(2,373)**	**(1,300)**	**(13,018)**	(8,425)	(1,601)	(2,525)	(1,319)	(13,870)

The obligations arise from the following plans:

	2021					2020				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Funded – pension schemes	**(7,927)**	**(1,178)**	**(2,371)**	**(1,160)**	**(12,636)**	(8,405)	(1,335)	(2,525)	(603)	(12,868)
Funded – post-retirement healthcare	**–**	**(143)**	**–**	**–**	**(143)**	–	(169)	–	–	(169)
Unfunded – pension schemes	**–**	**(83)**	**(2)**	**(127)**	**(212)**	–	(97)	–	(696)	(793)
Unfunded – post-retirement healthcare	**(14)**	**–**	**–**	**(13)**	**(27)**	(20)	–	–	(20)	(40)
Total	**(7,941)**	**(1,404)**	**(2,373)**	**(1,300)**	**(13,018)**	(8,425)	(1,601)	(2,525)	(1,319)	(13,870)

22 Post-retirement and other defined benefit schemes *continued*

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 2021, are set out below.

	2021					2020				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Operating profit										
Current service cost	**(18)**	**(2)**	**(69)**	**(35)**	**(124)**	(18)	(1)	(59)	(26)	(104)
Past service (cost)/credit	**(4)**	**–**	**(1)**	**–**	**(5)**	(9)	64	(2)	(24)	29
Expenses	**(7)**	**–**	**–**	**–**	**(7)**	(6)	(2)	–	(1)	(9)
Total (charge)/credit to Operating profit	**(29)**	**(2)**	**(70)**	**(35)**	**(136)**	(33)	61	(61)	(51)	(84)
Finance expense										
Interest income on scheme assets	**75**	**27**	**12**	**5**	**119**	111	39	14	5	169
Interest expense on post-retirement scheme obligations	**(87)**	**(28)**	**(22)**	**(8)**	**(145)**	(130)	(40)	(26)	(10)	(206)
Net interest on post-employment defined benefit plan liabilities	**(12)**	**(1)**	**(10)**	**(3)**	**(26)**	(19)	(1)	(12)	(5)	(37)
(Charge)/credit before taxation	**(41)**	**(3)**	**(80)**	**(38)**	**(162)**	(52)	60	(73)	(56)	(121)
Other comprehensive income										
Difference between the actual return and the expected return on the post-retirement scheme assets	**372**	**(22)**	**62**	**3**	**415**	501	148	84	27	760
Experience (losses)/gains arising on the post-retirement scheme obligations	**(43)**	**(9)**	**–**	**74**	**22**	43	(19)	(24)	(17)	(17)
Changes in financial assumptions underlying the present value of the post-retirement scheme obligations	**239**	**59**	**(43)**	**(61)**	**194**	(649)	(160)	(4)	(79)	(892)
Changes in demographic assumptions	**3**	**(4)**	**–**	**(4)**	**(5)**	(31)	12	–	–	(19)
Remeasurement of the defined benefit liability	**571**	**24**	**19**	**12**	**626**	(136)	(19)	56	(69)	(168)

Past service costs include granting early retirement in the UK and Sweden. Past service cost in 2020 includes a credit of $64m relating to the change in coverage of the US healthcare plans. In addition, the freeze of the Netherlands pension plan effective from 1 January 2021 yielded a past service credit, taken in 2020, of $7m. The past service cost in 2020 also includes costs predominantly related to enhanced pensions in early retirement in the UK and Sweden.

Total Group pension costs in respect of defined contribution and defined benefit schemes during the year are set out below (see Note 29).

	2021 $m	2020 $m
Defined contribution schemes	**428**	351
Defined benefit schemes – current service costs and expenses	**131**	113
Defined benefit schemes – past service credit	**5**	(29)
Pension costs	**564**	435

SE 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.

	2021		2020	
Discount rate	**+0.5%**	**-0.5%**	+0.5%	-0.5%
UK ($m)	**565**	**(634)**	610	(687)
US ($m)	**79**	**(84)**	93	(99)
Sweden ($m)	**197**	**(226)**	214	(246)
Total ($m)	**841**	**(944)**	917	(1,032)

	2021		2020	
Inflation rate[1]	**+0.5%**	**-0.5%**	+0.5%	-0.5%
UK ($m)	**(386)**	**375**	(396)	378
US ($m)	**n/a**	**n/a**	n/a	n/a
Sweden ($m)	**(207)**	**196**	(245)	216
Total ($m)	**(593)**	**571**	(641)	594

	2021		2020	
Rate of increase in salaries	**+0.5%**	**-0.5%**	+0.5%	-0.5%
UK ($m)	**n/a**	**n/a**	n/a	n/a
US ($m)	**n/a**	**n/a**	n/a	n/a
Sweden ($m)	**(90)**	**82**	(62)	70
Total ($m)	**(90)**	**82**	(62)	70

Mortality rate	2021 +1 year	2021 –1 year	2020 +1 year	2020 –1 year
UK ($m)	**(390)**[2]	**388**[3]	(396)	395
US ($m)	**(29)**	**29**	(32)	32
Sweden ($m)	**(94)**	**93**	(106)	96
Total ($m)	**(513)**	**510**	(534)	523

[1] Rate of increase in pensions in payment follows inflation.
[2] Of the $390m increase, $203m is covered by the longevity swap.
[3] Of the $388m decrease, $203m 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 inflation sensitivity allows for the impact of a change in inflation on salary increases and pension increases (where these assumptions are inflation-linked).

The salary increase sensitivity reflects the impact of an increase of only salary relative to inflation.

The sensitivity to the life expectancy assumption is estimated based on a revised mortality assumption that extends/reduces the current life expectancy by one year for a particular age.

23 Reserves

Retained earnings

The cumulative amount of goodwill written off directly to reserves resulting from acquisitions, net of disposals, amounted to $615m (2020: $636m; 2019: $614m) using year-end rates of exchange.

At 31 December 2021, 3,922,122 shares, at a cost of $239m, have been deducted from Retained earnings (2020: 556,108 shares, at a cost of $51m; 2019: 907,239 shares, at a cost of $37m) 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).

	2021 $m	2020 $m	2019 $m
Cumulative translation differences included within Retained earnings			
At 1 January	**(1,143)**	(2,189)	(2,007)
Foreign exchange arising on consolidation	**(483)**	443	40
Exchange adjustments on goodwill (recorded against other reserves)	**(21)**	22	(5)
Foreign exchange arising on designated borrowings in net investment hedges[1]	**(321)**	573	(252)
Fair value movements on derivatives designated in net investment hedges	**34**	8	35
Net exchange movement in Retained earnings	**(791)**	1,046	(182)
At 31 December	**(1,934)**	(1,143)	(2,189)

[1] Foreign exchange arising on designated borrowings in net investment hedges includes $100m in respect of designated bonds and $(421)m in respect of designated contingent consideration and other liabilities. The change in value of designated contingent consideration liabilities relates to $(266)m in respect of BMS' share of Global Diabetes Alliance, $(5)m in respect of Almirall and $(150)m in relation to the Acerta Pharma share purchase liability.

The cumulative gain with respect to costs of hedging is $4m (2020: $9m; 2019: $nil) and the loss during the year was $6m (2020: gain of $9m; 2019: loss of $47m).

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 $527m.

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 of $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.

24 Share capital

	Allotted, called-up and fully paid		
	2021 $m	2020 $m	2019 $m
Issued Ordinary Shares ($0.25 each)	**387**	328	328
Redeemable Preference Shares (£1 each – £50,000)	**–**	–	–
At 31 December	**387**	328	328

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		
	2021	2020	2019
At 1 January	**1,312,668,724**	1,312,137,976	1,267,039,436
Issue of shares (share placing)	**–**	–	44,386,214
Issue of share capital (business combinations)	**236,321,411**	–	–
Issue of shares (share schemes)	**410,530**	530,748	712,326
At 31 December	**1,549,400,665**	1,312,668,724	1,312,137,976

Share issues
Issue of share capital (business combinations) represents share capital issued as part of the acquisition of Alexion (see Note 27).

Share repurchases
No Ordinary Shares were repurchased by the Company in 2021 (2020:nil; 2019:nil).

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

25 Dividends to shareholders

	2021 Per share	2020 Per share	2019 Per share	**2021 $m**	2020 $m	2019 $m
Second interim (March 2021)	**$1.90**	$1.90	$1.90	**2,490**	2,489	2,403
First interim (September 2021)	**$0.90**	$0.90	$0.90	**1,392**	1,180	1,180
Total	**$2.80**	$2.80	$2.80	**3,882**	3,669	3,583

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 outstanding past 12 years be forfeited. $nil (2020: $1m; 2019: $4m) of unclaimed dividends have been adjusted for in Retained earnings in 2021.

The 2020 second interim dividend of $1.90 per share was paid on 29 March 2021. The 2021 first interim dividend of $0.90 per share was paid on 13 September 2021.

Reconciliation of dividends charged to equity to cash flow statement:

	2021 $m	2020 $m	2019 $m
Dividends charged to equity	**3,882**	3,669	3,583
Exchange losses on payment of dividend	**3**	4	5
Hedge contracts relating to payment of dividends (cash flow statement)	**(29)**	(101)	4
Dividends paid (cash flow statement)	**3,856**	3,572	3,592

26 Non-controlling interests

The Group Financial Statements at 31 December 2021 reflect equity of $19m (2020: $16m; 2019: $13m) and total comprehensive income of $3m (2020: $3m; 2019: $4m) attributable to the non-controlling interests in AstraZeneca Pharma India Limited, P.T. AstraZeneca Indonesia and Beijing Falikang Pharmaceutical (China) Co. Limited.

In addition to the non-controlling interests in AstraZeneca Pharma India Limited, P.T. AstraZeneca Indonesia and Beijing Falikang Pharmaceutical (China) Co. Limited, the Group Financial Statements at 31 December 2021 also reflect equity of $nil (2020: $nil; 2019: $1,456m) and total comprehensive losses of $nil (2020: $55m; 2019: $111m) attributable to the non-controlling interest in Acerta Pharma, resulting in reported total comprehensive income of $3m (2020: losses of $52m; 2019: losses of $107m).

In February 2016, AstraZeneca acquired a 55% controlling stake in Acerta Pharma where the non-controlling interest was subject to put and call options. The put option gave rise to a liability (see Note 20). The ability of the parties to exercise their respective put and call options, as well as the timing and amount of exercise, was dependent on certain conditions, the last of which was based on regulatory outcomes of *Calquence* (acalabrutinib) in the EU. In November 2020, *Calquence* received marketing approval in the EU, which removed all remaining conditionality in respect of the options. From November 2020, the minority shareholders were considered to have no further substantive variability in risk and reward related to their shares as it was considered highly likely that one of the options would be exercised, and the price of the options was fixed. Therefore, from November 2020, no further amounts of the consolidated AstraZeneca result were attributed to the minority shareholders of Acerta Pharma. The Non-controlling interests reserve relating to the minority shareholders of Acerta Pharma, totalling $1,401m, was reclassified into Retained earnings (see Consolidated Statement of Changes in Equity) in 2020. AstraZeneca exercised its option to acquire the remaining 45% of shares in Acerta Pharma in April 2021.

The following summarised financial information, for Acerta Pharma and its subsidiaries, prior to full consolidation in 2020, is presented on a standalone basis since the acquisition date, and before the impact of Group-related adjustments, some of which are incorporated into the calculation of the loss attributable to the non-controlling interests:

	2019 $m
Total Revenue	–
Loss after tax	(422)
Other comprehensive income	–
Total comprehensive loss	(422)

	2019 $m
Non-current assets	157
Current assets	475
Total assets	632
Current liabilities	(310)
Non-current liabilities	(267)
Total liabilities	(577)
Net assets	55

	2019 $m
Net cash outflow from operating activities	(13)
Net cash inflow from investing activities	7
Net cash inflow from financing activities	7
Increase in cash and cash equivalents in the year	1

As part of the acquisition of Alexion in July 2021, a pre-existing non-controlling interest in Caelum Biosciences was recognised (Note 27). This was valued at $150m, the agreed upon exercise price for the exclusive option to acquire the remaining equity. The option was exercised on 28 September 2021 and the acquisition of Caelum Biosciences closed shortly thereafter on 5 October 2021.

27 Acquisition of business operations

On 21 July 2021, AstraZeneca completed the acquisition of 100% of the issued shares of Alexion Pharmaceuticals, Inc. (Alexion), based in Boston, Massachusetts, US. Alexion is a global biopharmaceutical company focused on serving patients and families affected by rare diseases and devastating conditions through the discovery, development and commercialisation of life-changing medicines.

At closing, Alexion shareholders received 2.1243 AstraZeneca American Depository Shares (ADSs) and $60 in cash for each of their Alexion shares. Unvested Alexion employee share awards were converted to equivalent AstraZeneca share awards. The fair value of the purchase consideration was $41,058m, comprising AstraZeneca ADSs of $27,196m, cash of $13,349m and replacement employee share awards of $513m.

The Group has funded the cash element of the acquisition with $8bn of new long-term debt, issued in May and June 2021, $4bn of term loans drawn in July 2021 under the $17.5bn committed bank facilities entered into in December 2020 to secure the acquisition financing, and existing cash balances. The Group cancelled the remaining $13.5bn of the facilities in June, July and October 2021. Loans and borrowings of $2.3bn acquired with Alexion were repaid in full shortly following completion of the acquisition.

The acquisition has been accounted for as a business combination using the acquisition method of accounting in accordance with IFRS 3 'Business Combinations' and consequently the Alexion assets acquired, and liabilities assumed, have been recorded by AstraZeneca at fair value, with any excess of the purchase price over the fair value of the identifiable assets and liabilities being recognised as goodwill.

KJ As part of the Alexion acquisition in 2021, we identified the assets (comprising principally launched products and post pre-clinical stage) and liabilities acquired. Attributing fair values to assets acquired and liabilities assumed as part of business combinations is considered to be a key judgement. The purchase price allocation was performed with assistance from an independent valuer to advise on the valuation techniques and key assumptions in the valuation, in particular in respect of the valuation of the intangible assets and inventory.

