FINANCIAL STATEMENTS

Consolidated income statement

Year ended 31 December 2022

	Notes	2022 £m	2021 £m
Continuing operations			
Revenue	2	13,520	11,218
Cost of sales [1]		(10,763)	(9,082)
Gross profit	2	2,757	2,136
Commercial and administrative costs	2	(1,077)	(890)
Research and development costs	2, 3	(891)	(778)
Share of results of joint ventures and associates	12	48	45
Operating profit		837	513
Gain arising on disposal of businesses	27	81	56
Profit before financing and taxation		918	569
Financing income	4	355	229
Financing costs [2]	4	(2,775)	(1,092)
Net financing costs		(2,420)	(863)
Loss before taxation		(1,502)	(294)
Taxation	5	308	418
(Loss)/profit for the year from continuing operations		(1,194)	124
Discontinued operations			
Profit for the year from ordinary activities	27	68	36
Costs of disposal of discontinued operations prior to disposal	27	–	(39)
Loss on disposal of discontinued operations	27	(148)	–
Loss for the year from discontinued operations		(80)	(3)
(Loss)/profit for the year		(1,274)	121
Attributable to:			
Ordinary shareholders		(1,269)	120
Non-controlling interests (NCI)		(5)	1
(Loss)/profit for the year		(1,274)	121
Other comprehensive income		522	41
Total comprehensive (expense)/income for the year		(752)	162
(Loss)/earnings per ordinary share attributable to ordinary shareholders:	6		
From continuing operations			
Basic		(14.24)p	1.48p
Diluted		(14.24)p	1.47p
From continuing and discontinued operations			
Basic		(15.20)p	1.44p
Diluted		(15.20)p	1.43p

[1] Cost of sales includes a net charge for expected credit losses of £73m (31 December 2021: £78m). Further detail can be found in note 14

[2] Included within financing costs are fair value changes on derivative contracts. Further details can be found in notes 2, 4 and 20

Consolidated statement of comprehensive income

Year ended 31 December 2022

	Notes	2022 £m	2021 £m
(Loss)/profit for the year		(1,274)	121
Other comprehensive income/(expense) (OCI)			
Actuarial movements on post-retirement schemes	22	(156)	254
Revaluation to fair value of other investments	12	(4)	(2)
Share of OCI of joint ventures and associates	12	2	1
Related tax movements	5	89	(79)
Items that will not be reclassified to profit or loss		(69)	174
Foreign exchange translation differences on foreign operations		452	(178)
Foreign exchange translation differences reclassified to income statement on disposal of businesses	27	65	(1)
Hedging reserves reclassified to income statement on disposal of businesses	27	111	–
NCI disposed of on disposal of businesses	27	1	–
Movement on fair values charged to cash flow hedge reserve		(7)	(32)
Reclassified to income statement from cash flow hedge reserve [1]		(55)	39
Costs of hedging		10	–
Share of OCI of joint ventures and associates	12	–	44
Related tax movements	5	14	(5)
Items that will be reclassified to profit or loss		591	(133)
Total other comprehensive income		522	41
Total comprehensive (expense)/income for the year		(752)	162
Attributable to:			
Ordinary shareholders		(748)	161
NCI		(4)	1
Total comprehensive (expense)/income for the year		(752)	162
Total comprehensive (expense)/income for the year attributable to ordinary shareholders arises from:			
Continuing operations		(673)	278
Discontinued operations		(75)	(117)
Total comprehensive (expense)/income for the year attributable to ordinary shareholders		(748)	161

[1] Includes £(52)m loss on the deal contingent forward reclassified to loss on disposal in the same period as the hedged cash flow proceeds. Further detail can be found in note 20 and 27

FINANCIAL STATEMENTS

Consolidated balance sheet

At 31 December 2022

	Notes	2022 £m	2021 £m
ASSETS			
Intangible assets	9	4,098	4,041
Property, plant and equipment	10	3,936	3,917
Right-of-use assets	11	1,061	1,203
Investments – joint ventures and associates	12	422	404
Investments – other	12	36	36
Other financial assets	20	542	361
Deferred tax assets	5	2,731	2,249
Post-retirement scheme surpluses	22	613	1,148
Non-current assets		13,439	13,359
Inventories	13	4,708	3,666
Trade receivables and other assets	14	6,936	5,383
Contract assets	15	1,481	1,473
Taxation recoverable		127	90
Other financial assets	20	141	46
Short-term investments	20	11	8
Cash and cash equivalents	16	2,607	2,621
Current assets		16,011	13,287
Assets held for sale	27	–	2,028
TOTAL ASSETS		29,450	28,674
LIABILITIES			
Borrowings and lease liabilities	17	(358)	(279)
Other financial liabilities	20	(1,016)	(689)
Trade payables and other liabilities	19	(6,983)	(6,016)
Contract liabilities	15	(4,825)	(3,599)
Current tax liabilities		(104)	(101)
Provisions for liabilities and charges	21	(632)	(475)
Current liabilities		(13,918)	(11,159)
Borrowings and lease liabilities	17	(5,597)	(7,497)
Other financial liabilities	20	(3,230)	(2,715)
Trade payables and other liabilities	19	(2,364)	(1,575)
Contract liabilities	15	(7,337)	(6,710)
Deferred tax liabilities	5	(286)	(451)
Provisions for liabilities and charges	21	(1,701)	(1,107)
Post-retirement scheme deficits	22	(1,033)	(1,373)
Non-current liabilities		(21,548)	(21,428)
Liabilities associated with assets held for sale	27	–	(723)
TOTAL LIABILITIES		(35,466)	(33,310)
NET LIABILITIES		(6,016)	(4,636)
EQUITY			
Called-up share capital	23	1,674	1,674
Share premium		1,012	1,012
Capital redemption reserve		166	165
Hedging reserves		26	(45)
Merger reserve		–	650
Translation reserve		861	342
Accumulated losses		(9,789)	(8,460)
Equity attributable to ordinary shareholders		(6,050)	(4,662)
NCI		34	26
TOTAL EQUITY		(6,016)	(4,636)

The Financial Statements on pages 102 to 172 were approved by the Board on 23 February 2023 and signed on its behalf by:

Tufan Erginbilgic
Chief Executive

Panos Kakoullis
Chief Financial Officer

Consolidated cash flow statement

Year ended 31 December 2022

	Notes	2022 £m	2021 £m
Reconciliation of cash flows from operating activities			
Operating profit from continuing operations		837	513
Operating profit/(loss) from discontinued operations	27	86	(43)
Operating profit		923	470
Loss on disposal of property, plant and equipment		18	9
Share of results of joint ventures and associates	12	(48)	(45)
Dividends received from joint ventures and associates	12	73	27
Amortisation and impairment of intangible assets	9	287	290
Depreciation and impairment of property, plant and equipment	10	430	462
Depreciation and impairment of right-of-use assets	11	287	257
Adjustment of amounts payable under residual value guarantees within lease liabilities [1]	18	(3)	(4)
Impairment of and other movements on investments	12	75	7
Decrease in provisions		(197)	(394)
Increase in inventories		(887)	(169)
Movement in trade receivables/payables and other assets/liabilities		(56)	(507)
Movement in contract assets/liabilities		1,753	(134)
Financial penalties paid [2]		–	(156)
Cash flows on other financial assets and liabilities held for operating purposes [3]		(660)	(85)
Interest received		36	9
Net defined benefit post-retirement cost recognised in profit before financing	22	27	23
Cash funding of defined benefit post-retirement schemes	22	(81)	(162)
Share-based payments	24	47	28
Net cash inflow/(outflow) from operating activities before taxation		2,024	(74)
Taxation paid		(174)	(185)
Net cash inflow/(outflow) from operating activities		1,850	(259)
Cash flows from investing activities			
Movement in other investments	12	(5)	(26)
Additions of intangible assets		(237)	(231)
Disposals of intangible assets	9	8	5
Purchases of property, plant and equipment		(359)	(328)
Disposals of property, plant and equipment		48	61
Disposal of businesses	27	1,398	99
Movement in investments in joint ventures and associates	12	(24)	–
Movement in short-term investments		(3)	(8)
Net cash inflow/(outflow) from investing activities		826	(428)
Cash flows from financing activities			
Repayment of loans [4]		(2,024)	(965)
Proceeds from increase in loans		1	2,005
Capital element of lease payments		(218)	(374)
Net cash flow from (decrease)/increase in borrowings and lease liabilities		(2,241)	666
Interest paid		(235)	(206)
Interest element of lease payments		(68)	(63)
Fees paid on undrawn facilities		(49)	(62)
Cash flows on settlement of excess derivative contracts [5]	4	(326)	(452)
Transactions with NCI [6]		57	30
NCI on formation of subsidiary		–	3
Dividends to NCI		(3)	(1)
Redemption of C Shares		(1)	(3)
Net cash outflow from financing activities		(2,866)	(88)

Consolidated cash flow statement – continued

Year ended 31 December 2022

	2022 £m	2021 £m
Change in cash and cash equivalents	(190)	(775)
Cash and cash equivalents at 1 January	2,639	3,496
Exchange gains/(losses) on cash and cash equivalents	156	(82)
Cash and cash equivalents at 31 December [7]	2,605	2,639

1 Where the cost of meeting residual value guarantees is less than that previously estimated, as costs have been mitigated or liabilities waived by the lessor, the lease liability has been remeasured. To the extent that the value of this remeasurement exceeds the value of the right-of-use asset, the reduction in the lease liability is credited to cost of sales
2 Relates to penalties paid on agreements with investigating bodies
3 Predominately relates to cash settled on derivative contracts held for operating purposes
4 Repayment of loans includes repayments of £2,000m relating to the loan supported by an 80% guarantee from UK Export Finance. Further details are provided in note 17
5 During the year, the Group incurred a cash outflow of £326m (2021: £452m) as a result of settling foreign exchange contracts that were originally in place to sell $2,200m (2021: $3,184m) receipts. Further detail is provided in note 4
6 Relates to NCI investment received in the year, in respect of Rolls-Royce SMR Limited
7 The Group considers overdrafts (repayable on demand) and cash held for sale to be an integral part of its cash management activities and these are included in cash and cash equivalents for the purposes of the cash flow statement

In deriving the consolidated cash flow statement, movement in balance sheet items have been adjusted for non-cash items. The cash flow in the year includes the sale of goods and services to joint ventures and associates – see note 26.