The fair values assigned to the Alexion business combination in 2021 were:

	Fair value $m
Non-current assets	
Property, plant and equipment	**1,135**
Right-of-use assets	**263**
Intangible assets	**26,855**
Other non-current assets	**301**
	28,554
Current assets	
Inventories	**6,769**
Trade and other receivables	**2,096**
Intangible assets	**100**
Cash and cash equivalents	**4,086**
	13,051
Current liabilities	
Interest-bearing loans and borrowings	**(2,336)**
Trade and other payables	**(1,192)**
Other current liabilities	**(40)**
	(3,568)
Non-current liabilities	
Lease liabilities	**(228)**
Deferred tax liabilities	**(4,191)**
Other non-current liabilities	**(697)**
	(5,116)
Total net assets acquired	**32,921**
Less: non-controlling interests	**(150)**
Goodwill	**8,287**
Total fair value of consideration	**41,058**
Less: fair value of equity consideration	**(27,196)**
Less: fair value of replacement employee share awards	**(513)**
Less: cash and cash equivalents acquired	**(4,086)**
Net cash outflow	**9,263**

The estimated fair value and useful lives of intangible assets were as follows:

	Fair value $m	Useful lives Years
Launched products – C5 franchise (*Soliris*/*Ultomiris*)	**18,480**	6 to 15
Launched products – *Strensiq*, *Kanuma*, *Andexxa*	**5,215**	11 to 17
Products in development	**2,760**	Not amortised
Other intangibles	**500**	5 to 10
	26,955	

The fair value attributed to intangible assets was $26,955m and primarily represents intellectual property rights over launched products $23,695m and products under development $2,760m. These were fair valued using the multi-period excess earnings method, which uses a number of estimates regarding the amount and timing of future cash flows. The key assumptions in the cash flows are PTRS, peak year sales and revenue erosion curves. In accordance with the Group's policy on impairment assessments as set out on page 144, the assets were assessed for impairment in Q4 2021. Future milestones have been included in the valuation of the intangible assets (as a deduction of cash flows).

The fair value of inventory, which includes raw materials, work in progress and finished goods related to the launched products was estimated at $6,769m, an uplift of $5,635m on the carrying value prior to the acquisition. The fair value adjustment relates only to work in progress and finished goods and was calculated as the estimated selling price less costs to complete and sell the inventory, associated margins on these activities and holding costs. The fair value adjustment is expected to amortise over approximately the first 18 months post-acquisition, in line with revenues.

Property, plant and equipment principally comprises the manufacturing facilities in Dublin and Athlone, Ireland and was fair valued using a cost approach. The estimated fair value of $1,135m represents an uplift of $111m over carrying value.

The estimated fair value of contingent liabilities was $76m, relating to various claims and disputes in each case where there is a possible, but not probable, future financial exposure, and involve an assessment of the likelihood of a number of scenarios in relation to those matters. This amount has been included within other non-current liabilities of $697m.

The estimated fair value of trade and other receivables was $2,096m, which approximated the contractual cash flows.

The net deferred tax position reflected an adjustment of $5,215m related to the deferred tax impact of the fair value uplifts on intangible assets, inventories, property, plant and equipment and contingent liabilities as described above.

Goodwill amounting to $8,287m was recognised on acquisition and is underpinned by a number of elements, which individually could not be quantified. Most significant amongst these is the premium attributable to a pre-existing, well positioned business in the innovation intensive, high growth rare diseases market with a highly skilled workforce and established reputation. Other important elements include the potential unidentified products that future research and development may yield and the core technological capabilities and knowledge base of the company. Goodwill is not expected to be deductible for tax purposes.

Non-controlling interests reflect Alexion's pre-existing minority equity interest in Caelum Biosciences and have been valued at $150m, the agreed upon exercise price for the exclusive option to acquire the remaining equity. The option was exercised on 28 September 2021 and the acquisition of Caelum Biosciences closed shortly thereafter on 5 October 2021 (Note 26).

Alexion's results have been consolidated into the Group's results from 21 July 2021. For the period from acquisition to 31 December 2021, before reflecting the fair value adjustments arising on the acquisition, Alexion's Total Revenues were $3,071m and Profit after tax was $889m. If the acquisition had taken effect at the beginning of the reporting period in which the acquisition occurred (1 January 2021), on a pro forma basis, after reflecting the fair value adjustments arising on the acquisition, the Total Revenue of the combined Group for the year ended 31 December 2021 would have been $41,132m and the Loss after tax would have been $1,152m. 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 2021 and should not be taken to be representative of future results.

Total acquisition-related costs of $171m have been incurred by the Group, which include advisory, legal and other professional fees. These costs are presented in the Statement of Comprehensive Income within Selling, general and administrative expense.

The terms of the acquisition include a retention bonus plan for legacy Alexion employees whereby up to $50m may be used for retention bonus awards to employees at the level of Vice President or below. These bonuses will vest and be payable six months after the acquisition, or earlier. In the period since acquisition, a cost of $24m has been recorded in the Statement of Comprehensive Income ($2m in Cost of sales, $9m in Research and development expense and $13m in Selling, general and administrative expense).

Upon completion of the acquisition, all unvested Alexion employee share awards were converted into AstraZeneca restricted stock awards that continue to have, and shall be subject to, the same terms and conditions as applied in the corresponding Alexion awards immediately prior to completion. Alexion Performance Stock Plan (PSU) awards that included performance-based vesting conditions were converted using the greater of the original target level and Alexion's assessment of the level of achievement immediately prior to completion (subject to a limit of 175 per cent. for the awards granted in 2019 and a limit of 150 per cent. for the awards granted in 2020). In the period since acquisition, a cost of $257m has been recorded in the Statement of Comprehensive Income ($9m in Cost of sales, $73m in Research and development expense and $175m in Selling, general and administrative expense). Payments made to the Employee Benefit Trust upon vesting of share awards recognised as part of the consideration for the acquisition of Alexion are recognised within investing activities in the Group's Consolidated Statement of Cash Flows.

28 Financial risk management objectives and policies

The Group's principal financial instruments, other than derivatives, comprise bank overdrafts, loans and other borrowings, lease liabilities, 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, together with the Group's approach to capital management, are set out below.

Hedge accounting

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. 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 138.

The following table represents the Group's continuing designated hedge relationships under IFRS 9:

2019

			Other comprehensive income						
	Nominal amounts in local currency	Carrying value $m	Opening balance 1 January 2019 $m	Fair value (gain)/loss deferred to OCI $m	Fair value loss recycled to the income statement $m	Closing balance 31 December 2019 $m	Average maturity year	Average USD FX rate	Average pay interest rate
Fair value hedge – foreign currency and interest rate risk[1]									
Cross currency interest rate swap – Euro bond	EUR 300m	10	–	–	–	–	2021	1.09	USD LIBOR + 1.27%
Cash flow hedges – foreign currency and interest rate risk[2, 4]									
Cross currency interest rate swaps – Euro bonds	EUR 2,200m	(13)	(92)	114	(52)	(30)	2025	1.14	USD 2.69%
Net investment hedge – foreign exchange risk[3, 4]									
Transactions matured pre 2019		–	(356)	–	–	(356)	–	–	–
Cross currency interest rate swap – JPY investment[5]	JPY 58.5bn	–	(213)	4	–	(209)	2019	78.01	JPY 0.35%
Cross currency interest rate swap – JPY investment	JPY 58.3bn	4	–	(4)	–	(4)	2029	108.03	JPY 1.53%
Cross currency interest rate swap – CNY investment	CNY 458m	(1)	4	(3)	–	1	2026	6.68	CNY 4.80%
Foreign currency borrowing – GBP investment	GBP 350m	(457)	(265)	14	–	(251)	2031	n/a	GBP 5.75%
Foreign currency borrowing – EUR investment	EUR 450m	(498)	44	(10)	–	34	2021	n/a	EUR 0.88%
Contingent consideration liabilities and Acerta Pharma put option liability – AZUK and AZAB USD investments	USD 5,583m	(5,583)	1,805	248	–	2,053	–	–	–

2020

	Nominal amounts in local currency	Carrying value $m	Other comprehensive income: Opening balance 1 January 2020 $m	Other comprehensive income: Fair value (gain)/loss deferred to OCI $m	Other comprehensive income: Fair value loss recycled to the income statement $m	Other comprehensive income: Closing balance 31 December 2020 $m	Average maturity year	Average USD FX rate	Average pay interest rate
Fair value hedge – foreign currency and interest rate risk[1]									
Cross currency interest rate swap – Euro bond	EUR 300m	43	–	–	–	–	2021	1.09	USD LIBOR + 1.27%
Cash flow hedges – foreign currency and interest rate risk[2, 4, 6]									
Cross currency interest rate swaps – Euro bonds	EUR 2,200m	150	(30)	(163)	239	46	2025	1.14	USD 2.69%
FX Forwards – short term FX risk	USD 618m	5	–	(20)	15	(5)	2021	–	–
Net investment hedge – foreign exchange risk[3, 4]									
Transactions matured pre 2020		–	(565)	–	–	(565)	–	–	–
Cross currency interest rate swap – JPY investment	JPY 58.5bn	19	(4)	(15)	–	(19)	2029	108.03	JPY 1.53%
Cross currency interest rate swap – CNY investment	CNY 458m	(2)	1	1	–	2	2026	6.68	CNY 4.80%
Foreign currency borrowing – GBP investment	GBP 350m	(475)	(251)	18	–	(233)	2031	n/a	GBP 5.75%
Foreign currency borrowing – EUR investment	EUR 450m	(548)	34	51	–	85	2021	n/a	EUR 0.88%
Contingent consideration liabilities and Acerta Pharma put option liability – AZUK and AZAB USD investments	USD 5,252m	(5,252)	2,053	(642)	–	1,411	–	–	–

2021

	Nominal amounts in local currency	**Carrying value $m**	**Other comprehensive income: Opening balance 1 January 2021 $m**	**Other comprehensive income: Fair value (gain)/loss deferred to OCI $m**	**Other comprehensive income: Fair value gain recycled to the income statement $m**	**Other comprehensive income: Closing balance 31 December 2021 $m**	**Average maturity year**	**Average USD FX rate**	**Average pay interest rate**
Fair value hedge – foreign currency and interest rate risk[1]									
Cross currency interest rate swap – Euro bond	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Cash flow hedges – foreign currency and interest rate risk[2, 4, 6]									
Cross currency interest rate swaps – Euro bonds	**EUR 1,700m**	**(43)**	**46**	**182**	**(201)**	**27**	**2026**	**1.14**	**USD 2.85%**
FX Forwards – short term FX risk	**USD 1,220m**	**12**	**(5)**	**–**	**(7)**	**(12)**	**2022**	**–**	**–**
Net investment hedge – foreign exchange risk[3, 4]									
Transactions matured pre 2021		**–**	**(565)**	**–**	**–**	**(565)**	**–**	**–**	**–**
Cross currency interest rate swap – JPY investment	**JPY 58.3bn**	**62**	**(19)**	**(43)**	**–**	**(62)**	**2029**	**108.03**	**JPY 1.53%**
Cross currency interest rate swap – CNY investment	**CNY 458m**	**(2)**	**2**	**–**	**–**	**2**	**2026**	**6.68**	**CNY 4.80%**
Foreign currency borrowing – GBP investment	**GBP 350m**	**470**	**(233)**	**(5)**	**–**	**(238)**	**2031**	**n/a**	**GBP 5.75%**
Foreign currency borrowing – EUR investment[7]	**EUR 450m**	**–**	**85**	**(47)**	**–**	**38**	**2021**	**n/a**	**EUR 0.88%**
Foreign currency borrowing – EUR investment[8]	**EUR 800m**	**898**	**–**	**(50)**	**–**	**(50)**	**2029**	**n/a**	**EUR 0.38%**
Contingent consideration liabilities and Acerta Pharma share purchase liability – AZUK and AZAB USD investments	**USD 2,658m**	**(2,658)**	**1,411**	**421**	**–**	**1,832**	**–**	**–**	**–**

[1] Swaps designated in a fair value hedge matured on 24 November 2021 and hedge ineffectiveness during the period was $nil (2020: gain of $1m).
[2] Hedge ineffectiveness recognised on swaps designated in a cash flow hedge during the period was $nil (2020: $nil).
[3] Hedge ineffectiveness recognised on swaps designated in a net investment hedge during the period was $nil (2020: $nil).
[4] Fair value movements on cross currency interest rate swaps in cash flow hedge and net investment hedge relationships are shown inclusive of the impact of costs of hedging.
[5] In September 2019, the maturity of our JPY 58.5bn cross currency interest rate swap resulted in a net cash inflow of $209m. The cash flow associated with the settlement has been reflected in cash flows from investing activities within the Consolidated Statement of Cash Flows on page 137, as its primary purpose was to hedge the translation foreign exchange risk arising on the consolidation of the Group's net investment in Japan.
[6] Nominal amount of FX forwards in a cash flow hedge of $1,220m represents the USD equivalent notional of the FX forwards. By currency, the nominal amounts were RMB 666m at FX rate 6.373, SEK 3,929m at 9.0742, JPY 19,289m at 115.1550, GBP 278m at 1.3506 and EUR 123m at 1.1306. All FX forwards in a cash flow hedge mature on 25 January 2022.
[7] The EUR 450m net investment hedge matured in November 2021, when the hedging instrument, a EUR bond, matured.
[8] On 3 June 2021, upon issuance of the EUR 800m 0.375% 2029 non-callable bond, EUR 550m was designated in a net investment hedge of the foreign currency exposure in relation of an equivalent amount of EUR-denominated net assets. The remaining EUR 250m was subsequently designated in a net investment hedge upon maturity of the EUR 450m bond on 24 November 2021.

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. The Group held no options during the reporting period.

Capital management

The capital structure of the Group consists of Shareholders' equity (Note 24), Debt (Note 19), Other current investments (Note 12) and Cash (Note 17). 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.

28 Financial risk management objectives and policies *continued*

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 16.

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 $12,110m at the beginning of the year to a net debt position of $24,322m at 31 December 2021. The increase in net debt was principally due to the acquisition of Alexion.

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 and European 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. At 31 December 2021, the Group was 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 was A3 Negative outlook by Moody's and A- Stable outlook by Standard and Poor's.

In addition to Cash and cash equivalents of $6,329m, short-term fixed income investments of $16m, fixed deposits of $53m, less overdrafts of $291m at 31 December 2021, the Group has committed bank facilities of $4,875m available to manage liquidity. The commitments mature in April 2025. None of the above facilities contain any financial covenants. 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 these facilities currently bear an interest rate per annum based on US dollar LIBOR (or other relevant benchmark rate) plus a margin. The facilities contain arrangements to switch to alternative risk free rate benchmarks before June 2023.

At 31 December 2021, the Group has $3,278m outstanding from debt issued under a Euro Medium Term Note programme and $21,908m under a SEC-registered programme. The funds made available under these facility agreements may be used for the general corporate purposes of the Group.

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	Lease liability $m	Trade and other payables $m	Total non-derivative financial instruments $m	Derivative financial instruments receivable[1] $m	Derivative financial instruments payable $m	Total derivative financial instruments $m	Total $m
Within one year	234	2,207	205	14,054	16,700	(11,956)	11,985	29	16,729
In one to two years	14	1,970	158	1,769	3,911	(955)	976	21	3,932
In two to three years	–	1,810	117	1,811	3,738	(54)	67	13	3,751
In three to four years	–	2,068	79	1,592	3,739	(54)	67	13	3,752
In four to five years	–	1,479	50	1,652	3,181	(1,051)	1,079	28	3,209
In more than five years	–	15,906	128	1,052	17,086	(1,648)	1,654	6	17,092
	248	25,440	737	21,930	48,355	(15,718)	15,828	110	48,465
Effect of interest	(1)	(8,038)	–	–	(8,039)	409	(488)	(79)	(8,118)
Effect of discounting, fair values and issue costs	(3)	(94)	(62)	(1,619)	(1,778)	(20)	(54)	(74)	(1,852)
31 December 2019	244	17,308	675	20,311	38,538	(15,329)	15,286	(43)	38,495

	Bank overdrafts and other loans $m	Bonds $m	Lease liability $m	Trade and other payables $m	Total non-derivative financial instruments $m	Derivative financial instruments receivable $m	Derivative financial instruments payable $m	Total derivative financial instruments $m	Total $m
Within one year	667	2,136	207	15,812	18,822	(9,719)	9,620	(99)	18,723
In one to two years	–	1,839	168	2,584	4,591	(60)	67	7	4,598
In two to three years	–	2,101	120	1,658	3,879	(59)	67	8	3,887
In three to four years	–	1,617	82	1,728	3,427	(1,151)	1,080	(71)	3,356
In four to five years	–	2,502	53	722	3,277	(36)	40	4	3,281
In more than five years	–	16,921	108	1,435	18,464	(1,707)	1,652	(55)	18,409
	667	27,116	738	23,939	52,460	(12,732)	12,526	(206)	52,254
Effect of interest	–	(7,974)	–	–	(7,974)	379	(405)	(26)	(8,000)
Effect of discounting, fair values and issue costs	(1)	(109)	(57)	(2,070)	(2,237)	(70)	24	(46)	(2,283)
31 December 2020	666	19,033	681	21,869	42,249	(12,423)	12,145	(278)	41,971

	Bank overdrafts and other loans $m	Bonds $m	Lease liability $m	Trade and other payables $m	Total non-derivative financial instruments $m	Derivative financial instruments receivable $m	Derivative financial instruments payable $m	Total derivative financial instruments $m	Total $m
Within one year	387	1,981	256	19,007	21,631	(11,766)	11,774	8	21,639
In one to two years	–	5,647	210	2,521	8,378	(55)	66	11	8,389
In two to three years	–	5,242	163	1,669	7,074	(1,060)	1,079	19	7,093
In three to four years	–	2,591	130	862	3,583	(35)	39	4	3,587
In four to five years	–	2,970	96	233	3,299	(118)	111	(7)	3,292
In more than five years	–	19,727	221	2,212	22,160	(1,521)	1,480	(41)	22,119
	387	38,158	1,076	26,504	66,125	(14,555)	14,549	(6)	66,119
Effect of interest	–	(8,609)	–	–	(8,609)	299	(325)	(26)	(8,635)
Effect of discounting, fair values and issue costs	–	(142)	(89)	(2,633)	(2,864)	(36)	7	(29)	(2,893)
31 December 2021	387	29,407	987	23,871	54,652	(14,292)	14,231	(61)	54,591

[1] The maturity profile table has been amended in 2019 to show gross derivative flows and to include all derivatives shown in Note 13 on page 161. In previous periods the table separately disclosed the net cash flows on interest rate swaps and cross-currency swaps.

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.

The Group has $2bn of bank loans that mature in July 2023 and $2bn of bank loans that mature in July 2024, which the Group can repay before maturity at face value. Other than that, 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 $2,865m of contingent consideration held within Trade and other payables (see Note 20).

Market risk

Interest rate risk

The Group maintains a Board approved mix of fixed and floating rate debt and uses underlying debt, interest rate swaps and forward rate agreements to manage this mix.

At 31 December 2021, interest rate swaps with a notional value of $288m are fair valued through profit or loss and this has effectively converted the 7% guaranteed debentures payable in 2023 to floating rates. No new interest rate swaps were entered into during 2021.

The majority of surplus cash is currently invested in US dollar liquidity funds and investment-grade fixed income securities.

The interest rate profile of the Group's interest-bearing financial instruments are 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.

	2021			2020			2019		
	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	**1,232**	**661**	**1,893**	1,357	1,029	2,386	1,785	225	2,010
Non-current	**23,985**	**4,903**	**28,888**	17,005	989	17,994	14,893	1,324	16,217
Total	**25,217**	**5,564**	**30,781**	18,362	2,018	20,380	16,678	1,549	18,227
Financial assets									
Fixed deposits	**53**	**–**	**53**	42	–	42	38	–	38
Cash and cash equivalents	**–**	**6,329**	**6,329**	–	7,832	7,832	–	5,369	5,369
Total	**53**	**6,329**	**6,382**	42	7,832	7,874	38	5,369	5,407

In addition to the financial assets above, there are $8,765m (2020: $6,328m; 2019: $6,765m) of other current and non-current asset investments and other financial assets. Of these, $nil receive floating rate interest (2020: $nil; 2019: $111m).

The Group is also exposed to market risk on equity securities, which represent non-controlling interests in third-party biotech companies.

	2021 $m	2020 $m	2019 $m
Equity securities at fair value through Other comprehensive income (Note 12)	**1,168**	1,108	1,339
Total	**1,168**	1,108	1,339

28 Financial risk management objectives and policies *continued*

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 68% of Group external sales in 2021 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 2021, before the impact of derivatives, 2% of interest-bearing loans and borrowings were denominated in pounds sterling and 9% 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 hyperinflationary. As at 31 December 2021, the Group operates in two countries designated as hyperinflationary, being Argentina and Venezuela.

The foreign exchange risk to the Group from Argentina and Venezuela has been assessed and deemed to be 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. Where practicable, these are hedged using forward foreign exchange. 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. Foreign exchange gains and losses on forward contracts transacted for transactional hedging are taken to profit or to Other comprehensive income if the contract is in a designated cash flow hedge.

Sensitivity analysis

The sensitivity analysis set out below 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.

The sensitivity analysis assumes an instantaneous 100 basis point change in interest rates in all currencies from their levels at 31 December 2021, with all other variables held constant. Based on the composition of our long-term debt portfolio as at 31 December 2021, a 1% increase in interest rates would result in an additional $54m in interest expense being incurred per year due to new floating rate debt issued during the year. The exchange rate sensitivity analysis assumes an instantaneous 10% change in foreign currency exchange rates from their levels at 31 December 2021, 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 2019	+1%	-1%	+10%	-10%
Increase/(decrease) in fair value of financial instruments ($m)	1,417	(1,521)	(4)	(36)
Impact on profit: (loss)/gain ($m)	–	–	(174)	172
Impact on equity: gain/(loss) ($m)	–	–	170	(208)

	Interest rates		Exchange rates	
31 December 2020	+1%	-1%	+10%	-10%
Increase/(decrease) in fair value of financial instruments ($m)	1,696	(1,758)	114	(132)
Impact on profit: (loss)/gain ($m)	–	–	(57)	74
Impact on equity: gain/(loss) ($m)	–	–	171	(206)

	Interest rates		Exchange rates	
31 December 2021	**+1%**	**-1%**	**+10%**	**-10%**
Increase/(decrease) in fair value of financial instruments ($m)	**1,978**	**(2,106)**	**82**	**(85)**
Impact on profit: gain/(loss) ($m)	**–**	**–**	**24**	**(9)**
Impact on equity: gain/(loss) ($m)	**–**	**–**	**58**	**(76)**

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 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 are recorded 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 2021 were as follows:

Current assets

	2021 $m	2020 $m	2019 $m
Cash at bank and in hand	**1,461**	1,182	755
Money market liquidity funds	**4,772**	6,602	4,110
Collateralised repurchase agreement	**–**	–	400
Other short-term cash equivalents	**96**	48	104
Total Cash and cash equivalents (Note 17)	**6,329**	7,832	5,369
Fixed income securities at fair value through profit and loss (Note 12)	**16**	118	811
Fixed deposits (Note 12)	**53**	42	38
Total derivative financial instruments (Note 13)	**83**	142	36
Current assets subject to credit risk	**6,481**	8,134	6,254

Non-current assets

	2021 $m	2020 $m	2019 $m
Fixed income securities at fair value through profit and loss (Note 12)	**–**	–	62
Derivative financial instruments (Note 13)	**102**	171	61
Non-current assets subject to credit risk	**102**	171	123

The majority of the Group's cash is invested in US dollar AAA rated money market liquidity funds. 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 were fully collateralised investments. The Group closed out its repurchase agreements during 2020. The value of the cash deposited in repurchase agreements at 31 December 2021 was $nil (2020: $nil; 2019: $401m).

The fixed income securities were managed by four external third-party fund managers. During 2020, the securities were sold and re-invested in money market funds. The long-term rating of these securities was BBB- 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 2021 was $93m (2020: $288m; 2019: $71m) and the carrying value of such cash collateral posted by the Group at 31 December 2021 was $47m (2020: $11m; 2019: $10m).

The impairment provision for other financial assets at 31 December 2021 was immaterial.

Trade 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. The Group applies the expected credit loss approach to establish an allowance for impairment that represents its estimate of expected losses in respect of Trade receivables.

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 2021, 31 December 2020 or 31 December 2019 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.

28 Financial risk management objectives and policies *continued*

On that basis, the loss allowance was determined as follows:

31 December 2019	Current	0-90 days past due	90-180 days past due	Over 180 days past due	Total
Expected loss rate	0.1%	0.8%	2.0%	44.0%	
Gross carrying amount ($m)	3,178	312	82	34	3,606
Loss allowance ($m)	2	2	2	15	21

31 December 2020	Current	0-90 days past due	90-180 days past due	Over 180 days past due	Total
Expected loss rate	0.1%	1.6%	19.4%	60.6%	
Gross carrying amount ($m)	3,659	124	21	25	3,829
Loss allowance ($m)	2	2	4	15	23

31 December 2021	**Current**	**0-90 days past due**	**90-180 days past due**	**Over 180 days past due**	**Total**
Expected loss rate	**0.1%**	**1.2%**	**22.6%**	**11.0%**	
Gross carrying amount ($m)	**5,617**	**328**	**18**	**91**	**6,054**
Loss allowance ($m)	**5**	**4**	**4**	**10**	**23**

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 94% of US sales (2020: three wholesalers accounted for approximately 95%; 2019: three wholesalers accounted for approximately 94%).

The movements of the Group expected credit losses provision are as follows:

	2021 $m	2020 $m	2019 $m
At 1 January	**23**	21	38
Net movement recognised in income statement	**(2)**	3	(13)
Amounts utilised, exchange and other movements	**2**	(1)	(4)
At 31 December	**23**	23	21

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 Operating profit.

29 Employee costs and share plans for employees

Employee costs

The monthly 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.

	2021	2020	2019
Employees			
UK	**8,900**	7,900	7,400
Rest of Europe	**18,300**	16,600	15,500
The Americas	**18,800**	17,300	16,600
Asia, Africa & Australasia	**33,600**	33,000	27,800
Continuing operations	**79,600**	74,800	67,300

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

The number of people employed by the Group at the end of 2021 was 83,100 (2020: 76,100; 2019: 70,600).

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

	2021 $m	2020 $m	2019 $m
Wages and salaries	**7,633**	6,273	5,648
Social security costs	**886**	726	658
Pension costs	**564**	435	491
Other employment costs	**1,192**	813	771
Total	**10,275**	8,247	7,568

Severance costs of $238m are not included above (2020: $116m; 2019: $158m).

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 (with awards granted as AstraZeneca ADSs for members of SET employed within the US). 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 129 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 $615m (2020: $277m; 2019: $259m). Payments made to the Employee Benefit Trust upon vesting of share awards are recognised within operating cash flows, reflecting the substance of the arrangement in place between the group and the Trust. 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 £150 a month to purchase Partnership Shares in the Company at the current market value. 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

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 2021, 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.

	Ordinary Shares '000	WAFV[1] pence	ADR Shares '000	WAFV[1] $
Outstanding at 1 January 2019	2,682	2295	6,963	15.65
Granted	1,018	3147	1,978	21.06
Forfeited	(350)	2317	(1,900)	16.80
Exercised	(491)	1983	(1,835)	14.17
Outstanding at 31 December 2019	2,859	2649	5,206	17.80
Granted	932	3702	1,767	24.02
Forfeited	(191)	3088	(478)	19.57
Cancelled	(3)	2234	–	–
Exercised	(552)	2426	(1,704)	15.43
Outstanding at 31 December 2020	3,045	2985	4,791	20.76
Granted	**1,275**	**2485**	**2,082**	**17.18**
Forfeited	**(220)**	**3005**	**(494)**	**20.53**
Cancelled	**(9)**	**3653**	**–**	**–**
Exercised	**(632)**	**2332**	**(1,201)**	**17.40**
Outstanding at 31 December 2021	**3,459**	**2919**	**5,178**	**20.12**

[1] Weighted average fair value.

29 Employee costs and share plans for employees *continued*

The AstraZeneca Investment Plan

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 four years.

The AstraZeneca Global Restricted Stock Plan

This plan was introduced in 2010. 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.

	Ordinary Shares '000	WAFV pence	ADR Shares '000	WAFV $
Outstanding at 1 January 2019	1,001	4598	10,493	31.57
Granted	759	6313	3,885	42.06
Forfeited	(115)	5438	(1,199)	35.44
Cancelled	–	–	(1)	32.39
Exercised	(317)	4028	(3,408)	28.82
Outstanding at 31 December 2019	1,328	5640	9,770	36.22
Granted	689	7408	3,671	47.71
Forfeited	(113)	6204	(1,077)	41.08
Cancelled	–	7280	(9)	36.93
Exercised	(278)	4929	(3,180)	31.47
Outstanding at 31 December 2020	1,626	6471	9,175	41.89
Granted	**902**	**6893**	**4,509**	**47.75**
Forfeited	**(158)**	**6865**	**(1,254)**	**45.77**
Cancelled	**(1)**	**7244**	**(8)**	**45.89**
Exercised	**(341)**	**4980**	**(2,881)**	**35.11**
Outstanding at 31 December 2021	**2,028**	**6879**	**9,541**	**46.19**

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 2021 to make awards to 111 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.

	Ordinary Shares '000	WAFV pence	ADR Shares '000	WAFV $
Outstanding at 1 January 2019	92	4952	1,062	30.79
Granted	105	6894	176	43.91
Forfeited	(7)	5907	(141)	31.17
Cancelled	–	–	(2)	28.19
Exercised	(14)	5244	(446)	30.12
Outstanding at 31 December 2019	176	6051	649	34.70
Granted	80	7931	295	52.92
Forfeited	(6)	7168	(79)	39.26
Exercised	(89)	5166	(359)	31.05
Outstanding at 31 December 2020	161	7434	506	47.20
Granted	**139**	**7415**	**481**	**53.96**
Forfeited	**(18)**	**7562**	**(42)**	**44.73**
Exercised	**(27)**	**7643**	**(182)**	**41.87**
Outstanding at 31 December 2021	**255**	**7393**	**763**	**52.88**

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.

	Ordinary Shares '000	WAFV pence	ADR Shares '000	WAFV $
Outstanding at 1 January 2019	238	5239	65	38.46
Granted	44	7301	–	–
Outstanding at 31 December 2019	282	5563	65	38.46
Granted	18	8386	–	–
Outstanding at 31 December 2020	300	5730	65	38.46
Granted	**–**	**–**	**175**	**56.83**
Forfeited	**(18)**	**8386**	**(45)**	**38.46**
Outstanding at 31 December 2021	**282**	**5563**	**195**	**54.92**

Alexion employee share award plan

Alexion employee share awards were converted into AstraZeneca restricted stock awards that continue to have, and shall be subject to, the same terms and conditions as applied in the corresponding Alexion awards immediately prior to completion.