	2022 £m	2021 £m
Reconciliation of movements in cash and cash equivalents to movements in net debt		
Change in cash and cash equivalents	(190)	(775)
Cash flow from decrease/(increase) in borrowings and lease liabilities	2,241	(666)
Less: settlement of related derivatives included in fair value of swaps below	–	6
Cash flow from increase in short-term investments	3	8
Change in net debt resulting from cash flows	2,054	(1,427)
New leases and other non-cash adjustments on borrowings and lease liabilities	(170)	(86)
Exchange losses on net debt	(150)	(51)
Fair value adjustments	70	170
Debt disposed of on disposal of businesses	53	8
Reclassifications	–	19
Movement in net debt	1,857	(1,367)
Net debt at 1 January	(5,194)	(3,827)
Net debt at 31 December excluding the fair value of swaps	(3,337)	(5,194)
Fair value of swaps hedging fixed rate borrowings	86	37
Net debt at 31 December	(3,251)	(5,157)

Consolidated cash flow statement – continued

Year ended 31 December 2022

The movement in net debt (defined by the Group as including the items shown below) is as follows:

	At 1 January £m	Funds flow £m	Net funds on disposal £m	Exchange differences £m	Fair value adjustments £m	Reclassi-fications [1] £m	Other movements £m	At 31 December £m
2022								
Cash at bank and in hand	795	17	–	35	–	–	–	847
Money market funds	49	(15)	–	–	–	–	–	34
Short-term deposits	1,777	(171)	–	120	–	–	–	1,726
Cash and cash equivalents (per balance sheet)	2,621	(169)	–	155	–	–	–	2,607
Cash and cash equivalents included within assets held for sale	25	(26)	–	1	–	–	–	–
Overdrafts	(7)	5	–	–	–	–	–	(2)
Cash and cash equivalents (per cash flow statement)	2,639	(190)	–	156	–	–	–	2,605
Short-term investments	8	3	–	–	–	–	–	11
Other current borrowings	(2)	2	–	(1)	–	–	–	(1)
Non-current borrowings	(6,023)	2,000	–	(125)	72	–	(29)	(4,105)
Borrowings included within liabilities held for sale	(59)	21	40	–	(2)	–	–	–
Lease liabilities	(1,744)	217	–	(179)	–	–	(141)	(1,847)
Lease liabilities included within liabilities held for sale	(13)	1	13	(1)	–	–	–	–
Financial liabilities	(7,841)	2,241	53	(306)	70	–	(170)	(5,953)
Net debt excluding the fair value of swaps	(5,194)	2,054	53	(150)	70	–	(170)	(3,337)
Fair value of swaps hedging fixed rate borrowings [2]	37	–	–	125	(76)	–	–	86
Net debt	(5,157)	2,054	53	(25)	(6)	–	(170)	(3,251)
2021								
Cash at bank and in hand	940	(87)	–	(20)	–	(38)	–	795
Money market funds	669	(620)	–	–	–	–	–	49
Short-term deposits	1,843	–	–	(66)	–	–	–	1,777
Cash and cash equivalents (per balance sheet)	3,452	(707)	–	(86)	–	(38)	–	2,621
Cash and cash equivalents included within assets held for sale	51	(68)	–	4	–	38	–	25
Overdrafts	(7)	–	–	–	–	–	–	(7)
Cash and cash equivalents (per cash flow statement)	3,496	(775)	–	(82)	–	–	–	2,639
Short-term investments	–	8	–	–	–	–	–	8
Other current borrowings	(1,006)	950	–	1	35	18	–	(2)
Non-current borrowings	(4,274)	(2,002)	–	38	136	88	(9)	(6,023)
Borrowings included within liabilities held for sale	–	18	–	1	(1)	(77)	–	(59)
Lease liabilities	(2,043)	370	–	(9)	–	15	(77)	(1,744)
Lease liabilities included within liabilities held for sale	–	4	8	–	–	(25)	–	(13)
Financial liabilities	(7,323)	(660)	8	31	170	19	(86)	(7,841)
Net debt excluding the fair value of swaps	(3,827)	(1,427)	8	(51)	170	19	(86)	(5,194)
Fair value of swaps hedging fixed rate borrowings [2]	251	(6)	–	(35)	(173)	–	–	37
Net debt	(3,576)	(1,433)	8	(86)	(3)	19	(86)	(5,157)

[1] Reclassifications during the year to 31 December 2021 included the transfer of ITP Aero to held for sale and fees of £29m paid in previous periods for the £2,000m loan (supported by an 80% guarantee from UK Export Finance) that have been reclassified to borrowings on the draw down of the facility during the prior period

[2] Fair value of swaps hedging fixed rate borrowings reflects the impact of derivatives on repayments of the principal amount of debt. Net debt therefore includes the fair value of derivatives included in fair value hedges (2022: £38m, 2021: £114m) and the element of fair value relating to exchange differences on the underlying principal of derivatives in cash flow hedges (2022: £48m, 2021: £(77)m)

Consolidated statement of changes in equity

Year ended 31 December 2022

The following describes the nature and purpose of each reserve within equity:

Share capital – The nominal value of ordinary shares of 20p each in issue.
Share premium – Proceeds received in excess of the nominal value of ordinary shares issued, less the costs of issue.
Capital redemption reserve – Amounts transferred from accumulated losses on the repurchase of ordinary shares or the redemption of C Shares. In Rolls-Royce Holdings plc's own Financial Statements, C Shares are issued from the merger reserve. This reserve was created by a scheme of arrangement in 2011. As this reserve is eliminated on consolidation in the Consolidated Financial Statements, the C Shares are shown as being issued from the capital redemption reserve.
Hedging reserves – Cumulative gains and losses on hedging instruments deemed effective in cash flow hedges and cost of hedging reserve.
Merger reserve – The premium on issuing shares to acquire a business where merger relief in accordance with the Companies Act 2006 applies.
Translation reserve – Gains and losses arising on retranslating the net assets of overseas operations into sterling.
Accumulated losses – All other net gains and losses and transactions with owners not recognised elsewhere and ordinary shares held for the purpose of share-based payment plans.
Non-controlling interests – The share of net assets or liabilities of subsidiaries held by third parties.

		Attributable to ordinary shareholders									
	Notes	Share capital £m	Share premium £m	Capital redemption reserve £m	Hedging reserves [1] £m	Merger reserve £m	Translation reserve £m	Accumulated losses [2] £m	Total £m	NCI £m	Total equity £m
At 31 December 2021 as previously reported		1,674	1,012	165	(45)	650	342	(8,460)	(4,662)	26	(4,636)
Adoption of amendment to IAS 37 (post-tax)	1	–	–	–	–	–	–	(729)	(729)	–	(729)
At 1 January 2022		1,674	1,012	165	(45)	650	342	(9,189)	(5,391)	26	(5,365)
Loss for the year		–	–	–	–	–	–	(1,269)	(1,269)	(5)	(1,274)
Foreign exchange translation differences on foreign operations		–	–	–	–	–	452	–	452	–	452
Hedging reserves reclassified to income statement on disposal of businesses	27	–	–	–	111	–	–	–	111	–	111
Foreign exchange translation differences reclassified to income statement on disposal of businesses	27	–	–	–	–	–	65	–	65	–	65
NCI disposed of on disposal of business	27	–	–	–	–	–	–	–	–	1	1
Actuarial movement on post-retirement schemes	22	–	–	–	–	–	–	(156)	(156)	–	(156)
Movement on fair value of cash flow hedges		–	–	–	(7)	–	–	–	(7)	–	(7)
Reclassified to income statement from cash flow hedge reserve		–	–	–	(55)	–	–	–	(55)	–	(55)
Costs of hedging		–	–	–	10	–	–	–	10	–	10
Revaluation to fair value of other investments	12	–	–	–	–	–	–	(4)	(4)	–	(4)
OCI of joint ventures and associates	12	–	–	–	–	–	–	2	2	–	2
Related tax movements	5	–	–	–	12	–	2	89	103	–	103
Total comprehensive income/(expense) for the year		–	–	–	71	–	519	(1,338)	(748)	(4)	(752)
Redemption of C Shares	20	–	–	1	–	–	–	(1)	–	–	–
Share-based payments – direct to equity [3]		–	–	–	–	–	–	46	46	–	46
Dividends to NCI		–	–	–	–	–	–	–	–	(3)	(3)
Transactions with NCI [4]		–	–	–	–	–	–	42	42	15	57
Transfer to realised profit [5]		–	–	–	–	(650)	–	650	–	–	–
Related tax movements		–	–	–	–	–	–	1	1	–	1
Other changes in equity in the year		–	–	1	–	(650)	–	738	89	12	101
At 31 December 2022		1,674	1,012	166	26	–	861	(9,789)	(6,050)	34	(6,016)