	Ordinary Shares '000	WAFV pence	ADR Shares '000	WAFV $
Outstanding at 1 January 2021	–	–	–	–
Granted	**–**	**–**	**20,189**	**57.54**
Forfeited	**–**	**–**	**(838)**	**57.54**
Exercised	**–**	**–**	**(4,131)**	**57.54**
Outstanding at 31 December 2021	**–**	**–**	**15,220**	**57.54**

The fair values for the market-based performance conditions of the AstraZeneca 2014 Performance Share Plan were determined using a modified version of the Monte Carlo model. This method incorporated market inputs in addition to expected dividends. The fair values of all other plans are set using the market price at the point of award. The grant date fair values of share awards disclosed in this section do not take account of service and non-market related performance conditions.

30 Commitments and contingent liabilities

Commitments	**2021 $m**	2020 $m	2019 $m
Contracts placed for future capital expenditure on Property, plant and equipment and software development costs not provided for in these financial statements	**388**	689	396

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 an intangible asset 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	**12,764**	**1,047**	**1,958**	**3,382**	**6,377**
Future potential revenue milestone payments	**17,769**	**68**	**420**	**1,452**	**15,829**

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 (e.g. 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 2021.

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 48, 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 2019, 2020 or 2021.

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 a number of 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.

30 Commitments and contingent liabilities *continued*

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 in progress. 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 2021 in the aggregate of $90m (2020: $100m; 2019: $96m), 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: (i) the nature and extent of claims that may be asserted in the future; (ii) whether AstraZeneca has or will have any legal obligation with respect to asserted or unasserted claims; (iii) the type of remedial action, if any, that may be selected at sites where the remedy is presently not known; (iv) the potential for recoveries from or allocation of liability to third parties; and (v) the length of time that the environmental investigation, remediation and liability allocation process can take. As per our accounting policy on page 144, 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 $99m and $165m (2020: $95m and $158m; 2019: $86m and $143m) 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 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/or an estimate of the amount of any loss is difficult to ascertain.

Unless specifically identified below that a provision has been taken, AstraZeneca considers each of the claims to represent a contingent liability and discloses information with respect to the nature and facts of the cases in accordance with IAS 37.

There is one matter, which is considered probable that an outflow will be required, but for which we are unable to make an estimate of the possible loss or range of possible losses at this stage.

We do not believe that disclosure of the amounts sought by plaintiffs, if known, would be meaningful with respect to these legal proceedings. This is due to a number of factors, including (i) the stage of the proceedings (in many cases trial dates have not been set) and the overall length and extent of pre-trial discovery; (ii) the entitlement of the parties to an action to appeal a decision; (iii) clarity as to theories of liability, damages and governing law; (iv) uncertainties in timing of litigation; and (v) 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 30, 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 including within the next financial year. 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.

KJ 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 abbreviated new drug applications (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 2021, 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

Calquence

US patent proceedings

In February 2022, 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.

In its complaint, AstraZeneca alleged that a generic version of *Calquence*, if approved and marketed, would infringe patents listed in the US FDA Orange Book with reference to *Calquence* that are owned or licensed by AstraZeneca. No trial date has been set.

Tagrisso

US patent proceedings

In February 2020, 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. In its complaint, AstraZeneca alleged that a generic version of *Tagrisso*, if approved and marketed, would infringe a US Orange Book-listed *Tagrisso* patent. In the fourth quarter of 2021, AstraZeneca entered into settlement agreements with Zydus Pharmaceuticals (USA) Inc. and Cadila Healthcare Limited (collectively, Zydus) and MSN Laboratories Pvt. Ltd. and MSN Pharmaceuticals Inc. (collectively, MSN), resolving all US patent litigation with Zydus and MSN relating to *Tagrisso*. The trial with the remaining defendant, Alembic Pharmaceuticals Limited, is scheduled for May 2022.

In September 2021, Puma Biotechnology, Inc. and Wyeth LLC filed a patent infringement lawsuit in the US District Court for the District of Delaware against AstraZeneca relating to *Tagrisso*. Neither a case schedule, nor a trial date have been set yet.

Patent proceedings outside the US

In Russia in October 2021, AstraZeneca filed a lawsuit in the Arbitration Court of the Moscow Region against Axelpharm, LLC to prevent it from obtaining authorisation to market a generic version of *Tagrisso* prior to the expiration of AstraZeneca's patents covering *Tagrisso*. The lawsuit also names the Ministry of Health of the Russian Federation as a third party. Neither a case schedule, nor a trial date have been set.

Faslodex

Patent proceedings outside the US

In Japan, in April 2021, AstraZeneca received notice from the Japan Patent Office that Sandoz K.K. filed a Request for Invalidation of the *Faslodex* formulation patent. In October 2021, AstraZeneca received notice that Sun Pharma Japan Ltd. requested to intervene in the Request for Invalidation brought by Sandoz K.K seeking invalidation of the *Faslodex* formulation patent. The Japan Patent Office has permitted the intervention. AstraZeneca is defending the challenged patent.

Farxiga/Forxiga

US patent proceedings

In 2018, in response to Paragraph IV notices, AstraZeneca initiated ANDA litigation against Zydus Pharmaceuticals (USA) Inc. (Zydus) in the US District Court for the District of Delaware (the District Court). In May 2021, trial against Zydus proceeded in the District Court. In October 2021, the District Court issued a decision finding the asserted claims of AstraZeneca's US Patent No. 6,515,117 as valid and infringed by Zydus's proposed ANDA product.

Patent proceedings outside the US

In Canada, in January 2021, Sandoz Canada Inc. served three Notices of Allegation on AstraZeneca alleging invalidity and/or non-infringement of all three patents listed on the Canadian Patent Register in relation to *Forxiga*. AstraZeneca commenced litigation in response. A trial date has been set for October 2022 with closing argument in December 2022.

In February 2021, Teva Canada Limited served a Notice of Allegation on AstraZeneca alleging invalidity and/or non-infringement of all three patents listed on the Canadian Patent Register in relation to *Forxiga*. AstraZeneca commenced litigation in response. A trial date has been set for October 2022 with closing argument in December 2022.

Brilinta

US patent proceedings

In 2015 and subsequently, in response to Paragraph IV notices from 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 2020, AstraZeneca entered into three separate settlements and the District Court entered consent judgments to dismiss each of the corresponding litigations. Additional proceedings are ongoing in the District Court. No trial date has been set.

Roxadustat

US patent proceedings

In April 2021, Akebia Therapeutics, Inc. and Otsuka America Pharmaceutical, Inc. served AstraZeneca with a complaint seeking a declaration of invalidity and non-infringement for several of FibroGen, Inc's (FibroGen) method of use patents related to HIF prolylhydroxylase inhibitors. AstraZeneca is the exclusive licensee of FibroGen in the United States. AstraZeneca filed a motion to dismiss in June 2021.

Patent proceedings outside the US

In Canada, in May 2018, Akebia Therapeutics, Inc. filed an impeachment action in the Federal Court of Canada alleging invalidity of several of FibroGen, Inc.'s (FibroGen) method of use patents related to HIF prolylhydroxylase inhibitors. AstraZeneca is the exclusive licensee of FibroGen in Canada. AstraZeneca and FibroGen were defending the action. The parties have resolved the action.

Symbicort

US patent proceedings

AstraZeneca is involved in ongoing ANDA litigation with Mylan Pharmaceuticals Inc. (Mylan) and Kindeva Drug Delivery L.P. (Kindeva) brought in the US District Court for the Northern District of West Virginia (the District Court). In the action, AstraZeneca alleges that the defendants' generic versions of *Symbicort*, if approved and marketed, would infringe various AstraZeneca patents. In September 2020, Mylan and Kindeva stipulated to patent infringement to the extent that the asserted patent claims are found to be valid and enforceable, but reserved the right to seek a vacatur of the stipulation if the US Court of Appeals for the Federal Circuit (the Federal Circuit) reverses or modifies the District Court's claim construction. In March 2021, the District Court decided in favour of AstraZeneca and determined that the asserted patent claims were not invalid or unenforceable. Mylan and Kindeva appealed to the Federal Circuit. In December 2021, the Federal Circuit affirmed the decision by the District Court determining that the asserted patent claims were nonobvious. However, the Federal Circuit reversed the District Court's claim construction decision, vacated the stipulated judgment of infringement by Mylan and Kindeva and remanded the matter back to the District Court for determination of whether their ANDA product infringes the asserted patent claims under the Federal Circuit's claim construction. In January 2022, AstraZeneca filed a Combined Petition for Panel Rehearing and Rehearing En Banc with the Federal Circuit.

Daliresp

US patent proceedings

In 2015 and subsequently, in response to Paragraph IV notices from 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 2020, AstraZeneca entered into a settlement and the District Court entered a consent judgment to dismiss the corresponding litigation. Additional proceedings are ongoing in the District Court. No trial date has been set.

Movantik

US patent proceedings

In March 2020, Aether Therapeutics, Inc. filed a patent infringement lawsuit in the US District Court for the District of Delaware against AstraZeneca, Nektar Therapeutics and Daiichi Sankyo, Inc., relating to *Movantik*. A trial has been set for March 2023.

Onglyza

Patent proceedings outside the US

In Canada, in November 2019, Sandoz Canada Inc. sent a Notice of Allegation to AstraZeneca challenging the validity of Canadian substance Patent No. 2402894 (expiry March 2021) (the '894 patent) and formulation Patent No. 2568391 (expiry May 2025) related to *Onglyza*. AstraZeneca commenced an action in response related to the '894 patent in January 2020. In October 2021, the parties reached an agreement to resolve the dispute. This matter is now concluded.

30 Commitments and contingent liabilities *continued*

Enhertu

US patent proceedings

In October 2020, Seagen Inc. (Seagen) filed a complaint against Daiichi Sankyo Company, Limited in the US District Court for the Eastern District of Texas alleging that *Enhertu* infringes US Patent No. 10,808,039 (the '039 patent). AstraZeneca Pharmaceuticals LP co-commercialises *Enhertu* with Daiichi Sankyo, Inc. (Daiichi Sankyo) in the US. In July 2021, AstraZeneca Pharmaceuticals LP and AstraZeneca UK Limited intervened in the Texas action in support of Daiichi Sankyo. A claim construction hearing took place in August 2021 and a trial has been scheduled for April 2022.

On 23 December 2020, AstraZeneca and Daiichi Sankyo filed a post-grant review petition with the US Patent and Trademark Office alleging, inter alia, that the '039 patent is invalid for lack of written description and enablement. In January 2021, AstraZeneca and Daiichi Sankyo filed a second post-grant review petition with the US Patent and Trademark Office extending its challenge to additional claims in the '039 patent. In June 2021, the US Patent and Trademark Office declined to institute the post-grant reviews. AstraZeneca and Daiichi Sankyo have requested a rehearing of their post-grant review petitions.

In August 2021, AstraZeneca Pharmaceuticals LP and Daiichi Sankyo filed an action against Andrew Hirshfeld, acting in his official capacity as Under Secretary of Commerce, and the US Patent and Trademark Office in the US District Court for the Eastern District of Virginia seeking judicial review of the US Patent Office's discretionary authority to deny institution of post-grant review proceedings.

Ultomiris

US patent proceedings

In November 2018, Chugai Pharmaceutical Co., Ltd. (Chugai) filed a lawsuit against Alexion in the Delaware District Court alleging that *Ultomiris* infringes a US patent held by Chugai. Upon issuance of another US patent in November 2019, Chugai filed a second lawsuit in the same court alleging that *Ultomiris* also infringes the second patent. The two lawsuits were consolidated. Trial scheduled to occur in January 2022 has been postponed until February 2022 due to COVID-19.

Patent proceedings outside the US

In Japan, in December 2018, Chugai Pharmaceutical Co., Ltd (Chugai) filed a lawsuit in the Tokyo District Court against Alexion Pharma GK in Japan and alleges that *Ultomiris* infringes two Japanese patents held by Chugai. Chugai's complaints seek unspecified damages and certain injunctive relief. In March 2020, the Supreme Court of Japan dismissed Chugai's appeal against an earlier IP High Court of Japan decision which held that one of the Chugai patents-in-suit is invalid. Subsequently, Chugai filed a correction to the claims of this patents-in-suit and Alexion has countered that the corrected claims are still invalid and not infringed. In all cases, Alexion has denied the charges and countered that the patents are neither valid nor infringed. In October 2021 the Japanese Patent Office invalidated four Chugai patents, including those asserted in the Tokyo District Court Case. Chugai has appealed the patent office decision.

Product liability litigation

Farxiga and *Xigduo* XR

In several jurisdictions in the US, AstraZeneca has been named as a defendant in lawsuits involving plaintiffs claiming physical injury, including Fournier's Gangrene and necrotising fasciitis, from treatment with *Farxiga* and/or *Xigduo* XR. A majority of these claims are filed in Delaware state court and remain pending.

One case, filed in state court in Minnesota, is scheduled for trial in January 2023.

Byetta/Bydureon

In the US, Amylin Pharmaceuticals, LLC (a wholly owned subsidiary of AstraZeneca) and 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 pancreatic cancer and thyroid 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 coordinated proceeding has been established in Superior Court in Los Angeles, California (the California Court) in regard to the various lawsuits in California state courts. In October and December 2020, the District Court and the California Court jointly heard oral argument on renewed motions filed by Defendants seeking summary judgment and dismissal of all claims alleging pancreatic cancer. In March and April 2021, the District Court and the California Court respectively granted the Defendants' motions, and dismissed all cases alleging pancreatic cancer with prejudice. Plaintiffs have dismissed the appeal as to Amylin Pharmaceuticals, LLC and AstraZeneca. The other claims in both courts, including those alleging thyroid cancer, remain pending.

Onglyza and *Kombiglyze*

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 US District Court for the Eastern District of Kentucky (District Court) for consolidated pre-trial proceedings with the federal actions pending in the District Court. In the previously disclosed California State Court coordinated proceeding, AstraZeneca submitted its motion for summary judgment in December 2021.

Nexium and *Losec/Prilosec*

US proceedings

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 (PPIs), including *Nexium* and *Prilosec*. The vast majority of those lawsuits relate to allegations of kidney injuries. In particular, 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 coordinated 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. A trial in the MDL previously scheduled for January 2022 has been rescheduled to October 2022. In addition to the MDL cases, there are cases filed in several state courts around the US; a trial in Delaware state court previously scheduled for February 2022 is being rescheduled.

In addition, AstraZeneca has been defending lawsuits involving allegations of gastric cancer following treatment with PPIs. One such claim is filed in the US District Court for the Middle District of Louisiana, where the court has scheduled a trial for November 2022.

Canada proceedings

In Canada, in July and August 2017, AstraZeneca was served with three putative class action lawsuits. Two of the lawsuits have been dismissed, one in 2019 and one in 2021. The third lawsuit, filed in Saskatchewan, seeks authorisation to represent individual residents in Canada who allegedly suffered kidney injuries from the use of proton pump inhibitors, including *Nexium* and *Losec*.