Consolidated statement of changes in equity – continued

Year ended 31 December 2022

		Attributable to ordinary shareholders									
	Notes	Share capital £m	Share premium £m	Capital redemption reserve £m	Cash flow hedging reserve £m	Merger reserve £m	Translation reserve £m	Accumulated losses [2] £m	Total £m	NCI £m	Total equity £m
At 1 January 2021		1,674	1,012	162	(94)	650	524	(8,825)	(4,897)	22	(4,875)
Profit for the year		–	–	–	–	–	–	120	120	1	121
Foreign exchange translation differences on foreign operations		–	–	–	–	–	(178)	–	(178)	–	(178)
Foreign exchange translation differences reclassified to income statement on disposal of businesses		–	–	–	–	–	(1)	–	(1)	–	(1)
Actuarial movements on post-retirement schemes	22	–	–	–	–	–	–	254	254	–	254
Movement on fair values of cash flow hedges		–	–	–	(32)	–	–	–	(32)	–	(32)
Reclassified to income statement from cash flow hedge reserve		–	–	–	39	–	–	–	39	–	39
Revaluation to fair value of other investments	12	–	–	–	–	–	–	(2)	(2)	–	(2)
OCI of joint ventures and associates	12	–	–	–	44	–	–	1	45	–	45
Related tax movements	5	–	–	–	(2)	–	(3)	(79)	(84)	–	(84)
Total comprehensive income/ (expense) for the year		–	–	–	49	–	(182)	294	161	1	162
Redemption of C Shares	20	–	–	3	–	–	–	(3)	–	–	–
Share-based payments – direct to equity [3]		–	–	–	–	–	–	28	28	–	28
Transactions with NCI [4]		–	–	–	–	–	–	29	29	1	30
Dividends to NCI		–	–	–	–	–	–	–	–	(1)	(1)
NCI on formation of subsidiary		–	–	–	–	–	–	–	–	3	3
Related tax movements		–	–	–	–	–	–	17	17	–	17
Other changes in equity in the year		–	–	3	–	–	–	71	74	3	77
At 31 December 2021		1,674	1,012	165	(45)	650	342	(8,460)	(4,662)	26	(4,636)

1 Hedging reserves include the cash flow hedge reserve of £26m and the cost of hedging reserve of £nil. During the year, costs of hedging of £10m were recognised and reclassified to the income statement

2 At 31 December 2022, 11,402,796 ordinary shares with a net book value of £27m (2021: 29,405,191 ordinary shares with a net book value of £65m) were held for the purpose of share-based payment plans and included in accumulated losses. During the year:
- 18,488,558 ordinary shares with a net book value of £39m (2021: 10,667,095 ordinary shares with a net book value of £24m) vested in share-based payment plans; and
- the Company acquired none (2021: none) of its ordinary shares via reinvestment of dividends received on its own shares and purchased 486,163 (2021: none) of its ordinary shares through purchases on the London Stock Exchange

3 Share-based payments – direct to equity is the share-based payment charge for the year less actual cost of vesting excluding those vesting from own shares and cash received on share-based schemes vesting

4 Relates to NCI investment received in the year in respect of Rolls-Royce SMR Limited

5 On disposal of ITP Aero on 15 September 2022, the premium recognised on issue of shares for the previous acquisition became realised on receipt of qualifying consideration. As such, the total merger reserve has been transferred to accumulated losses

1 Accounting policies

The Company and the Group

Rolls-Royce Holdings plc (the 'Company') is a public company limited by shares incorporated under the Companies Act 2006 and domiciled in England in the United Kingdom. The Consolidated Financial Statements of the Company for the year ended 31 December 2022 consist of the audited consolidation of the Financial Statements of the Company and its subsidiaries (together referred to as the Group) together with the Group's interest in jointly controlled and associated entities.

Basis of preparation and statement of compliance

The Company has elected to prepare its individual Company Financial Statements under FRS 101 *Reduced Disclosure Framework*. They are set out on pages 173 to 178 with the associated accounting policies from page 175.

The Consolidated Financial Statements have been prepared in accordance with UK adopted International Accounting Standards (IAS) in conformity with the requirements of the Companies Act 2006 and interpretations issued by the IFRS Interpretations Committee (IFRS IC) applicable to companies reporting under UK adopted IFRS.

The Consolidated Financial Statements have been prepared on a going concern basis as described on page 48. The historical cost basis has been used except where IFRS require the revaluation of financial instruments to fair value and certain other assets and liabilities on an alternative basis, most significantly post-retirement scheme obligations are valued on the basis required by IAS 19 *Employee Benefits*.

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

The preparation of the Consolidated Financial Statements requires management to make judgements and estimates that affect the statutory amounts of assets and liabilities at the date of the Consolidated Financial Statements and the statutory amounts of revenue and expenses during the reporting period. Actual future outcomes could differ from those estimates.

Going concern

The Directors have undertaken a comprehensive going concern review. In adopting the going concern basis for preparing these Consolidated Financial Statements, the Directors have undertaken a review of the Group's cash flow forecasts and available liquidity, along with consideration of the principal risks and uncertainties over an 18-month period to August 2024. Recognising the challenges of reliably estimating and forecasting the impact of external factors on the Group, the Directors have considered two forecasts in the assessment of going concern, along with a likelihood assessment of these forecasts, being:

- base case, which reflects the Directors' current expectations of future trading of a steady and ongoing recovery of trading towards pre-pandemic levels; and
- stressed downside forecast, which envisages a 'stress' or 'downside' situation.

The future impact of climate change on the Group has been considered through climate scenarios. The climate scenarios modelled do not have a material impact on the cash flow forecasts over the 18-month period to August 2024.

Further details are given in the going concern review on page 48. After reviewing the current liquidity position and the cash flow forecasts modelled under both the base case and stressed downside, the Directors consider that the Group has sufficient liquidity to continue in operational existence for a period of at least 18 months from the date of this report and are therefore satisfied that it is appropriate to adopt the going concern basis of accounting in preparing the Consolidated Financial Statements.

Climate change

In preparing the Consolidated Financial Statements the Directors have considered the potential impact of climate change, particularly in the context of the disclosures included in the Strategic Report and Climate Review this year and the stated decarbonisation strategy. Based on the Taskforce for Climate-related Financial Disclosures (TCFD) recommendations, the Group assesses the potential impact of climate-related risks which cover both transition risks and physical risks. The eight key risks and the opportunities considered in the climate scenarios prepared include extensive policy, legal, technological, and market changes and physical risks which could include direct damage to assets and supply chain disruption. Two of the assessed key transition risks have been identified as potentially having a high impact on the Group. These relate to the risk that regulatory changes could materially impact demand for our products and that addressing climate change will require shifting investment focus towards more sustainable products and solutions. Both of these risks are being actively addressed through the Group's decarbonisation strategy and the financial implications, as reflected in the quantified climate scenarios, have been considered when preparing the financial statements.

The Group has set its decarbonisation strategy and identified longer-term considerations in response to the climate challenge and is engaging proactively with external stakeholders to advocate for the conditions that society needs to achieve its net zero target. The Group's main short- and longer-term priorities include:

- achieving net zero greenhouse gas (GHG) emissions by 2030 from all energy purchased and consumed in the Group's offices, manufacturing and production activities (with the exception of product testing and development). This will be met through continued investment in onsite renewable energy installations; the procurement of renewable energy; and continued investment in energy efficiency improvements to reduce the Group's overall energy demands and operating costs. An estimate of the investment required to meet these scope 1 and 2 emission improvements is included in the forecasts that support these Consolidated Financial Statements;
- the scale up of sustainable fuels that will play a crucial role in reaching net zero carbon. To accelerate this, the Group are working to demonstrate that all the commercial aero engines produced, and the most popular reciprocating engines, representing 80% of the product portfolio, are compatible with sustainable fuels by the end of 2023 and working with our armed forces customers to achieve the same goals for the Rolls-Royce engines they use; and

1 Accounting policies – continued

Climate change (continued)

— developing breakthrough new technologies, including investment in hybrid-electric solutions in Power Systems, continued development of the more efficient UltraFan aero engine, testing of sustainable aviation fuels, small modular reactors (SMRs) and hybrid and fully electric propulsion. New products will be compatible with net zero operation by 2030 and all products will be compatible with net zero operation by 2050. In the year, R&D costs of £(108)m (2021: £(68)m) within New Markets included design development to ready the SMRs to progress through the UK generic design assessment (GDA) process and investment in electrical propulsion technology. Future investment required to deliver these technologies is included in the forecasts that support the Consolidated Financial Statements.

The climate change scenarios previously prepared to assess the viability of our business strategy, decarbonisation plans and approach to managing climate-related risk have continued to develop over the last year as set out in our Climate Review. There remains inherent uncertainty over the assumptions used within these and how they will impact the Group's business operations, cash flows and profit projections. The Directors assess the assumptions on a regular basis to ensure that they are consistent with the risk management activities and the commitments made to investors and other stakeholders.

Assumptions used within the Consolidated Financial Statements in relation to areas such as revenue recognition for long-term contracts, impairment reviews of non-current assets and the carrying amount of deferred tax assets consider the findings from the climate scenarios prepared. Key variables include carbon pricing based on the International Energy Agency (IEA) Net Zero scenario, which assumes an increase from $46 per tonne of carbon in 2022 to $250 per tonne in 2050, and commodity price, temperature rise and GDP information from the Oxford Economics Global Climate Service Net Zero scenario aligned to IPCC SSP1-19.

As details of what incremental specific future intervention measures will be taken by governments are not yet available, carbon pricing has been used to quantify the potential impact of future policy changes on the Group. To ensure revenue recognition or the carrying value of assets is not overstated it has been assumed that carbon pricing falls on our own manufacturing facilities and those of our supply chain. The Group will be able to mitigate an element of the financial impact as it reduces the scope 1 and 2 emissions from its offices, manufacturing and production activities, the costs of which have been incorporated into forecasts. The Group has made estimates in relation to decarbonisation in its external supply chain and the impact this may have on the Group's costs, whilst acknowledging in its financial modelling that this is complex and will therefore take some time. The financial modelling performed recognises the extent to which the Group's current supplier contracts offer protection from cost increases in the short to medium term where pricing is fixed or subject to capped escalation clauses. The Group has made a cautious assessment of whether higher costs would be passed on to customers in the short and medium term that considers the markets operated in and the pricing mechanisms in place. For example, in Civil Aerospace it is recognised that escalation caps within a number of its long-term service agreements (LTSA) contracts would be triggered, meaning additional costs could remain within the business under current commercial arrangements until the end of existing contract periods.

When determining the amount of cumulative revenue recognised on long-term contracts, and the obligation in relation to onerous contracts, the assumptions above have been used to reflect the climate uncertainties. Changes in estimates have not had a significant impact on revenue catch-ups in the year (2021: £(17)m) or on contract loss provisions (2021: £(20)m). Increases in carbon and commodity price estimates over the term of the current contracts are estimated to be around 1% (2021: 1%). A sensitivity is presented within the key sources of estimation uncertainty (page 116) to disclose the impact of a further 1% cost increase that might arise from further unmitigated increases in carbon and/or commodity pricing.

Impairment testing of non-current assets including goodwill and programme assets has considered the above risks as well as assessing how the Group's 1.5°C and 3.6°C scenarios may change the demand for products over the medium and longer term. Given the headroom, the climate scenarios modelled do not indicate any potential impairment. Further information is provided in note 9.

Deferred tax assets are recognised to the extent it is probable that future taxable profits will be available, against which the unused tax losses and deductible temporary difference can be utilised. The weighted downside forecast includes the climate-related estimates and assumptions. Whilst carbon pricing illustrates pressure on costs, decarbonisation and new supplier and customer contracts offer the opportunity to receive value for more efficient and sustainable products. Further details are included in note 5 together with sensitivity analysis in the key sources of estimation uncertainty section below.

The climate-related estimates and assumptions that have been considered to be key areas of judgement or sources of estimation uncertainty for the year ended 31 December 2022 are those relating to the recoverable amount of non-current assets including goodwill, capitalised development costs, recovery of deferred tax assets, recognition and measurement of provisions and recognition of revenue on long-term contracts. These items are included within the key areas of judgement and key sources of estimation uncertainty summarised on page 113 and explained in detail throughout the significant accounting policies.

Items that may be impacted by climate-related risks, but which are not considered to be key areas of judgements or sources of estimation uncertainty in the current financial year are outlined on page 112.

1 Accounting policies – continued

Climate change (continued)

Useful lives of assets – The useful lives of property, plant and equipment and right-of-use assets could be reduced by climate-related matters, for example, as a result of physical risks, obsolescence or legal restrictions. The change in useful lives would have a direct impact on the amount of depreciation or amortisation recognised each year from the date of reassessment. The Directors' review of useful lives has taken into consideration the impacts of the Group's decarbonisation strategy and has not had a material impact on the results for the year. The Directors have also considered the remaining useful economics lives of material intangible assets, including the £1,826m and £250m capitalised development spend associated with the Trent and business aviation programmes disclosed in note 9. Given the measures the Group is taking, including the testing of engines for sustainable aviation fuels (SAF) compatibility and that all the commercial aero-engines and the most popular reciprocating engines that are currently produced will be compatible with sustainable fuels by the end of 2023, the Directors judge that no adjustment is required to the useful economic lives.

Inventory valuation – Climate-related matters may affect the value of inventories as a result of a decline in selling prices or could become obsolete due to a reduction in demand. After consideration of the typical stock-turns of the inventory in relation to the rate of change in the market the Directors consider that inventory is appropriately valued.

Recoverability of trade receivables and contract assets – The impact of climate-related matters could have an impact on the Group's customers in the future, especially those customers in the Civil Aerospace business. No material climate-related issues have arisen during the year that have impacted the assessment of the recoverability of receivables. The Group's expected credit loss (ECL) provision uses credit ratings which inherently will include the market's assessment of the climate change impact on credit risk of the counter parties. Given the maturity time of trade receivables and the majority of contract assets, climate change is unlikely to cause a material increase on counter party credit risk in that time.

Share-based payments – Remuneration packages will be impacted and measured against a new sustainability metric from the 2023 financial year. This could impact the future amount and timing of the recognition of the share-based payment expense in the income statement once these metrics are included within the performance condition criteria of the share-based payment plans. This change has had no impact on the 2022 Consolidated Financial Statements and is unlikely to have a material impact on the charge recognised in the next 12 months.

Defined benefit pension plans – Climate-related risks could affect the financial position of defined benefit pension plans. As a result, this could have implications on the expected return on plan assets and measurement of defined benefit liabilities in future years. The Trustee of the Rolls-Royce UK Pension Fund meet the climate-related regulatory requirements. When making decisions about the plan, its analysis is carried out in a way consistent with Taskforce on Climate-Related Financial Disclosures (TCFD). The Trustee has set a net zero target for the plan assets by 2050. Having assessed the risks and opportunities of climate change and considered the nature of the assets of the fund, climate change is unlikely to have a material impact on the position in the Consolidated Financial Statements.

Presentation of underlying results

The Group measures financial performance on an underlying basis and discloses this information as an alternative performance measure (APM). This is consistent with the way that financial performance is measured by the Directors and reported to the Board in accordance with IFRS 8 *Operating Segments*. The Group believes this is the most appropriate basis to measure the in-year performance, as underlying results reflect the substance of trading activity, including the impact of the Group's foreign exchange forward contracts, which economically hedge net foreign currency cash flows at predetermined exchange rates. In addition, underlying results exclude the accounting impact of business acquisitions and disposals, impairment charges where the reasons are outside of normal operating activities, exceptional items, and certain other items which are market driven and outside of the control of management. Further details are given in note 2. A reconciliation of APMs to the statutory equivalent is provided on pages 203 to 206.

Revisions to IFRS applicable in 2022

The Group adopted the amendment to IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* for Onerous Contracts – Cost of Fulfilling a Contract on 1 January 2022. The amendment clarifies the meaning of 'costs to fulfil a contract', explaining that the direct cost of fulfilling a contract comprises the incremental costs of fulfilling that contract (for example, direct labour and materials) and also an allocation of other costs that relate directly to fulfilling contracts. As a result of the amendment, the Group now includes additional allocated costs when determining whether a contract is onerous and in the quantification of the provision recognised in the event of a contract being onerous. These additional allocated costs primarily relate to (a) fixed overheads in our operational areas that are incurred irrespective of manufacturing load, (b) fixed overheads of providing services, including engine health monitoring and IT costs, and (c) depreciation of spare engines that the Group owns are used to support the delivery of our contractual commitments to customers under LTSAs. The Group has assessed the impact of this amendment on its contracts and has included additional allocated costs that increased the total contract loss provision by £723m, as at 1 January 2022 (see note 21). All material elements impact Civil Aerospace contracts. Of this increase, £38m relates to current provisions and £685m to non-current provisions. A tax credit has not been recognised on the increase in the provision relating to the UK (see note 5 for details). As required by the transition arrangement in relation to the amendment, comparative information has not been restated. The cumulative effect of initially applying the amendment has been recognised as an adjustment to the opening balance of retained earnings as at 1 January 2022. It is estimated that the impact of the IAS 37 amendment has had a favourable immaterial impact on the 2022 income statement. Further information can be found in note 21.

There are no other new standards or interpretations issued by the IASB that had a significant impact on the Consolidated Financial Statements.

1 Accounting policies – continued

Key areas of judgement and sources of estimation uncertainty

The determination of the Group's accounting policies requires judgement. The subsequent application of these policies requires estimates, and the actual outcome may differ from that calculated. The key judgements and key sources of estimation uncertainty at the balance sheet date, that have a significant risk of causing material adjustment to the carrying amounts of assets and liabilities within the next financial year, are summarised below. Further details, together with sensitivities for key sources of estimation uncertainty where appropriate and practicable, are included within the significant accounting policies section of this note.