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. A trial of the matter was held in February 2020 and post-trial oral argument was heard in August 2020. In November 2020, the Delaware Court of Chancery decided in AstraZeneca's favour and subsequently entered a Final Judgment as to all pending claims in favour of AstraZeneca. In December 2020, the plaintiffs filed an appeal to the Delaware Supreme Court. In October 2021, the Delaware Supreme Court affirmed the Delaware Court of Chancery's decision. This matter is now concluded.

Array BioPharma
In December 2017, AstraZeneca was served with a complaint filed in New York State court by Array BioPharma, Inc. (Array) alleging breaches of contractual obligations relating to a 2003 collaboration agreement between AstraZeneca and Array. In June 2020, an appeal court denied AstraZeneca's motion for an early dismissal of the case, allowing the case to continue towards trial. No trial date has been set.

Ocimum lawsuit
In the US, in December 2017, AstraZeneca was served with a complaint filed by Ocimum Biosciences, Ltd. (Ocimum) in the Superior Court for the State of Delaware that alleged, 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. In February 2021, the Delaware Supreme court affirmed the grant of AstraZeneca's motion for summary judgment. This matter is now concluded.

Seroquel XR (Antitrust Litigation)
In the US in 2019, AstraZeneca was named in several related complaints brought in the US District Court for the Southern District of New York (the Court), including several putative class action lawsuits that were purportedly brought on behalf of classes of direct purchasers or end payors of *Seroquel XR*, that allege AstraZeneca and generic drug manufacturers violated antitrust laws when settling patent litigation related to *Seroquel XR*. In August 2020, the Court granted AstraZeneca's motions to transfer all such lawsuits to the US District Court for the District of Delaware. AstraZeneca has filed motions to dismiss the complaints, which remain pending.

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 (the District Court) by US nationals (or their estates, survivors, or heirs) who were killed or wounded in Iraq between 2005 and 2013. 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. In July 2020, the District Court granted AstraZeneca's and the other defendants' motion and dismissed the lawsuit, and the plaintiffs appealed to the DC Circuit Court of Appeals (the Appellate Court). In January 2022, a panel of the Appellate Court reversed the dismissal and remanded the case back to the District Court. AstraZeneca and the other defendants have filed petitions requesting en banc review by the entire Appellate Court.

AZD1222 Securities litigation
In January 2021, putative securities class action lawsuits were filed in the US District Court for the Southern District of New York against AstraZeneca PLC and certain officers, on behalf of purchasers of AstraZeneca publicly traded securities during the period 21 May 2020 through 20 November 2020. The Court appointed co-lead plaintiffs in April 2021 and they filed an Amended Complaint in July 2021 on behalf of purchasers of AstraZeneca publicly traded securities during the period 15 June 2020 through 29 January 2021. The Amended Complaint alleges that defendants made materially false and misleading statements in connection with the development of AZD1222, AstraZeneca's vaccine for the prevention of COVID-19. In September 2021, AstraZeneca moved to dismiss the Amended Complaint.

Definiens
In Germany, in July 2020, AstraZeneca received a notice of arbitration filed with the German Institution of Arbitration from the sellers of Definiens AG (the Sellers) regarding the 2014 Share Purchase Agreement (SPA) between AstraZeneca and the Sellers. The Sellers claim they are owed approximately $140m in earn-outs under the SPA. AstraZeneca disputes the claims of the Sellers. An oral hearing is scheduled for July 2022.

Alexion shareholder litigation
In March 2021, several shareholders of Alexion Pharmaceuticals, Inc. (Alexion) filed individual lawsuits against Alexion, its management, and/or AstraZeneca and affiliates in federal district court in New York. The complaints generally alleged that the preliminary registration statement filed with the SEC on 19 February 2021, omitted certain allegedly material information in connection with AstraZeneca's proposed acquisition of Alexion (the Acquisition), and one of the complaints further alleged that the Alexion directors breached their fiduciary duties in connection with the Acquisition and that AstraZeneca and the other entity defendants aided and abetted the alleged breaches. In May 2021, all such complaints were withdrawn and dismissed. This matter is now concluded.

PARP inhibitor royalty dispute
In October 2012, Tesaro, Inc. (now wholly owned by GlaxoSmithKline plc, 'GSK') entered into two worldwide, royalty-bearing patent license agreements with AstraZeneca related to GSK's product niraparib. In May 2021, AstraZeneca filed a lawsuit against Tesaro in the Commercial Court of England and Wales alleging that GSK has failed to pay all of the royalties due on niraparib sales under our license agreements. While a case schedule has not yet been set, trial is anticipated in H2 2022.

Portola shareholder litigation
In connection with Alexion's July 2020 acquisition of Portola Pharmaceuticals, Inc. (Portola), Alexion assumed litigation to which Portola is a party. In January 2020, putative securities class action lawsuits were filed in the US District Court for the Northern District of California against Portola and certain officers and directors, on behalf of purchasers of Portola publicly traded securities during the period 8 January 2019 through 26 February 2020. The third amended complaint alleges that defendants made materially false and/or misleading statements or omissions about the demand for *Andexxa*, usage of *Andexxa* by hospitals and healthcare organisations, and about Portola's accounting for its return reserves. In August 2021, the court denied in part defendants' motion to dismiss the case. A trial date has been set for December 2022.

Shareholder litigation – Alexion (US)
In December 2016, putative securities class action lawsuits were filed in the US District Court for the District of Connecticut (the District Court) against Alexion and certain officers and directors, on behalf of purchasers of Alexion publicly traded securities during the period 30 January 2014 through 26 May 2017. The amended complaint alleges that defendants engaged in securities fraud, including by making misrepresentations and omissions in its public disclosures concerning Alexion's *Soliris* sales practices, management changes, and related investigations. In August 2021, the District Court issued a decision denying in part Defendants' motion to dismiss the matter.

Syntimmune
In connection with Alexion's prior acquisition of Syntimmune, Inc. (Syntimmune), a clinical-stage biotechnology company developing an antibody therapy targeting the FcRn, in the US, in December 2020, Alexion was served with a lawsuit filed by the stockholders' representative for Syntimmune in Delaware State Court that alleged, among other things, breaches of contractual obligations relating to the 2018 merger agreement. The stockholders' representative alleges that Alexion failed to meet its obligations under the merger agreement to use commercially reasonable efforts to achieve the milestones, and the plaintiff has requested payment of all milestone obligations. Alexion also filed a claim for breach of the representations in the 2018 merger agreement regarding unusable drug product and drug substance that Alexion acquired from Syntimmune. Trial in the matter is scheduled for November 2022.

30 Commitments and contingent liabilities *continued*

Government investigations/proceedings

Toprol-XL Louisiana Attorney General litigation

In July 2020, the Louisiana First Circuit Court of Appeals (the Appellate Court) reversed and remanded a Louisiana state trial court (the Trial Court) ruling that had granted AstraZeneca's motion for summary judgment and dismissed a state court complaint, brought by the Attorney General for the State of Louisiana (the State), alleging that AstraZeneca engaged in unlawful monopolisation and unfair trade practices in connection with the enforcement of its *Toprol-XL* patents. In August 2020, AstraZeneca petitioned the Louisiana Supreme Court (the Supreme Court) to review the decision of the Appellate Court and reinstate the Trial Court's summary judgment ruling. In April 2021, the Supreme Court granted a motion to dismiss all of the State's claims with prejudice and vacate the decisions of the Trial Court and Appellate Court. This matter is now closed.

Vermont US Attorney Investigation

In April 2020, AstraZeneca received a Civil Investigative Demand from the US Attorney's Office in Vermont and the Department of Justice, Civil Division, seeking documents and information relating to AstraZeneca's relationships with electronic health-record vendors. AstraZeneca is co-operating with this enquiry.

US 340B Litigations and Proceedings

AstraZeneca is involved in several matters relating to its contract pharmacy recognition policy under the 340B Drug Pricing Program in the US. In 2020, three lawsuits were filed by covered entities and advocacy groups against the US Department of Health and Human Services, the US Health Resources and Services Administration as well as other US government agencies and their officials. The complaints allege, among other things, that these agencies should enforce an interpretation of the governing statute for the 340B Drug Pricing Program that would require drug manufacturers participating in the program to offer their drugs for purchase at statutorily capped rates to an unlimited number of contract pharmacies. AstraZeneca has sought to intervene in the lawsuits. Two of the three cases are currently stayed pending further proceedings and the third case has been dismissed. Administrative Dispute Resolution proceedings have also been initiated against AstraZeneca before the US Health Resources and Services Administration.

In February 2021, AstraZeneca received a Civil Investigative Subpoena from the Attorney General's Office for the State of Vermont seeking documents and information relating to AstraZeneca's contract pharmacy recognition policy under the 340B Drug Pricing Program. AstraZeneca has cooperated with the inquiry.

In January 2021, AstraZeneca filed a separate lawsuit in federal court in Delaware alleging that an Advisory Opinion issued by the Department of Health and Human Services violates the Administrative Procedure Act. In June 2021, the Court found in favour of AstraZeneca, invalidating the Advisory Opinion. Prior to the Court's ruling, however, in May 2021, the US government issued new and separate letters to AstraZeneca (and other companies) asserting that our contract pharmacy policy violates the 340B statute. In July 2021, AstraZeneca amended the complaint to include allegations challenging the letter sent in May. In September 2021, the US government issued a follow-up letter to AstraZeneca (and other companies) asserting that it has referred the matter to the Office of Inspector General for further review and consideration. In October 2021, oral arguments were held before the federal court in Delaware challenging the letters sent in May and September.

In September 2021, AstraZeneca was served with a class-action antitrust complaint filed in federal court in New York by Mosaic Health on behalf of a purported class. The complaint alleges that AstraZeneca conspired with Sanofi-Aventis U.S., LLC, Eli Lilly and Company, Lilly USA, LLC, and Novo Nordisk Inc. to restrict access to 340B discounts in the diabetes market through contract pharmacies.

US Congressional

In January 2019, AstraZeneca received a letter from the US House of Representatives Committee on Oversight and Reform (Committee) seeking information related to pricing practices for *Crestor*. Similar letters were sent to 11 other pharmaceutical manufacturers. AstraZeneca cooperated with the inquiry and produced certain responsive information. In December 2021, the Committee issued a final report culminating the Committee's pharmaceutical pricing investigation. AstraZeneca's products are not the subject of the findings in the final report.

European Commission claim regarding AZD1222

In April 2021 and May 2021, the European Commission (acting on behalf of the European Union and its member states) initiated two separate legal proceedings against AstraZeneca AB in the Court of First Instance in Brussels. Both proceedings related to an Advance Purchase Agreement between the parties dated 27 August 2020 (the APA) for the supply of AZD1222. The allegations include claims that AstraZeneca has failed to meet certain of its obligations under the APA and the European Commission was seeking, among other things, a Court order to compel AstraZeneca to supply a specified number of doses before the end of the second quarter of 2021. In June 2021, the Court issued a decision in the first proceeding finding that AstraZeneca did not meet its Best Reasonable Efforts obligation in the APA because AstraZeneca did not use all of the manufacturers listed in the APA to supply the member states. The Court ordered AstraZeneca to provide an additional 50 million doses of vaccine by the end of September 2021, which AstraZeneca exceeded by the end of June 2021. The Court denied the remainder of the Commission's claims and requested relief.

In September 2021, the parties reached an agreement to resolve the dispute. This matter is now concluded.

COVID-19 Vaccine Supply and Manufacturing Inquiries

In June 2021, Argentina's Federal Criminal Prosecutor's Office (the Prosecutor) contacted AstraZeneca Argentina seeking documents and electronic records in connection with a local criminal investigation relating to the public procurement and supply of *Vaxzevria* in that country. In October 2021, the Prosecutor filed a submission with the presiding court requesting dismissal of the criminal investigation. The request remains pending.

Tagrisso

In India, in June 2021, the National Pharmaceutical Pricing Authority (NPPA) issued a demand notice (Demand Notice) to AstraZeneca Pharma India Limited (AZPIL), regarding the pricing of *Tagrisso*. The NPPA has alleged that AZPIL has overcharged *Tagrisso*, claiming approximately $21m plus interest. AZPIL has challenged the Demand Notice in the Delhi High Court.

Turkish Ministry of Health matter

In Turkey, in July 2020, the Turkish Ministry of Health initiated an investigation regarding payments to healthcare providers by Alexion Turkey and former employees and consultants. The investigation arose from Alexion's disclosure of a civil settlement with the US Securities & Exchange Commission (SEC) in July 2020 fully resolving the SEC's investigation into possible violations of the FCPA. Alexion neither admitted nor denied any wrongdoing in connection with the settlement but paid $21.5 million to the SEC, consisting of amounts attributable to disgorgement, civil penalties, and pre-judgment interest. AstraZeneca is cooperating with the investigation by the Turkish agency. In September 2021, the Ministry of Health completed its draft investigation report, and referred the matter to the Ankara Public Prosecutor's Office with a recommendation for further proceedings against certain former employees.

Canadian pricing matter

In October 2017, Alexion filed proceedings in the Federal Court of Canada to seek judicial review of a determination by the Canadian Patented Medicine Prices Review Board (PMPRB) that Alexion had excessively priced *Soliris* in a manner inconsistent with the Canadian pricing rules and guidelines. In its decision, the PMPRB ordered Alexion to decrease the price of *Soliris* to an upper limit based upon pricing in certain other countries and to forfeit excess revenues for the period between 2009 and 2017. In May 2019, the Federal Court dismissed Alexion's application. Alexion appealed the decision to the Canadian Federal Court of Appeal. On 29 July 2021, the Federal Court of Appeal of Canada issued its judgment allowing the appeal, reversing the PMPRB's decision and remitting the matter to the PMPRB for re-determination with costs to AstraZeneca. In September 2021, the Attorney General of Canada sought leave to appeal the decision to the Supreme Court of Canada. Pursuant to an order made by the Federal Court of Canada, as of August 2021, AstraZeneca has placed approximately $71.4m in escrow pending the final resolution of all appeals in this matter.

Brazilian operations investigation

In May 2017, Brazilian authorities seized records and data from Alexion's São Paulo, Brazil offices as part of an investigation being conducted into Alexion's Brazilian operations. AstraZeneca are cooperating with this inquiry.