Area	Key judgements	Key sources of estimation uncertainty	Page ref
Revenue recognition and contract assets and liabilities	— Whether Civil Aerospace OE and aftermarket contracts should be combined. — How performance on long-term aftermarket contracts should be measured. — Whether any costs should be treated as wastage. — Whether sales of spare engines to joint ventures are at fair value. — When revenue should be recognised in relation to spare engine sales.	— Estimates of future revenue and costs of long-term contractual arrangements, including the impact of climate change.	115
Risk and revenue sharing arrangements	— Determination of the nature of entry fees received.		116
Taxation		— Estimates necessary to assess whether it is probable that sufficient suitable taxable profits will arise in the UK to utilise the deferred tax assets recognised.	118
Discontinued operations and business disposals	— The assets, liabilities and associated consolidation adjustments of the ITP Aero business recognised on disposal.		118
Research and development	— Determination of the point in time where costs incurred on an internal programme development meet the criteria for capitalisation. — Determination of the basis for amortising capitalised development costs.		120
Impairment of non-current assets	— Determination of cash-generating units for assessing impairment of goodwill.		122
Leases	— Determination of the lease term.	— Estimates of the payments required to meet residual value guarantees at the end of engine leases.	122
Provisions	— Whether any costs should be treated as wastage.	— Estimates of the time to resolve the technical issues on the Trent 1000, including the development of the modified high pressure turbine (HPT) blade and estimates of the expenditure required to settle the obligation relating to Trent 1000 long-term contracts assessed as onerous. — Estimates of the future revenues and costs to fulfil onerous contracts. — Assumptions implicit within the calculation of discount rates.	123
Post-retirement benefits		— Estimates of the assumptions for valuing the net defined benefit obligation.	124

Significant accounting policies

The Group's significant accounting policies are set out below. These accounting policies have been applied consistently to all periods presented in these Consolidated Financial Statements.

Basis of consolidation

The Consolidated Financial Statements include the Company Financial Statements and its subsidiary undertakings together with the Group's share of the results in joint arrangements and associates made up to 31 December.

A subsidiary is an entity controlled by the Company. Control exists when the Company has power over an entity, exposure to variable returns from its involvement with an entity and the ability to use its power over an entity so as to affect the Company's returns. Subsidiaries are consolidated in accordance with IFRS 10 *Consolidated Financial Statements*.

1 Accounting policies – continued

Basis of consolidation (continued)

A joint arrangement is an entity in which the Group holds a long-term interest and which is jointly controlled by the Group and one or more other investors under a contractual arrangement. Joint arrangements may be either joint ventures or joint operations. Joint ventures are accounted for using the equity method of accounting and joint operations are accounted for using proportionate accounting.

An associate is an entity that is neither a subsidiary nor a joint arrangement, in which the Group holds a long-term interest and where the Group has a significant influence. The results of associates are accounted for using the equity method of accounting.

All intra-group transactions, balances, income and expenses are eliminated on consolidation. Adjustments are made to eliminate the profit or loss arising on transactions with joint arrangements and associates to the extent of the Group's interest in the entity. Transactions with non-controlling interests are recorded directly in equity.

Any subsidiary undertaking, joint arrangement or associate sold or acquired during the year are included up to, or from, the date of change of control. Details of transactions in the year are set out in note 27.

Revenue recognition and contract assets and liabilities

Revenue recognised comprises sales to the Group's customers after discounts and amounts payable to customers. Revenue excludes value added taxes. The transaction price of a contract is typically clearly stated within the contract, although the absolute amount may be dependent on escalation indices and long-term contracts that require the key estimates highlighted below to be made. Refund liabilities, where sales are made with a right of return, are not typical in the Group's contracts. Where they do exist, and consideration has been received, a portion based on an assessment of the expected refund liability is recognised within other payables. The Group has elected to use the practical expedient not to adjust revenue for the effect of financing components where the expectation is that the period between the transfer of goods and services to customers and the receipt of payment is less than a year. Consideration is received in the form of deposits and payments for completion of milestones or performance obligations. LTSA cash receipts are typically received based on EFHs.

Sales of standard OE, spare parts and time and material overhaul services are generally recognised on transfer of control to the customer. This is generally on delivery to the customer, unless the specific contractual terms indicate a different point. The Directors consider whether there is a need to constrain the amount of revenue to be recognised on delivery based on the contractual position and any relevant facts, however, this is not typically required.

Sales of OE and services that are specifically designed for the contract (most significantly in the Defence business) are recognised by reference to the progress towards completion of the performance obligation, using the cost method described in the key judgements, provided the outcome of contracts can be assessed with reasonable certainty.

The Group generates a significant portion of its revenue on aftermarket arrangements arising from the installed OE fleet. As a consequence, in particular in the Civil Aerospace large engine business, the Group will often agree contractual prices for OE deliveries that take into account the anticipated aftermarket arrangements. Sometimes this may result in losses being incurred on OE. As described in the key judgements, these contracts are not combined. The consideration in the OE contract is therefore allocated to OE performance obligations and the consideration in the aftermarket contract to aftermarket performance obligations.

Key areas of the accounting policy are:

- Future variable revenue from long-term contracts is constrained to take account of the risk of non-recovery of resulting contract balances from reduced utilisation e.g. EFHs, based on historical forecasting experience and the risk of aircraft being parked by the customer.
- A significant amount of revenue and cost related to long-term contract accounting is denominated in currencies other than that of the relevant Group undertaking, most significantly USD transactions in sterling and euro denominated undertakings. These are translated at estimated long-term exchange rates.
- The assessment of stage of completion is generally measured for each contract. However, in certain cases, such as for CorporateCare agreements, where there are many contracts covering aftermarket services each for a small number of engines, the Group accounts for a portfolio of contracts together, as the effect on the Consolidated Financial Statements would not differ materially from applying the standard to the individual contracts in the portfolio. When accounting for a portfolio of LTSAs, the Group uses estimates and assumptions that reflect the size and composition of the portfolio.
- A contract asset/liability is recognised where payment is received in arrears/advance of the revenue recognised in meeting performance obligations.
- Where material, wastage costs (see key judgements on page 115) are recorded as an exceptional non-underlying expense.

If the expected costs to fulfil a contract exceed the expected revenue, a contract loss provision is recognised for the excess costs.

The Group pays participation fees to airframe manufacturers, its customers for OE, on certain programmes. Amounts paid are initially treated as contract assets and subsequently charged as a reduction to the OE revenue when the engines are transferred to the customer.

The Group has elected to use the practical expedient to expense as incurred any incremental costs of obtaining or fulfilling a contract if the amortisation period of an asset created would have been one year or less. Where costs to obtain a contract are recognised in the balance sheet, they are amortised over the performance of the related contract (two to 13 years).

1 Accounting policies – continued

Key judgement – Whether Civil Aerospace OE and aftermarket contracts should be combined
In the Civil Aerospace business, OE contracts for the sale of engines to be installed on new aircraft are with the airframers, while the contracts to provide spare engines and aftermarket goods and services are with the aircraft operators, although there may be interdependencies between them. IFRS 15 *Revenue from Contracts with Customers* includes guidance on the combination of contracts, in particular that contracts with unrelated parties should not be combined. Notwithstanding the interdependencies, the Directors consider that the engine contract should be considered separately from the aftermarket contract. In making this judgement, they also took account of industry practice.

Key judgement – How performance on long-term aftermarket contracts should be measured
The Group generates a significant proportion of its revenue from aftermarket arrangements. These aftermarket contracts, such as TotalCare and CorporateCare agreements in the Civil Aerospace business, cover a range of services and generally have contractual terms covering more than one year. Under these contracts, the Group's primary obligation is to maintain customers' engines in an operational condition. This is achieved by undertaking various activities, such as maintenance, repair and overhaul, and engine monitoring over the period of the contract. Revenue on these contracts is recognised over the period of the contract and the basis for measuring progress is a matter of judgement. The Directors consider that the stage of completion of the contract is best measured by using the actual costs incurred to date compared to the estimated costs to complete the performance obligations, as this reflects the extent of completion of the activities to be performed.

Key judgement – Whether any costs should be treated as wastage
In rare circumstances, the Group may incur costs of wasted material, labour or other resources to fulfil a contract where the level of cost was not reflected in the contract price. The identification of such costs is a matter of judgement and would only be expected to arise where there has been a series of abnormal events which give rise to a significant level of cost of a nature that the Group would not expect to incur and hence is not reflected in the contract price. Examples include technical issues that: require resolution to meet regulatory requirements; have a wide-ranging impact across a product type; and cause significant operational disruption to customers. Similarly, in these rare circumstances, significant disruption costs to support customers resulting from the actual performance of a delivered good or service may be treated as a wastage cost. Provision is made for any costs identified as wastage when the obligation to incur them arises – see note 21.

Key judgement – Whether sales of spare engines to joint ventures are at fair value
The Civil Aerospace business maintains a pool of spare engines to support its customers. Some of these engines are sold to, and held by, joint venture companies. The assessment of whether the sales price reflects fair value is a key judgement. The Group considers that based upon the terms and conditions of the sales, and by comparison to the sales price of spare engines to other third parties, the sales made to joint ventures reflect the fair value of the goods sold. See note 26 for the value of sales to joint ventures during the year.

Key judgement – When revenue should be recognised in relation to spare engine sales
Revenue is recognised at the point in time when a customer obtains control of a spare engine. The customer could be a related party, an external operator or a spare engine service provider. Depending on the contractual arrangements, judgement is required on when the Group relinquishes control of spare engines and, therefore, when the revenue is recognised. The point of control passing has been concluded to correspond to the point of legal sale, even for instances where the customer is contracted to provide some future spare engine capacity to the Group to support its installed engine base. In such cases, the customer has responsibility for generating revenue from the engines and exposure to periods of non-utilisation; exposure to risk of damage or loss, risk from residual value movements, and will determine if and when profits will be made from disposal. The spare engine capacity that will be made available to the Group in the future does not consist of identified assets and the provider retains a substantive right to substitute the asset through the Group's period of use. It is, therefore, appropriate to recognise revenue from the sale of the spare engines at the point that title transfers. During 2022, of the total 44 (2021: 36) large spare engine sales delivered, 20 (2021: six) engines were sold to customers where contractual arrangement allows for some future spare engine capacity to be used by the Group. These sales contributed £454m (2021: £111m) to revenue for the year.