Brazilian tax assessment matter

In connection with an ongoing matter, in August 2019, the Brazilian Federal Revenue Service provided a Notice of Tax and Description of the Facts (the Tax Assessment) to two Alexion subsidiaries (the Brazil Subsidiaries), as well as to two additional entities, a logistics provider utilized by Alexion and a distributor. The Tax Assessment focuses on the importation of *Soliris* vials pursuant to Alexion's free drug supply to patients program (referred to as Global Access to Medicines, or GATM) in Brazil. In September 2019, the Brazil Subsidiaries filed defences to the Tax Assessment disputing the basis for liability under the Tax Assessment, based on, among others, the following: in connection with the operation of GATM, during the period from September 2014 to June 2019: (i) the importers responsible for the importation of the GATM *Soliris* vials into Brazil were correctly identified and (ii) the correct customs value was utilised for the purpose of importing the GATM *Soliris* vials provided to the patients free of charge. Alexion prevailed in the first level of administrative appeals in the Brazilian federal administrative proceeding system based on a deficiency in the Brazil Tax Assessment. The decision was subject to an automatic (ex officio) appeal to the second level of the administrative courts, which is pending. There are three separate levels of administrative appeals within the Brazilian federal administrative proceeding system and, if the outcome of these administrative appeals is unfavourable, the final decision of the federal administrative proceeding system can be disputed to the federal court systems in Brazil (at this time, AstraZeneca intends to appeal the Tax Assessment if it is not overturned in the course of administrative appeals). Given the early stage of these proceedings, AstraZeneca is unable to predict the duration, scope or outcome of this matter, but we expect that a final resolution will take three years or more. While it is possible that a loss related to the Tax Assessment may be incurred, given its ongoing nature, we cannot reasonably estimate the potential magnitude of any such possible loss or range of loss, or the cost of the ongoing administrative appeals (and potential appeals to the federal court system) of the Tax Assessment. Any determination that any aspects of the importation of free of charge medications into Brazil as set forth in the Tax Assessment are not, or were not, in compliance with existing laws or regulations could result in the imposition of fines, civil penalties and, potentially criminal penalties, and/or other sanctions against the Group, and could have an adverse impact on the Group's Brazilian operations.

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

SE AstraZeneca considers whether it is probable that a taxation authority will accept an uncertain tax treatment. If it is concluded that it is not probable that the taxation authority will accept an uncertain tax treatment, where tax exposures can be quantified, an accrual is made based on either the most likely amount method or the expected value method depending on which method management expects to better predict the resolution of the uncertainty. 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. Details of the movements in relation to material tax exposures are discussed below.

KJ 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 key judgements with respect to the ultimate outcome of current and potential future tax audits, 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 $77m (2020: $287m; 2019: $140m), a decrease of $210m compared with 2020 mainly as a result of reduction of tax liabilities arising from updates to estimates of prior period tax liabilities following settlements with tax authorities. These positions can be complex and judgemental. Therefore in determining the accrual, management has assessed their expectation of the ultimate resolution of the uncertainty, including settlement or litigation.

Management continues to believe that AstraZeneca's positions on all its transfer pricing and other international tax audits and disputes are robust, and that AstraZeneca is appropriately provided, including consideration of whether corresponding relief will be available under Mutual Agreement procedures or unilaterally.

HMRC communicated to the Group that they do not consider that the Group is a beneficiary of state aid following the European Commission's (EC) decision on the state aid review of UK Controlled Foreign Company Group Financing Exemption therefore this matter is now closed.

For transfer pricing and other international tax matters where AstraZeneca and the tax authorities are in dispute, AstraZeneca estimates the potential for additional liabilities above the amount provided where the possibility of the additional liabilities falling due is more than remote, to be up to $48m (2020: $251m; 2019: $76m) including associated interest. Management believes that it is unlikely that these additional liabilities will arise. It is possible that some of these contingencies may change in the future to reflect progress in tax authority reviews, to the extent that any tax authority challenge is concluded, or matters lapse including following expiry of the relevant statutes of limitation resulting in a reduction in the tax charge in future periods.

30 Commitments and contingent liabilities *continued*

Other tax contingencies

Included in the tax accrual is $691m (2020: $727m; 2019: $887m) relating to a number of other tax contingencies, a decrease of $36m mainly due to releases of tax contingencies following the expiry of the relevant statute of limitations and on the conclusion of tax authority review and exchange rate effects, partially offset by the inclusion of provisions for tax contingencies relating to Alexion. The majority of the accrual relates to tax contingencies which are estimated using the expected value method and depend on AstraZeneca's assessment of the likelihood of the approach taken by the tax authorities and could change in the future to reflect progress in tax authority reviews, the extent that any tax authority challenge is concluded, or matters lapse including following expiry of the relevant statutes of limitation resulting in a reduction in the tax charge in future periods.

For these other tax contingencies, AstraZeneca estimates the potential for additional liabilities above the amount provided where the possibility of the additional liabilities falling due is more than remote, to be up to $598m (2020: $517m; 2019: $327m) including associated interest. It is possible that some of these contingencies may reduce in the future if any tax authority challenge is concluded or matters lapse following expiry of the relevant statutes of limitation, resulting in a reduction in the tax charge in future periods.

Timing of cash flows and interest

It is not possible to estimate the timing of tax cash flows in relation to each outcome. It is anticipated that tax payments may be required in relation to a number of significant disputes which may be resolved over the next one to two years. AstraZeneca considers the accruals set out above to appropriately reflect the expected value of any final settlement. Some of the items discussed above are not currently within the scope of tax authority audits and may take longer to resolve.

Included within other receivables and payables is a net amount of interest arising on tax contingencies of $85m (2020: $82m; 2019: $90m).

31 Statutory and other information

	2021 $m	2020 $m	2019 $m
Fees payable to PricewaterhouseCoopers LLP and its associates:			
Group audit fee	**10.5**	6.3	3.9
Fees payable to PricewaterhouseCoopers LLP and its associates for other services:			
The audit of subsidiaries pursuant to legislation	**15.2**	10.8	8.3
Attestation under s404 of Sarbanes-Oxley Act 2002	**2.0**	2.0	2.0
Audit-related assurance services	**4.5**	0.7	0.3
Other assurance services	**3.4**	0.2	0.1
Fees payable to PricewaterhouseCoopers Associates in respect of the Group's pension schemes:			
The audit of subsidiaries' pension schemes	**0.3**	0.3	0.3
	35.9	20.3	14.9

$0.4m of fees payable in 2021 are in respect of the Group audit and audit of subsidiaries related to prior years (2020: $0.8m in respect of the 2019 Group audit and audit of subsidiaries).

$0.3m of audit fees and $0.7m of Audit-related and Other assurance services relate to pre-acquisition fees incurred by Alexion.

Included in Audit-related and Other assurance services are $6.1m of services provided in relation to the acquisition of Alexion and related debt issuance.

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.

	2021 $'000	2020 $'000	2019 $'000
Short-term employee benefits	**32,985**	29,126	31,329
Post-employment benefits	**1,378**	1,602	1,766
Share-based payments	**45,234**	27,666	19,210
	79,597	58,394	52,305

Total remuneration is included within employee costs (see Note 29).

32 Subsequent events

On 4 January 2022, AstraZeneca completed the sale of the global rights to *Tudorza* and *Duaklir* to Covis Pharma GmbH for an upfront payment of $270m, which will be recorded within Other operating income and expense. The intangible assets of $368m associated with this transaction were classified as Assets held for sale as at 31 December 2021 (Note 18).

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 2021 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 2021.

At 31 December 2021	Group Interest
Wholly owned subsidiaries	
Algeria	
AAPM Sarl	100%
20 Zone Macro-Economique, Hydra, Dar El Medina, Algiers, Algeria	
Argentina	
AstraZeneca S.A.	100%
Nicolas de Vedia 3616, Piso 8, Ciudad Autónoma de Buenos Aires, Argentina	
Alexion Pharma Argentina SRL	100%
Avenida Leandro N. Alem 592 Piso 6, Buenos Aires, Argentina	
Australia	
AstraZeneca Holdings Pty Limited	100%
AstraZeneca PTY Limited	100%
66 Talavera Road, Macquarie Park, NSW 2113, Australia	
Alexion Pharmaceuticals Australasia Pty Ltd	100%
Building A Suite 401 Level 4, 20 Rodborough Road, Frenchs Forest, NSW 2086, Australia	
Austria	
AstraZeneca Österreich GmbH	100%
Landstraßer Hauptstraße 1A, A-1030 Wien, Österreich	
Alexion Pharma Austria GmbH	100%
Donau-City-Straße 7, 30. Stock, DC Tower, Vienna 1220, Austria	
Belgium	
AstraZeneca S.A. / N.V.	100%
Alfons Gossetlaan 40 bus 201 at 1702 Groot-Bijgaarden, Belgium	
Alexion Pharma Belgium Sprl	100%
Alexion Services Europe Srl	100%
de Meeûssquare 37 Bruxelles 1000 Belgium	
Bermuda	
Alexion Bermuda Holding ULC	100%
Alexion Bermuda Limited	100%
Canon's Court, 22 Victoria St., Hamilton, Bermuda	

At 31 December 2021	Group Interest
Brazil	
AstraZeneca do Brasil Limitada	100%
Rod. Raposo Tavares, KM 26, 9, Cotia, Brazil	
Alexion Farmacêutica América Latina Serviços de Administração de Vendas Ltda.	100%
Alexion Farmacêutica Brasil Importação e Distribuição de Produtos e Serviços de Administração de Vendas Ltda	100%
Avenida Dr. Chucri Zaidan, 1240, 15th floor, Morumbi Corporate Golden Tower, São Paulo, SP, 04711-130, 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	
Alexion Pharma Canada Corporation	100%
1300-1969 ST, Upper Water, Halifax, NS B3J3R7, 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, Jiangsu Province, China	
AstraZeneca (Wuxi) Trading Co. Ltd	100%
Building E, Huirong Plaza, Jinghui Road East, Xinwu District, Wuxi, Jiangsu Province, China	
AstraZeneca Investment (China) Co., Ltd	100%
199 Liangjing Road, China (Shanghai) Pilot Free Trade Zone, Shanghai, China	
AstraZeneca Pharmaceutical (China) Co. Ltd	100%
No. 9 Medical Avenue, Jiangsu Province, Taizhou, China	
AstraZeneca Pharmaceutical (Beijing) Co., Ltd	100%
1F, Building No.4, No.8 Courtyard, No.1 Kegu Street, Beijing Economic-Technological Development Area, Beijing 100176, China	

At 31 December 2021	Group Interest
AstraZeneca (Guangzhou) Pharmaceutical Consulting Co., Ltd.	100%
Room 406-178, No. 1, Yichuang Street, (China-Singapore Guangzhou Knowledge City) Huangpu District, Guangzhou City, China	
AstraZeneca Investment Consulting (Wuxi) Co., Ltd	100%
Room 808, 8F, Building 99-2 Linghu Avenue, Xinwu District, Wuxi, Jiangsu, China	
AstraZeneca Pharmaceutical (Hangzhou) Co., Ltd	100%
12F & 14F, Building 1, Shuli Plaza, 758 Fei Jia Tang Road, Gongshu District, Hangzhou, Zhejiang Province, China	
AstraZeneca Global R&D (China) Co., Ltd	100%
16F, 88 Xizang North Road, Jing'an District, Shanghai, China	
AstraZeneca Pharmaceutical (Chengdu) Co., Ltd.	100%
10th Floor, Building 11 (Building E11), No. 366, Hemin Street, Chengdu High-tech Zone, China (Sichuan) Pilot Free Trade Zone	
AstraZeneca Pharmaceutical (Shanghai) Co., Ltd	100%
B1F, 8F & 9F, 88 Xizang North Road, Jing'an District, Shanghai, China	
Alexion Pharmaceuticals (Shanghai) Company Limited	100%
Room 702, Level, No. 1539 West Nanjing Road, Jing'an District, Shangai, China	
Colombia	
AstraZeneca Colombia S.A.S.	100%
Carrera 7 No. 71-21, Torre A, Piso 19, Bogota, D.C., Colombia	
Alexion Pharma Colombia S.A.S.	100%
Carrera 9 No. 115 – 06 /30 Edificio Tierra Firme Oficina 2904 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	
Alexion Pharma Czech s.r.o.	100%
Novodvorská 994/138, Braník, 142 00 Prague, Czech Republic	

Group Subsidiaries and Holdings
continued

At 31 December 2021	Group Interest
Denmark	
AstraZeneca A/S	100%
World Trade Center Ballerup, Borupvang 3, DK- 2750 Ballerup, Denmark	
Egypt	
AstraZeneca Egypt for Pharmaceutical Industries SAE	100%
6th of October City, 6th Industrial Zone, Plot 2, Giza, Egypt	
AstraZeneca Egypt LLC	100%
47 St. 270 New Maadi, Maddi, Cairo, Egypt	
Drimex LLC	100%
Plot 133, Banks' District, 5th Settlement, New Cairo, Cairo, 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%
Tour Carpe Diem-31, Place des Corolles, 92400 Courbevoie, France	
AstraZeneca Dunkerque Production SCS	100%
224 Avenue de la Dordogne, 59640 Dunkerque, France	
AstraZeneca Reims Production	100%
Chemin de Vrilly Parc, Industriel de la Pompelle, 51100, Reims, France	
Alexion Europe S.A.S.	100%
Alexion Pharma France S.A.S.	100%
103-105 Rue Anatole France 92300 Levallois-Perret	
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	
AstraZeneca Computational Pathology GmbH[2]	100%
Bernhard-Wicki-Straße 5, 80636, Munich, Germany	
Portola FRG GmbH	100%
Fraunhoferstraße 12Planegg 82152 Germany	
Alexion Pharma Germany GmbH	100%
Landsberger Straße 300, 80687 Munich, Germany	
Greece	
AstraZeneca S.A.	100%
Agisilaou 6-8 str., Marousi-Athens, 15123, Greece	

At 31 December 2021	Group Interest
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	
Alexion Business Services Private Limited	100%
9th Floor, Platina, G BlockPlot No. C-59, Bandra-Kurla Complex Bandra (East), Mumbai 400051 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	
Alexion Pharma Holding UC	100%
Alexion Pharma International Operations UC	100%
Alexion Pharma Development UC	100%
College Business & Technology Park, Blanchardstown Road, North Dublin 15, Ireland	
Israel	
AstraZeneca (Israel) Ltd	100%
6 Hacharash St., Hod Hasharon, 4524075, Israel	
Alexion Pharma Israel Ltd	100%
4 Weizmann Str., Tel-Aviv-Jaffa, Israel	
Italy	
Simesa SpA	100%
AstraZeneca SpA	100%
Viale Decumano 39 20157 Milan, Italy	
Alexion Pharma Italy Srl	100%
Via Melchiorre Gioia 8 Milano 20124, Italy	
Japan	
AstraZeneca K.K.	100%
Grand Front Osaka Tower B, 3-1, Ofuka-cho, Kita-ku, Osaka, 530-0011, Japan	
Alexion Pharma GK	100%
Ebisu First Square, 18-14, Ebisu 1-chome, Shibuya-ku, Tokyo, Japan	
Kenya	
AstraZeneca Pharmaceuticals Limited	100%
L.R. No.1/1327, Avenue 5, 1st Floor, Rose Avenue, Nairobi, Kenya	