1 Accounting policies – continued

Key estimate – Estimates of future revenue and costs on long-term contractual arrangements
The Group has long-term contracts that fall into different accounting periods and which can extend over significant periods (generally up to 25 years), the most significant of these are LTSAs in the Civil Aerospace business, with an average remaining term of around ten years. The estimated revenue and costs are inherently imprecise and significant estimates are required to assess: EFHs, time-on-wing and other operating parameters; the pattern of future maintenance activity and the costs to be incurred; lifecycle cost improvements over the term of the contracts; and escalation of revenue and costs (that includes the impact of inflation). The impact of climate change on EFHs and costs is also considered when making these estimates. Industry and customer data on expected levels of utilisation is included in the forecasts used. Across the length of the current Civil Aerospace LTSA contracts, allowance has been made for around a 1% (2021: 1%) projected cost increase resulting from carbon pricing and commodity price changes.

The sensitivities below demonstrate how changes in assumptions (including as a result of climate change) could impact the level of revenue recognised were assumptions to change. The Directors believe that the estimates used to prepare the Consolidated Financial Statements take account of the inherent uncertainties, constraining the expected level of revenue as appropriate.

Estimates of future LTSA revenue within Civil Aerospace are based upon future EFH forecasts, influenced by assumptions over the recovery of the civil aviation industry. Finally, many of the revenues and costs are denominated in currencies other than that of the relevant group undertaking. These are translated at an estimated long-term exchange rate, based on historical trends and economic forecasts.

During the year, changes to the estimate in relation to the Civil Aerospace LTSA contracts resulted in favourable catch-up adjustments to revenue of £360m (2021: £214m).

Based upon the stage of completion of all LTSA contracts within Civil Aerospace as at 31 December 2022, the following reasonably possible changes in estimates would result in catch-up adjustments being recognised in the period in which the estimates change (at underlying rates):

- A change in forecast EFHs of 1% over the remaining term of the contracts would impact LTSA income and to a lesser extent costs, resulting in an in-year impact of around £20m. This would be expected to be seen as a catch-up change in revenue or, to the extent it impacts onerous contracts, within cost of sales.
- A 2% increase or decrease in our pricing to customers over the life of the contracts would lead to a revenue catch-up adjustment in the next 12 months of around £260m.
- A 2% increase or decrease in shop visit costs over the life of the contracts would lead to a revenue catch-up adjustment in the next 12 months of around £100m.

Risk and revenue sharing arrangements (RRSAs)

Cash entry fees received are initially deferred on the balance sheet within trade payables and other liabilities. They are then recognised as a reduction in cost of sales incurred. Individual programme amounts are allocated pro rata to the estimated number of units to be produced. Amortisation commences as each unit is delivered and then recognised on a 15-year straight-line basis.

The payments to suppliers of their shares of the programme cash flows for their production components are charged to cost of sales when OE sales are recognised or as LTSA costs are incurred.

The Group also has arrangements with third parties who invest in a programme and receive a return based on its performance, but do not undertake development work or supply parts. Such arrangements (financial RRSAs) are financial instruments as defined by IAS 32 *Financial Instruments: Presentation* and are accounted for using the amortised cost method.

Key judgement – Determination of the nature of entry fees received
RRSAs with key suppliers (workshare partners) are a feature of the civil aviation industry business. Under these contractual arrangements, the key commercial objectives are that: (i) during the development phase the workshare partner shares in the risks of developing an engine by performing its own development work, providing development parts, and paying a non-refundable cash entry fee; and (ii) during the production phase the workshare partner supplies components in return for a share of the programme cash flows as a 'life of type' supplier (i.e. as long as the engine remains in service).

The non-refundable cash entry fee is judged by the Group to be a contribution towards the development expenditure incurred. These receipts are deferred on the balance sheet and recognised against the cost of sales over the estimated number of units to be delivered on a similar basis to the amortisation of development costs – see page 120.

1 Accounting policies – continued

Royalty payments
Where a government or similar body has previously acquired an interest in the intellectual property of a programme, royalty payments are matched to the related sales.

Government grants
Government grants received are varied in nature and are recognised in the income statement so as to match them with the related expenses that they are intended to compensate. Where grants are received in advance of the related expenses, they are initially recognised as liabilities within trade payables and other liabilities and released to match the related expenditure. Non-monetary grants are recognised at fair value.

Interest
Interest receivable/payable is credited/charged to the income statement using the effective interest method. Where borrowing costs are attributable to the acquisition, construction or production of a qualifying asset, such costs are capitalised as part of the specific asset.

Taxation
The tax charge/credit on the profit or loss for the year comprises current and deferred tax:

- Current tax is the expected tax payable for the year, using tax rates enacted or substantively enacted at the balance sheet date, and any adjustment to tax payable in respect of previous years.
- Deferred tax is provided using the balance sheet liability method, providing for temporary differences between the carrying amounts of the assets and liabilities for financial reporting purposes and the amounts used for tax purposes and is calculated using the enacted or substantively enacted rates that are expected to apply when the asset or liability is settled. In the UK, the deferred tax liability on the pension scheme surplus is recognised consistently with the basis for recognising the surplus i.e. at the rate applicable to refunds from a trust.

Tax is charged or credited to the income statement or OCI as appropriate, except when it relates to items credited or charged directly to equity in which case the tax is also dealt with in equity.

Deferred tax liabilities are recognised for taxable temporary differences arising on investments in subsidiaries and joint arrangements, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax is not recognised on taxable temporary differences arising on the initial recognition of goodwill or for temporary differences arising from the initial recognition of assets and liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profit.

Deferred tax assets are recognised only to the extent that it is probable that future taxable profits, which include the reversal of taxable temporary differences, will be available against which the assets can be utilised. Further details on the Group's tax position can be found on page 133.

1 Accounting policies – continued

Key estimate – Estimates necessary to assess whether it is probable that sufficient suitable taxable profits will arise in the UK to utilise the deferred tax assets recognised
Deferred tax assets are only recognised to the extent it is probable that future taxable profits will be available, against which the deductible temporary difference can be utilised. On this basis a deferred tax asset of £2,040m is not recognised in respect of UK tax losses. Further details are included in note 5.

In addition to taking into account a severe but plausible downside forecast (see below), the climate-related estimates and assumptions (set out on pages 110 to 112) have also been considered when assessing the recoverability of the deferred tax assets. Recognising the longer terms over which these assets will be recovered, the Group has considered the risk that regulatory changes could materially impact demand for our products and shifting investment focus towards more sustainable products and solutions. The climate scenarios prepared do not indicate a significant deterioration in demand or profitability for Civil Aerospace programmes given that all commercial aero-engines will be compatible with sustainable fuels by the end of 2023.

While carbon and commodity pricing may put pressure on costs, decarbonisation and new supplier and customer contracts offer the opportunity to receive value for more efficient and sustainable products.

Macro-economic factors continue to result in uncertainty over the recovery of demand across the civil aviation industry. As explained in note 5, a 25% probability of there being a severe but plausible downside forecast in relation to the civil aviation industry has been taken into account in the assessment of the recovery of the UK deferred tax assets.

The estimates take account of the inherent uncertainties constraining the expected level of profit as appropriate. Changes in these estimates will affect future profits and, therefore, the recoverability of the deferred tax assets. The following sensitivities have been modelled to demonstrate the impact of changes in assumptions on the recoverability of deferred tax assets.

- A 5% change in margin in the main Civil Aerospace large engine programmes.
- A 5% change in the number of shop visits driven by EFHs.
- Assumed future cost increases from climate change expected to pass through to customers at 100% are restricted to 90% pass through.

All of these could be driven by a number of factors, including the impact of climate change as explained on pages 110 to 112 and changes in foreign exchange rates.

A 5% change in margin or shop visits (which could be driven by fewer EFHs as a result of climate change) would result in an increase/decrease in the deferred tax asset of around £130m.

If only 90% of assumed future cost increases from climate change are passed on to customers, this would result in a decrease in the deferred tax asset of around £50m, and if carbon prices were to double, this would be £80m.

Foreign currency translation
Transactions denominated in currencies other than the functional currency of the transacting group undertaking are translated into the functional currency at the average monthly exchange rate when the transaction occurs. Monetary assets and liabilities denominated in foreign currencies are translated into the relevant functional currency at the rate prevailing at the year end. Exchange differences arising on foreign exchange transactions and the retranslation of monetary assets and liabilities into functional currencies at the rate prevailing at the year end are included in profit/(loss) before taxation.

The trading results of Group undertakings are translated into sterling at the average exchange rates for the year. The assets and liabilities of overseas undertakings, including goodwill and fair value adjustments arising on acquisition, are translated at the exchange rates prevailing at the year end. Exchange adjustments arising from the retranslation of the opening net assets, and from the translation of the profits or losses at average rates, are recognised in OCI.

Discontinued operations and business disposals
A discontinued operation is defined in IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations* as a component of an entity that has been disposed of or is classified as held for sale, represents a separate major line of business or geographical area of operations, is part of a single co-ordinated plan to dispose of such a line of business or is a subsidiary acquired exclusively with a view to resale. The results of discontinued operations are required to be presented separately in the income statement.

Assets and businesses are classified as held for sale when their carrying amounts will be recovered through sale rather than through continuing use.

Key judgement – The assets, liabilities and associated consolidation adjustments of the ITP Aero business recognised on disposal
In identifying the assets and liabilities that form part of the disposal group in relation to the ITP Aero business, the Group has considered whether the associated consolidation adjustments meet the criteria to be classified within the disposal group. The consolidation adjustments allocated to the disposal group are those that relate to the carrying value of the disposal group's assets and liabilities. Further detail can be found in note 27.