At 31 December 2021	Group Interest
Latvia	
AstraZeneca Latvija SIA	100%
Skanstes iela 50, Riga, LV-1013, Latvia	
Lithuania	
AstraZeneca Lietuva UAB	100%
Spaudos g., Vilnius, LT-05132, Lithuania	
Luxembourg	
AstraZeneca Luxembourg S.A.	100%
Rue Nicolas Bové 2A – L-1253 Luxembourg	
Malaysia	
AstraZeneca Asia-Pacific Business Services Sdn Bhd	100%
12th Floor, Menara Symphony, No. 5 Jalan Prof, Khoo Kay Kim, Seksyen 13, 46200 Petaling Jaya, Selangor Darul Ehsan, Malaysia	
AstraZeneca Sdn Bhd	100%
Nucleus Tower, Level 11 & 12, No. 10 Jalan PJU 7/6, Mutiara Damansara, 47800 Petaling Jaya, Selangor Darul Ehsan, Malaysia	
Mexico	
AstraZeneca Health Care Division, S.A. de C.V.	100%
AstraZeneca, S.A. de C.V.	100%
Av. Periferico Sur 4305 interior 5, Colonia Jardines en la Montaña, Mexico City, Tlalpan Distrito Federal, CP 14210, Mexico	
Alexion Pharma Mexico S. de R.L. de C.V.	100%
Paseo de los Tamarindos 90 Torre 1piso 6 – ACol. Bosques de la Lomas CP 05120 D.F 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%
Alexion Holding B.V.	100%
Alexion Pharma Foreign Holdings, B.V.	100%
Prinses Beatrixlaan 582, 2595BM, The Hague, The Netherlands	
AstraZeneca Nijmegen B.V.	100%
Lagelandseweg 78, 6545 CG Nijmegen, The Netherlands	
Acerta Pharma B.V.	100%
Aspire Therapeutics B.V.	100%
Kloosterstraat 9, 5349 AB, Oss, The Netherlands	

At 31 December 2021	Group Interest
Portola Netherlands B.V.	100%
Prins Bernhardplein 200 JB Amsterdam 1097, The Netherlands	
Alexion Pharma Netherlands B.V.	100%
Herengracht 282 Amsterdam 1016 BX, 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	
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%
Calle Las Orquídeas No. 675, Int. 802, Edificio Pacific Tower, San Isidro, 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, Unipessoal 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	

At 31 December 2021	Group Interest
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%
249006, 1st Vostochniy proyezd, 8, Dobrino village, Borovskiy district, Russian Federation	
AstraZeneca Pharmaceuticals, LLC	100%
Building 1, 21 First Krasnogvardeyskiy lane, floor 30, Moscow, Russia	
Alexion Pharma OOO LLC	100%
4th Lesnoy Pereulok, Floor 5, Office 529, Moscow, 125047, Russian Federation.	
Singapore	
AstraZeneca Singapore Pte Limited	100%
10 Kallang Avenue #12-10, Aperia Tower 2, 339510, Singapore	
South Africa	
AstraZeneca Pharmaceuticals (Pty) Limited	100%
17 Georgian Crescent West, Northdowns Office Park, Bryanston, 2191, South Africa	
South Korea	
AstraZeneca Korea Co. Ltd	100%
21st Floor, Asem Tower, 517, Yeongdong-daero, Gangnam-gu, Seoul, 06164, South Korea	
Alexion Pharma Korea LLC	100%
41 FL., 152 Teheran-ro (Yeoksam-dong Gangnam Finance Center), Gangnam-gu, Seoul, South Korea	
Spain	
AstraZeneca Farmaceutica Holding Spain, S.A.	100%
AstraZeneca Farmaceutica Spain S.A.	100%
Fundación AstraZeneca	100%
Laboratorio Beta, S.A.	100%
Laboratorio Lailan, S.A.	100%
Laboratorio Tau S.A.	100%
Parque Norte, Edificio Álamo, C/Serrano Galvache no 56., 28033 Madrid, Spain	
Alexion Pharma Spain S.L.	100%
Av Diagonal Num. 601 P.1 Barcelona 08028, 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	

At 31 December 2021	Group Interest
Aktiebolaget Hassle	100%
Symbicom Aktiebolag[6]	100%
431 83 Molndal, Sweden	
Astra Tech International Aktiebolag	100%
Box 14, 431 21 Molndal, Sweden	
Alexion Pharma Nordics Holding AB	100%
Alexion Pharma Nordics AB	100%
TTM Europe Development AB	100%
Wilson Therapeutics AB	100%
Wilson Therapeutics Incentive AB	100%
Kungsgatan 3, 111 43 Stockholm, Sweden	
Switzerland	
AstraZeneca AG	100%
Neuhofstrasse 34, 6340 Baar, Switzerland	
Spirogen Sarl[6]	100%
Rue du Grand-Chêne 5, CH-1003 Lausanne, Switzerland	
Portola Schweiz GmbH	100%
c/o Tom Schaffner Schärer Rechtsanwälte Hintere Bahnhofstrasse 6, 5000 Aarau, Switzerland	
Alexion Pharma GmbH	100%
Giesshübelstrasse 30, Zürich, 8045, Switzerland	
Taiwan	
AstraZeneca Taiwan Limited	100%
21st Floor, Taipei Metro Building 207, Tun Hwa South Road, SEC 2 Taipei, Taiwan	
Alexion Pharma Taiwan Ltd	100%
Room 1153, 11F, No.1, SongZhi Rd Taipei, 11047 Taiwan	
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 No. 1.5.5 les jardins du lac, bloc B les berges du lac Tunis, Tunisia	
Turkey	
AstraZeneca Ilac Sanayi ve Ticaret Limited Sirketi	100%
YKB Plaza, B Blok, Kat:3-4, Levent/ Besiktas, Istanbul, Turkey	
Zeneca Ilac Sanayi Ve Ticaret Anonim Sirketi	100%
Büyükdere Cad., Y.K.B. Plaza, B Blok, Kat:4, Levent/Besiktas, Istanbul, Turkey	
Alexion Ilac Ticaret Limited Sirketi	100%
Içerenköy Mahallesi Umut Sok. AND Ofis Sit. No. 1012/73 Atasehir Istanbul, Turkey	
Ukraine	
AstraZeneca Ukraina LLC	100%
54 Simi Prakhovykh street, Kiev, 01033, Ukraine	

Group Subsidiaries and Holdings
continued

At 31 December 2021	Group Interest
United Arab Emirates	
AstraZeneca FZ-LLC	100%
P.O. Box 505070, Block D, Dubai Healthcare City, Oud Mehta Road, Dubai, United Arab Emirates	
Alexion Pharma Middle East FZ-LLC	100%
Dubai Science Park, 501, Floor 5, EIB Building No. 2, 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	
Syntimmune Limited	100%
21 Holborn Viaduct, London, EC1A 2DY, United Kingdom	
Alexion Pharma UK Limited	100%
Portola Pharma UK Limited	100%
3 Furzeground Way, Stockley Park, Uxbridge, Middlesex, UB11 1EZ, United Kingdom	

At 31 December 2021	Group Interest
United States	
Amylin Ohio LLC[7]	100%
Amylin Pharmaceuticals, LLC[7]	100%
AstraZeneca Collaboration Ventures, LLC[7]	100%
AstraZeneca Pharmaceuticals LP[8]	100%
Atkemix Nine Inc.	100%
Atkemix Ten Inc.	100%
BMS Holdco, Inc.	100%
Corpus Christi Holdings Inc.	100%
Omthera Pharmaceuticals, Inc.	100%
Optein, Inc.	100%
Stauffer Management Company LLC[7]	100%
Zeneca Holdings Inc.	100%
Zeneca Inc.	100%
Zeneca Wilmington Inc.[5]	100%
AstraZeneca Finance LLC	100%
AstraZeneca Finance and Holdings 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[7]	100%
333 Parkland Plaza, Suite 5, Ann Arbor, MI 48103, 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, LLC[7]	100%
MedImmune Ventures, Inc.	100%
One MedImmune Way, Gaithersburg, MD 20878, United States	
Pearl Therapeutics, Inc.	100%
200 Cardinal Way, Redwood City, CA 94063, United States	
Caelum Biosciences Inc.	100%
1200 Florence Columbus Road, Bordentown, NJ 08505, United States	
Alexion Services Latin America Inc.	100%
600 Brickell Ave, Miami, FL 33131, United States	
Portola USA, Inc.	100%
Portola Pharmaceuticals LLC	100%
270 East Grand Avenue, South San Francisco, CA 94080, United States	
Achillion Pharmaceuticals, Inc.	100%
Alexion Delaware Holding LLC	100%
Alexion Holding LLC	100%
Alexion Pharma LLC	100%
Alexion Pharmaceuticals, Inc.	100%
Syntimmune, Inc.	100%
Alexion US Holdings LLC	100%
Alexion US1 LLC	100%
Savoy Therapeutics Corp	100%
Wilson Therapeutics USA, Inc.	100%
121 Seaport Boulevard, Boston, MA 02210, United States	

At 31 December 2021	Group Interest
Acerta Pharma LLC[7]	100%
121 Oyster Point Boulevard, South San Francisco, CA 94080, United States	
Cider Merger Sub, Inc.	100%
1209 Orange Street, City of Wilmington, County of New Castle, Delaware 19801, United States	
Uruguay	
AstraZeneca S.A.	100%
Yaguarón 1407 of 1205, 11.100, 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 2021	Group Interest
Subsidiaries where the effective interest is less than 100%	
India	
AstraZeneca Pharma India Limited[3]	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	
Joint Ventures	
Hong Kong	
WuXi MedImmune Biopharmaceutical Co., Limited	50%
Room 1902, 19/F, Lee Garden One, 33 Hysan Avenue, Causeway Bay, Hong Kong	
IHP HK Holdings Limited	50%
Unit 5805, 58/F., Two International Finance Centre 8 Finance Street, Central, Hong Kong	
United Kingdom	
Archigen Biotech Limited[9]	50%
Centus Biotherapeutics Limited[9]	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	

At 31 December 2021	Group Interest
Significant Holdings	
Australia	
Armaron Bio Ltd[10]	24.60%
MPR Group, HWT Tower, Level 19, 40 City Rd, Southbank, VIC 3006, Australia	
China	
Dizal (Jiangsu) Pharmaceutical Co., Ltd.[11]	26.95%
199 Liangjing Rd, Zhangjiang Hi-Tech Park, Pudong District, Shanghai, China, 201203	
Wuxi AstraZeneca-CICC Venture Capital Partnership (Limited Partnership)	22.13%
Room 808, 8F, Building 99-2 Linghu Avenue, Xinwu District, Wuxi, Jiangsu, China	
United Kingdom	
Apollo Therapeutics LLP[7]	25%
Stevenage Biosciences Catalyst, Gunnels Wood Road, Stevenage, Hertfordshire, SG1 2FX, United Kingdom	
VaxEquity[14]	40%
The Mansion, Chesterford Research Park, Little Chesterford, Essex, CB10 1XL, United Kingdom	
United States	
C.C. Global Chemicals Company[8]	37.5%
PO Box 7, MS2901, Texas, TX76101-0007, United States	

At 31 December 2021	Group Interest
Associated Holdings	
France	
Medetia SAS[9]	10%
Institute Imagine 24, Boulevard du Montparnasse 75015, Paris, France	
Sweden	
Swedish Orphan Biovitrum AB (publ)	9.9%
Tomtebodavägen 23A, Stockholm, Sweden	
Ondosis[6]	19.9%
BioVentureHub, Pepparedsleden 1, 431 83 Mölndal, Sweden	
United Kingdom	
Circassia Pharmaceuticals PLC	17%
Northbrook House, Robert Robinson Avenue, Oxford Science Park, Oxford, OX4 4GA, United Kingdom	
United States	
AbMed Corporation[12]	18%
68 Cummings Park Drive, Woburn, MA 01801, United States	
Aristea Therapeutics, Inc.[13]	11.85%
122770 High Bluff Drive, #380, San Diego, CA 92130, United States	
Baergic Bio, Inc.	19.95%
2 Gansevoort Street, 9th Floor, New York, NY 10014, United States	
Employee Benefit Trust	
The AstraZeneca Employee Benefit Trust	

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 as membership interest.
8 Ownership held as partnership interest.
9 Ownership held in class A preference shares.
10 Ownership held in class B preference shares.
11 Voting rights and percentages vary depending on the subject matter and business to be voted on.
12 Ownership held in common shares and series A preferred shares.
13 Ownership held in series A-1 preferred stock and series B preferred stock.
14 Ownership held in series A preferred stock.

Company Balance Sheet
at 31 December

AstraZeneca PLC

	Notes	2021 $m	2020 $m
Fixed assets			
Fixed asset investments	1	**65,624**	33,268
Other receivables		**–**	4
		65,624	33,272
Current assets			
Debtors – other		**9**	26
Debtors – amounts owed by Group undertakings		**6,321**	7,011
		6,330	7,037
Creditors: Amounts falling due within one year			
Other payables	3	**(198)**	(192)
Interest-bearing loans and borrowings	2	**(1,249)**	(1,535)
		(1,447)	(1,727)
Net current assets		**4,883**	5,310
Total assets less current liabilities		**70,507**	38,582
Creditors: Amounts falling due after more than one year			
Amounts owed to Group undertakings	2	**(283)**	(283)
Interest-bearing loans and borrowings	2	**(20,781)**	(17,161)
Other payables	3	**(32)**	–
		(21,096)	(17,444)
Net assets		**49,411**	21,138
Capital and reserves			
Called-up share capital	4	**387**	328
Share premium account		**35,126**	7,971
Capital redemption reserve		**153**	153
Other reserves		**2,182**	2,382
Profit and loss account		**11,563**	10,304
Shareholders' funds		**49,411**	21,138

$m means millions of US dollars.

The Company's profit for the year was $5,141m (2020: $1,974m).

The Company Financial Statements from pages 202 to 208 were approved by the Board and were signed on its behalf by

Pascal Soriot
Director
10 February 2022

Aradhana Sarin
Director

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[1] $m	Profit and loss account[2] $m	Total equity $m
At 1 January 2020	328	7,941	153	2,441	11,998	22,861
Total comprehensive income for the period						
Profit for the period	–	–	–	–	1,974	1,974
Total comprehensive income for the period	–	–	–	–	1,974	1,974
Transactions with owners, recorded directly in equity						
Dividends	–	–	–	–	(3,668)	(3,668)
Capital contributions for share-based payments	–	–	–	(59)	–	(59)
Issue of Ordinary Shares	–	30	–	–	–	30
Total contributions by and distributions to owners	–	30	–	(59)	(3,668)	(3,697)
At 31 December 2020	328	7,971	153	2,382	10,304	21,138
Total comprehensive income for the period						
Profit for the period	**–**	**–**	**–**	**–**	**5,141**	**5,141**
Total comprehensive income for the period	**–**	**–**	**–**	**–**	**5,141**	**5,141**
Transactions with owners, recorded directly in equity						
Dividends	**–**	**–**	**–**	**–**	**(3,882)**	**(3,882)**
Capital contributions for share-based payments	**–**	**–**	**–**	**(200)**	**–**	**(200)**
Issue of Ordinary Shares	**59**	**27,155**	**–**	**–**	**–**	**27,214**
Total contributions by and distributions to owners	**59**	**27,155**	**–**	**(200)**	**(3,882)**	**23,132**
At 31 December 2021	**387**	**35,126**	**153**	**2,182**	**11,563**	**49,411**

[1] The Other reserves arose from the cancellation of £1,255m share premium by the Company in 1993 and the redenomination of share capital of $157m in 1999. Included within Other reserves at 31 December 2021 is $341m (31 December 2020: $541m) in respect of cumulative share-based payment awards, which are not available for distribution.