1 Accounting policies – continued

Financial instruments – Classification and measurement

Financial assets primarily include trade receivables, cash and cash equivalents, short-term investments, derivatives (foreign exchange, commodity and interest rate contracts), and listed and unlisted investments.

- Trade receivables are classified either as held to collect and measured at amortised cost, or as held to collect and sell and measured at fair value, with movements in fair value recognised through other comprehensive income (FVOCI). The Group may sell trade receivables due from certain customers before the due date. Any trade receivables from such customers that are not sold at the reporting date are classified as 'held to collect and sell'.
- Cash and cash equivalents (consisting of balances with banks and other financial institutions, money-market funds, short-term deposits) and short-term investments are subject to low market risk. Cash balances, short-term deposits and short-term investments are measured at amortised cost. Money market funds are measured at fair value, with movements in fair value recognised in the income statement as a profit or loss (FVPL).
- Derivatives and unlisted investments are measured at FVPL. The Company has elected to measure its listed investments at FVOCI

Financial liabilities primarily consist of trade payables, borrowings, derivatives, financial RRSAs and C Shares.

- Derivatives are classified and measured at FVPL.
- All other financial liabilities are classified and measured at amortised cost.

Financial instruments – Impairment of financial assets and contract assets

IFRS 9 *Financial Instruments* sets out the basis for the accounting of ECLs on financial assets and contract assets resulting from transactions within the scope of IFRS 15. The Group has adopted the simplified approach to provide for ECLs, measuring the loss allowance at a probability weighted amount that considers reasonable and supportable information about past events, current conditions and forecasts of future economic conditions of customers. These are incorporated in the simplified model adopted by using credit ratings which are publicly available, or through internal risk assessments derived using the customer's latest available financial information. The ECLs are updated at each reporting date to reflect changes in credit risk since initial recognition. ECLs are calculated for all financial assets in scope, regardless of whether or not they are overdue.

Financial instruments – Hedge accounting

Forward foreign exchange contracts and commodity swaps (derivative financial instruments) are held to manage the cash flow exposures of forecast transactions denominated in foreign currencies or in commodities respectively. Derivative financial instruments qualify for hedge accounting when: (i) there is a formal designation and documentation of the hedging relationship and the Group's risk management objective and strategy for undertaking the hedge at the inception of the hedge; and (ii) the hedge is expected to be effective.

In general, the Group has chosen to not apply hedge accounting in respect of these exposures.

The Group economically hedges the fair value and cash flow exposures of its borrowings. Cross-currency interest rate swaps are held to manage the fair value or cash flow exposures of borrowings denominated in foreign currencies and are designated as fair value hedges or cash flow hedges as appropriate. Interest rate swaps are held to manage the interest rate exposures of fixed and floating rate borrowings and may be designated as fair value hedges or cash flow hedges as appropriate. If the swaps are not designated as fair value or cash flow hedges, the economic effect is included in the underlying results – see note 2.

Changes in the fair values of derivatives that are designated as fair value hedges are recognised directly in the income statement. The fair value changes of effective cash flow hedge derivatives are recognised in OCI and subsequently recycled to the income statement in the same period or periods during which the hedged cash flows affect profit or loss. Any ineffectiveness in the hedging relationship is included in the income statement.

Hedge accounting is discontinued when the hedging instrument expires or is sold, terminated, exercised, or no longer qualifies for hedge accounting. At that time, for cash flow hedges and, if the forecast transaction remains probable, any net cumulative gain or loss on the hedging instrument recognised in SOCIE is retained until the forecast transaction occurs. If a hedged transaction is no longer expected to occur, the net cumulative gain or loss is recycled to the income statement.

Financial instruments – Replacement of benchmark interest rates

In August 2020, Phase 2 of IBOR reform was published, effective from 1 January 2021. The amendments address issues that arise from the implementation of the reforms including the replacement of one benchmark with an alternative one. The Phase 2 amendments provide additional temporary reliefs from applying specific IAS 39 *Financial Instruments: Recognition and Measurement* and IFRS 9 hedge accounting requirements to hedging relationships directly affected by IBOR reform.

A number of the Group's lease liabilities are based on a LIBOR index. These are predominantly referencing USD LIBOR, which is not expected to cease until 2023, hence the change in relation to these contracts has not impacted the 2022 financial statements. Amendments to these contracts is in progress at the balance sheet date.

1 Accounting policies – continued

Business combinations and goodwill
Goodwill recognised represents the excess of the fair value of the purchase consideration over the fair value to the Group of the net of the identifiable assets acquired and the liabilities assumed. On transition to IFRS on 1 January 2004, business combinations were not retrospectively adjusted to comply with UK-adopted International Accounting Standards and goodwill was recognised based on the carrying value under the previous accounting policies. Goodwill, in respect of the acquisition of a subsidiary, is recognised as an intangible asset. Goodwill arising on the acquisition of joint arrangements and associates is included in the carrying value of the investment.

Customer relationships
The fair value of customer relationships recognised as a result of a business combination relate to the acquired company's established relationships with its existing customers that result in repeat purchases and customer loyalty. Amortisation is charged on a straight-line basis over its useful economic life, up to a maximum of 15 years.

Certification costs
Costs incurred, in respect of meeting regulatory certification requirements for new Civil Aerospace aero-engine/aircraft combinations, including payments made to airframe manufacturers for this, are recognised as intangible assets to the extent that they can be recovered out of future sales. They are charged to the income statement over the programme life. Individual programme assets are allocated pro rata to the estimated number of units to be produced. Amortisation commences as each unit is delivered and then charged on a 15-year straight-line basis.

Research and development
Expenditure incurred on research and development is distinguished as relating either to a research phase or to a development phase. All research phase expenditure is charged to the income statement. Development expenditure is recognised as an internally generated intangible asset (programme asset) only if it meets strict criteria, relating in particular to technical feasibility and generation of future economic benefits. More specifically, development costs are capitalised from the point at which the following conditions have been met:

— the technical feasibility of completing the programme and the intention and ability (availability of technical, financial and other resources) to complete the programme asset and use or sell it;

— the probability that future economic benefits will flow from the programme asset; and

— the ability to measure reliably the expenditure attributable to the programme asset during its development.

Capitalisation continues until the point at which the programme asset meets its originally contracted technical specification (defined internally as the point at which the asset is capable of operating in the manner intended by the Directors).

Subsequent expenditure is capitalised where it enhances the functionality of the programme asset and demonstrably generates an enhanced economic benefit to the Group. All other subsequent expenditure on programme assets is expensed as incurred.

Individual programme assets are allocated pro rata to the estimated number of units to be produced. Amortisation commences as each unit is delivered and then charged on a 15-year straight-line basis. In accordance with IAS 38 *Intangible Assets*, the basis on which programme assets are amortised is assessed annually.

Key judgement – Determination of the point in time when costs incurred on an internal programme development meet the criteria for capitalisation
The Group incurs significant research and development expenditure in respect of various development programmes. Determining when capitalisation should commence and cease is a key judgement, as is the determination of when subsequent expenditure on the programme assets should be capitalised. During the year, £131m of development expenditure was capitalised.

Within the Group, there is an established Product Introduction and Lifecycle Management process (PILM) in place. Within this process, the technical feasibility, the commercial viability and financial assessment of the programme is assessed at certain milestones. When these are met, development expenditure is capitalised. Prior to this, expenditure is expensed as incurred.

The Group continues to invest in new technologies as a result of its decarbonisation commitments. As these are new technologies, there is a higher level of uncertainty over potential outcomes and, therefore, this could impact the level of expenditure that is capitalised or recognised in the income statement in future years.

Subsequent expenditure after entry into service which enhances the performance of the engine and the economic benefits to the Group is capitalised. This expenditure is referred to as enhanced performance and is governed by the PILM process referred to above. All other development costs are expensed as incurred.

Key judgement – Determination of the basis for amortising capitalised development costs
The economic benefits of the development costs are primarily those cash inflows arising from LTSAs, which are expected to be relatively consistent for each engine within a programme. Amortisation of development costs is recognised on a straight-line basis over the estimated period of operation of the engine by its initial operator.

1 Accounting policies – continued

Software
Software that is not specific to an item of property, plant and equipment is classified as an intangible asset, recognised at its acquisition cost and amortised on a straight-line basis over its useful economic life. The amortisation period of software assets is reviewed annually. In 2022, the amortisation period was changed from a maximum of five years to a maximum of ten years to reflect the expected useful lives of the assets. The change has been accounted for as a change in accounting estimate and has impacted a limited amount of assets with an immaterial impact on the results for the year. The cost of internally developed software includes direct labour and an appropriate proportion of overheads.

Other intangible assets
These principally include intangible assets arising on acquisition of businesses, such as technology, patents and licences, which are amortised on a straight-line basis over a maximum of 15 years, and trademarks which are not amortised.

Property, plant and equipment
Property, plant and equipment are stated at acquisition cost less accumulated depreciation and any provision for impairment in value. The cost of self-constructed assets includes the cost of materials, direct labour and an appropriate proportion of overheads and, where appropriate, interest.

Depreciation is provided on a straight-line basis to write off the cost, less the estimated residual value, of property, plant and equipment over their estimated useful lives. No depreciation is recorded on assets in the course of construction. Estimated useful lives are reassessed annually and are as follows:

- Land and buildings, as advised by the Group's professional advisers:
  - freehold buildings – five to 50 years (average 23 years); and
  - no depreciation is provided on freehold land.
- Plant and equipment – two to 27 years (average 11 years).
- Aircraft and engines – five to 20 years (average 16 years).