[2] At 31 December 2021, the Profit and loss account reserve of $11,563m (31 December 2020: $10,304m) was available for distribution, subject to filing these Financial Statements with Companies House. When making a distribution to shareholders, the Directors determine profits available for distribution by reference to guidance on realised and distributable profits under the Companies Act 2006 issued by the Institute of Chartered Accountants in England and Wales and the Institute of Chartered Accountants of Scotland in April 2017. The profits of the Company have been received in the form of receivables due from subsidiaries. The availability of distributable reserves in the Company is dependent on those receivables meeting the definition of qualifying consideration within the guidance, and in particular on the ability of subsidiaries to settle those receivables within a reasonable period of time. The Directors consider that, based on the nature of these receivables and the available cash resources of the Group and other accessible sources of funds, at 31 December 2021, all (31 December 2020: all) of the Company's profit and loss reserves were available for distribution.

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 UK (UK-adopted International Accounting Standards), but made amendments where necessary in order to comply with the Companies Act 2006 and to take advantage of FRS 101 disclosure exemptions.

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 134 to 201) 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 Instruments: Disclosures'.

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

UK-adopted International Accounting Standards

On 31 December 2020, EU-adopted IFRS was brought into UK law and became UK-adopted International Accounting Standards, with future changes to IFRS being subject to endorsement by the UK Endorsement Board. In preparing these financial statements in accordance with FRS 101, the Company Financial Statements transitioned to UK-adopted International Accounting Standards (as described above) on 1 January 2021. There is no impact on recognition, measurement or disclosure in the period reported as a result of this change.

Basis of accounting

The Company Financial Statements are prepared under the historical cost convention and on a going concern basis, in accordance with the Companies Act 2006.

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

Estimates and judgements

The preparation of the Company 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. There are no key judgements or significant estimates.

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 Finance expense. Exchange differences on all other foreign currency transactions are recognised in 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 accepted by the authorities. This is based upon management's interpretation of applicable laws and regulations and the expectation of how the tax authority will resolve the matter. Once considered probable of not being accepted, management reviews each material tax benefit and reflects the effect of the uncertainty in determining the related taxable result.

Accruals for tax contingencies are measured using either the most likely amount or the expected value amount depending on which method the Company expects to better predict the resolution of the uncertainty.

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.

Debtors
Amounts owed by Group undertakings are recognised initially at fair value. Subsequent to initial recognition they are measured at amortised cost using the effective interest method, less any impairment losses.

The recoverability of these balances has been assessed in accordance with IFRS 9 and no impairment has been identified. The amounts owed by Group undertakings are considered to have low credit risk, due to timely payment of interest and settlement of principal amounts on agreed due dates, limiting the loss allowance to 12-month expected credit losses.

Amounts owed by Group undertakings are written off where there is no reasonable expectation of recovery. Impairment losses are presented as net impairment losses within Operating profit, any subsequent recoveries are credited against the same line.

Other payables
Liabilities included in Other payables are recognised initially at fair value. Subsequent to initial recognition they are re-measured at fair value using an expected credit loss model.

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.

1 Fixed asset investments

	Investments in subsidiaries		
	Shares $m	Loans $m	Total $m
At 1 January 2020	15,861	15,664	31,525
Additions during the year	–	2,971	2,971
Transfer to Debtors – amounts owed by Group undertakings	–	(1,451)	(1,451)
Capital reimbursement	(44)	–	(44)
Exchange	–	254	254
Amortisation	–	13	13
At 31 December 2020	15,817	17,451	33,268
Additions during the year	**33,745**	**290**	**34,035**
Transfer to Debtors – amounts owed by Group undertakings	**–**	**(1,249)**	**(1,249)**
Capital reimbursement	**(13)**	**–**	**(13)**
Exchange	**–**	**(172)**	**(172)**
Amortisation	**–**	**13**	**13**
Disposals and other movements	**32**	**(290)**	**(258)**
At 31 December 2021	**49,581**	**16,043**	**65,624**

Loans to subsidiaries consists of bonds which are issued externally and are issued back to Group undertakings with comparable terms on interest rates and are repayable on maturity, details of which are disclosed in Note 2. The recoverability of these inter-company loans has been assessed in accordance with IFRS 9 with no impairment identified. The inter-company balances are considered to have low credit risk due to timely payment of interest and settlement of principal amount on agreed due dates, limiting the loss allowance to 12-month expected credit losses. In 2021, there have been no credit losses (2020: $nil).

Included within Additions during the year of inter-company loans, are the distribution in specie received from subsidiary undertakings in the form of a loan receivable from Group companies for $290m. The loan was settled during the year and recorded as disposed in the same year. The other movements include $32m representing fair value of a guarantee provided to Group companies as explained in Notes 2 and 3.

2 Loans and borrowings

		Repayment dates	**2021 $m**	2020 $m
Amounts due within one year				
Interest-bearing loans and borrowings (unsecured)				
0.25% Callable bond	euros	2021	**–**	614
0.875% Non-callable bond	euros	2021	**–**	921
Floating rate notes	US dollars	2022	**250**	–
2.375% Callable bond	US dollars	2022	**999**	–
			1,249	1,535
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)				
Floating rate notes	US dollars	2022	**–**	250
2.375% Callable bond	US dollars	2022	**–**	996
Floating rate notes	US dollars	2023	**400**	400
0.3% Callable bond	US dollars	2023	**1,397**	–
3.5% Callable bond	US dollars	2023	**848**	847
0.75% Callable bond	euros	2024	**1,014**	1,102
2024 Floating bank loan	US dollars	2024	**1,997**	–
3.375% Callable bond	US dollars	2025	**1,988**	1,985
0.7% Callable bond	US dollars	2026	**1,193**	1,192
3.125% Callable bond	US dollars	2027	**745**	744
1.25% Callable bond	euros	2028	**896**	973
0.375% Callable bond	euros	2029	**898**	–
4% Callable bond	US dollars	2029	**994**	993
1.375% Callable bond	US dollars	2030	**1,292**	1,291
5.75% Non-callable bond	pounds sterling	2031	**470**	475
6.45% Callable bond	US dollars	2037	**2,724**	2,722
4% Callable bond	US dollars	2042	**988**	988
4.375% Callable bond	US dollars	2045	**980**	980
4.375% Callable bond	US dollars	2048	**737**	737
2.125% Callable bond	US dollars	2050	**486**	486
3% Callable bond	US dollars	2051	**734**	–
Total amounts due after more than one year			**21,064**	17,444
Total loans and borrowings			**22,313**	18,979

	2021 $m	2020 $m
Loans and borrowings are repayable:		
After five years from balance sheet date	**11,944**	11,581
From two to five years	**6,192**	4,617
From one to two years	**2,928**	1,246
Within one year	**1,249**	1,535
Total unsecured	**22,313**	18,979

All bonds are issued with fixed interest rates with the exception of two bonds, the 2022, the 2023 floating rate notes and the $2bn USD 2024 floating rate loan. The $2bn USD 2024 floating rate loan pays interest linked to 1 month LIBOR. As the loan is 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. The other two floating rate notes are not impacted by LIBOR reference as they either use non-LIBOR fixings or will mature before the withdrawal of relevant LIBOR rate.

In addition, the Company acts as guarantor for bonds issued by its wholly owned subsidiaries, AstraZeneca Finance LLC and AstraZeneca Finance and Holdings Inc. AstraZeneca Finance LLC is the issuer of $1,600m 0.700% Notes due 2024, $1,250m 1.200% Notes due 2026, $1,250m 1.750% Notes due 2028 and $750m 2.250% Notes due 2031 (the 'AstraZeneca Finance Notes'). AstraZeneca Finance and Holdings Inc. has a $2bn bank loan due 2023. Each series of AstraZeneca Finance Notes has been fully and unconditionally guaranteed by the Company. Each of the guarantees by the Company is full and unconditional and joint and several.

The guarantee by the Company of the AstraZeneca Finance Notes is the senior unsecured obligation of the Company and ranks equally with all of the Company's existing and future senior unsecured and unsubordinated indebtedness. Each guarantee by the Company is effectively subordinated to any secured indebtedness of the Company to the extent of the value of the assets securing such indebtedness. The AstraZeneca Finance Notes are structurally subordinated to indebtedness and other liabilities of the subsidiaries of the Company, none of which guarantee the AstraZeneca Finance Notes.

3 Other payables

	2021 $m	2020 $m
Amounts due within one year		
Other creditors	**187**	185
Deferred income	**4**	–
Amounts owed to Group undertakings	**7**	**7**
	198	**192**
Amounts due after more than one year		
Other creditors	**32**	–
	32	–

Non-current other creditors include an amount representing the fair value of the guarantee provided by the Company to its subsidiary for the bonds issued externally as explained in Note 2. As at 31 December 2021, the fair value of the guarantee was $32m (2020: $nil).

4 Called-up share capital

Details of share capital movements in the year are included in Note 24 to the Group Financial Statements.

5 Contingent liabilities

The Company has guaranteed the external borrowing of a subsidiary in the amount of $286m (2020: $286m), and no amount of undrawn borrowing facility of a subsidiary was guaranteed (2020: $17.5bn) in relation to the acquisition of Alexion.

Vermont US Attorney Investigation

In the US, in April 2020, AstraZeneca received a Civil Investigative Demand from the US Attorney's Office in Vermont and the Department of Justice, Civil Division, seeking documents and information relating to AstraZeneca's relationships with electronic health-record vendors. AstraZeneca is co-operating with this enquiry.

AZD1222 Securities Litigation

In January 2021, putative securities class action lawsuits were filed in the US District Court for the Southern District of New York against AstraZeneca PLC and certain officers, on behalf of purchasers of AstraZeneca publicly traded securities during the period 21 May 2020 through 20 November 2020. The Court appointed co-lead plaintiffs in April 2021 and they filed an Amended Complaint in July 2021 on behalf of purchasers of AstraZeneca publicly traded securities during the period 15 June 2020 through 29 January 2021. The Amended Complaint alleges that defendants made materially false and misleading statements in connection with the development of AZD1222, AstraZeneca's vaccine for the prevention of COVID-19. In September 2021, AstraZeneca moved to dismiss the Amended Complaint.

5 Contingent liabilities *continued*

Alexion Shareholder Litigation

In March 2021, several shareholders of Alexion Pharmaceuticals, Inc. (Alexion) filed individual lawsuits against Alexion, its management, and/or AstraZeneca and affiliates in federal district court in New York. The complaints generally allege that the preliminary registration statement filed with the SEC on 19 February 2021, omitted certain allegedly material information in connection with AstraZeneca's proposed acquisition of Alexion (the Acquisition), and one of the complaints further alleges that the Alexion directors breached their fiduciary duties in connection with the Acquisition and that AstraZeneca and the other entity defendants aided and abetted the alleged breaches. In May 2021, all such complaints were withdrawn and dismissed. This matter is now closed.

US Congressional

In January 2019, AstraZeneca received a letter from the US House of Representatives Committee on Oversight and Reform (Committee) seeking information related to pricing practices for *Crestor*. Similar letters were sent to 11 other pharmaceutical manufacturers. AstraZeneca cooperated with the inquiry and produced certain responsive information. In December 2021, the Committee issued a final report culminating the Committee's pharmaceutical pricing investigation. AstraZeneca's products are not the subject of the findings in the final report.

6 Statutory and other information

The Directors of the Company were paid by another Group company in 2021 and 2020.

7 Subsequent events

No subsequent events having material impact on the financial statements were identified after the balance sheet date.

Group Financial Record

For the year ended 31 December	2017 $m	2018 $m	2019 $m	2020 $m	**2021 $m**
Revenue and profits					
Product Sales	20,152	21,049	23,565	25,890	**36,541**
Collaboration Revenue	2,313	1,041	819	727	**876**
Cost of sales	(4,318)	(4,936)	(4,921)	(5,299)	**(12,437)**
Distribution costs	(310)	(331)	(339)	(399)	**(446)**
Research and development expense	(5,757)	(5,932)	(6,059)	(5,991)	**(9,736)**
Selling, general and administrative expense	(10,233)	(10,031)	(11,682)	(11,294)	**(15,234)**
Other operating income and expense	1,830	2,527	1,541	1,528	**1,492**
Operating profit	3,677	3,387	2,924	5,162	**1,056**
Finance income	113	138	172	87	**43**
Finance expense	(1,508)	(1,419)	(1,432)	(1,306)	**(1,300)**
Share of after tax losses in associates and joint ventures	(55)	(113)	(116)	(27)	**(64)**
Profit/(loss) before tax	2,227	1,993	1,548	3,916	**(265)**
Taxation	641	57	(321)	(772)	**380**
Profit for the period	2,868	2,050	1,227	3,144	**115**
Other comprehensive income/(loss) for the period, net of tax	639	(1,059)	(611)	1,608	**(145)**
Total comprehensive income/(loss) for the period	3,507	991	616	4,752	**(30)**
Profit attributable to:					
Owners of the Parent	3,001	2,155	1,335	3,196	**112**
Non-controlling interests	(133)	(105)	(108)	(52)	**3**
Earnings per share					
Basic earnings per $0.25 Ordinary Share	$2.37	$1.70	$1.03	$2.44	**$0.08**
Diluted earnings per $0.25 Ordinary Share	$2.37	$1.70	$1.03	$2.44	**$0.08**
Dividends	$2.80	$2.80	$2.80	$2.80	**$2.80**

At 31 December	2017 $m	2018 $m	2019 $m	2020 $m	**2021 $m**
Statement of Financial Position					
Property, plant and equipment, right-of-use assets, goodwill and intangible assets	45,628	41,087	40,836	41,709	**72,555**
Other non-current assets	2,387	1,594	2,260	2,038	**2,234**
Deferred tax assets	2,189	2,379	2,718	3,438	**4,330**
Current assets	13,150	15,591	15,563	19,544	**26,244**
Total assets	63,354	60,651	61,377	66,729	**105,363**
Current liabilities	(16,383)	(16,292)	(18,117)	(20,307)	**(22,594)**
Deferred tax liabilities	(3,995)	(3,286)	(2,490)	(2,918)	**(6,206)**
Other non-current liabilities	(26,334)	(27,029)	(26,174)	(27,866)	**(37,276)**
Net assets	16,642	14,044	14,596	15,638	**39,287**
Share capital	317	317	328	328	**387**
Reserves attributable to equity holders of the Company	14,643	12,151	12,799	15,294	**38,881**
Non-controlling interests	1,682	1,576	1,469	16	**19**
Total equity and reserves	16,642	14,044	14,596	15,638	**39,287**

For the year ended 31 December	2017 $m	2018 $m	2019 $m	2020 $m	**2021 $m**
Cash flows					
Net cash inflow/(outflow) from:					
Operating activities	3,578	2,618	2,969	4,799	**5,963**
Investing activities	(2,328)	963	(657)	(285)	**(11,058)**
Financing activities	(2,936)	(2,044)	(1,765)	(2,203)	**3,649**
	(1,686)	1,537	547	2,311	**(1,446)**