Leases
Assets and liabilities 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 incentive receivable;
- variable lease payments that are based on an index or a rate;
- amounts expected to be payable by the Group under residual value guarantees;
- the exercise price of a purchase option if the Group is reasonably certain to exercise that option; and
- payments of penalties for termination of the lease, if the lease term reflects the Group exercising that option.

Where leases commenced after the initial IFRS 16 *Leases* transition date, the lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be determined, the Group's incremental borrowing rate is used, being the rate that the Group would have to pay to borrow the funds necessary to obtain an asset of similar value in a similar economic environment with similar terms and conditions. Where appropriate, lease liabilities are revalued at each reporting date using the spot exchange rate.

The Group did not adopt the amendment to IFRS 16 *Leases*, effective in 2022, which provides a practical expedient to not treat COVID-19 rent concessions as lease modifications.

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

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

Each right-of-use asset is depreciated over the shorter of its useful economic life and the lease term on a straight-line basis unless the lease is expected to transfer ownership of the underlying asset to the Group, in which case the asset is depreciated to the end of the useful life of the asset.

Short-term leases are leases with a lease term of 12 months or less. Payments associated with short-term leases and low-value leases are recognised on a straight-line basis as an expense in the income statement.

1 Accounting policies – continued

Key judgement – Determination of lease term

In determining the lease term, the Group considers all facts and circumstances that create an economic incentive to exercise an extension option, or not exercise a termination option. Extension options (or periods after termination) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated). Certain land and building leases have renewal options with renewal dates for the most significant property leases evenly spread between 2023–2028 and in 2041. The Group reviews its judgements on lease terms annually, including the operational significance of the site, especially where utilised for manufacturing activities.

Key estimates – Estimates of the payments required to meet residual value guarantees at the end of engine leases

Engine leases in the Civil Aerospace business often include clauses that require the engines to be returned to the lessor with specific levels of usable life remaining or cash payments to the lessor. The costs of meeting these requirements are included in the lease payments. The amounts payable are calculated based upon an estimate of the utilisation of the engines over the lease term, whether the engine is restored to the required condition by performing an overhaul at our own cost or through the payments of amounts specified in the contract and any new contractual arrangements arising when the current lease contracts end. Amounts due can vary depending on the level of utilisation of the engines, overhaul activity prior to the end of the contract, and decisions taken on whether ongoing access to the assets is required at the end of the lease term. During the year, adjustments to return conditions at the end of leases resulted in a credit of £4m to the income statement. The lease liability at 31 December 2022 included £434m relating to the cost of meeting these residual value guarantees in the Civil Aerospace business. Up to £114m is payable in the next 12 months, £175m is due over the following four years and the remaining balance after five years.

Impairment of non-current assets

Impairment of non-current assets is considered in accordance with IAS 36 *Impairment of Assets*. Where the asset does not generate cash flows that are independent of other assets, impairment is considered for the cash-generating unit (CGU) to which the asset belongs. Goodwill, indefinite life intangible assets and intangible assets not yet available for use are tested for impairment annually. Other intangible assets (including programme-related intangible assets), property, plant and equipment and investments are assessed for any indications of impairment annually. If any indication of impairment is identified, an impairment test is performed to estimate the recoverable amount.

If the recoverable amount of an asset (or CGU) is estimated to be below the carrying value, the carrying value is reduced to the recoverable amount and the impairment loss is recognised as an expense. The recoverable amount is the higher of value in use or fair value less costs of disposal, if this is readily available. The value in use is the present value of future cash flows using a pre-tax discount rate that reflects the time value of money and the risk specific to the asset (or CGU). Fair value less costs of disposal (FVLCOD) reflects market inputs or inputs based on market evidence if readily available. If these inputs are not readily available, the fair value is estimated by discounting future cash flows modified for market participants views. The relevant local statutory tax rates have been applied in calculating post-tax to pre-tax discount rates.

Key judgement – Determination of CGUs for assessing impairment of goodwill

The Group conducts impairment reviews at the CGU level. As permitted by IAS 36, impairment reviews for goodwill are performed at the groups of CGUs level, representing the lowest level at which the Group monitors goodwill for internal management purposes and no higher than the Group's operating segments. The main CGUs for which goodwill impairment reviews have been performed are Rolls-Royce Deutschland Ltd & Co KG and at an aggregated Rolls-Royce Power Systems AG level.

Inventories

Inventories are valued on a first-in, first-out basis, at the lower of cost and net realisable value. Cost comprises direct materials and, where applicable, direct labour costs and those direct and indirect overheads, including depreciation of property, plant and equipment, that have been incurred in bringing the inventories to their present location and condition. Net realisable value represents the estimated selling prices less all estimated costs of completion and costs to be incurred in marketing, selling and distribution. All inventories are classified as current as it is expected that they will be used in the Group's operating cycle, regardless of whether this is expected to be within 12 months of the balance sheet date.

Cash and cash equivalents

Cash and cash equivalents include cash at bank and in hand, investments in money-market funds and short-term deposits with a maturity of three months or less on inception. The Group considers overdrafts (repayable on demand) to be an integral part of its cash management activities and these are included in cash and cash equivalents for the purposes of the cash flow statement. Where the Group operates pooled banking arrangements across multiple accounts, these are presented on a net basis when it has both a legal right and intention to settle the balances on a net basis.

The Group offers a supply chain financing (SCF) programme through partnership with banks to enable suppliers, including joint ventures, who are on our standard 75 day or more payment terms to receive their payment sooner. The election to utilise the programme is the sole decision of the supplier. As the Group continues to have a contractual obligation to pay its suppliers under commercial terms which are unaffected by any utilisation of the programme, and it does not retain any ongoing involvement in the SCF, the related payables are retained on the Group's balance sheet and classified as trade payables. Further details are disclosed in note 19.

1 Accounting policies – continued

Provisions

Provisions are recognised when the Group has a present obligation as a result of a past event, and it is probable that the Group will be required to settle that obligation. Provisions are discounted to present value where the effect is material.

The principal provisions are recognised as follows:

— Trent 1000 in-service issues when wastage costs are identified as described on page 115;

— contract losses based on an assessment of whether the direct costs to fulfil a contract are greater than the expected revenue;

— warranty and guarantees based on an assessment of future claims with reference to past experience and recognised at the earlier of when the underlying products and services are sold and when the likelihood of a future cost is identified; and

— restructuring when the Group has approved a detailed and formal restructuring plan, and the restructuring has either commenced or has created a valid expectation to those affected.

Key judgement – Whether any costs should be treated as wastage
As described further on page 115, in rare circumstances, the Group may incur costs of wasted material, labour or other resources to fulfil a contract where the level of cost was not reflected in the contract price. The identification of such costs is a matter of judgement and would only be expected to arise where there has been a series of abnormal events which give rise to a significant level of cost of a nature that the Group would not expect to incur and hence is not reflected in the contract price. Provision is made for any costs identified as wastage when the obligation to incur them arises.

Specifically for the Trent 1000 wastage costs, provision has been made as the Group is an owner of an engine Type Certificate under which it has a present obligation to develop appropriate design changes to address certain engine conditions that have been noted in issued Airworthiness Directives. The Group is also required to ensure engine operators can continue to safely operate engines within the terms of their LTSAs, and this requires the engines to be compliant with the requirements of those issued Airworthiness Directives. These requirements cannot be met without the Group incurring significant costs in the form of replacement parts and customer claims. Given the significant activities of the Group in designing and overhauling aero engines it is very experienced in making the required estimates in relation to the number and timing of shop visits, parts costs, overhaul labour costs and customer claims.

Key estimates – Estimates of the time to resolve the technical issues on the Trent 1000, including the development of the modified HPT blade and estimates of the expenditure required to settle the obligation relating to Trent 1000 claims and to settle Trent 1000 long-term contracts assessed as onerous
The Group has provisions for Trent 1000 wastage costs at 31 December 2022 of £179m (2021: £157m). These represent the Directors' best estimate of the expenditure required to settle the obligations at the balance sheet date. These estimates take account of information available and different possible outcomes.

The Group considers that at 31 December 2022 the Trent 1000 contract loss provisions and the Trent 1000 wastage cost provision are most sensitive to changes in estimates. A 12-month delay in the availability of the modified HPT blade could lead to around a £40–70m increase in the Trent 1000 wastage costs provision.

Key estimates – Estimates of the future revenues and costs to fulfil onerous contracts
The Group has provisions for onerous contracts at 31 December 2022 of £1,592m (1 January 2022: £1,568m).

An increase in Civil Aerospace large engine estimates of LTSA costs of 1% over the remaining term of the contracts could lead to around a £100–125m increase in the provision for contract losses across all programmes.

Key estimates – Assumptions implicit within the calculation of discount rates
The contract loss provisions for onerous contracts are sensitive to changes in the discount rate used to value the provisions. The rate used for each contract is derived from bond yields (i.e. risk-free rates) with a similar duration and currency to the contract that they are applied to. The rate is adjusted to reflect the specific inflation characteristics of the contracts. The forecast rates are determined from third-party market analysis and average 4%. A 1% change in the discount rates used could lead to around a £80-100m change in the provision.

Customer financing support

In connection with the sale of its products, the Group will, on occasion, provide financing support for its customers. These arrangements fall into two categories: credit-based guarantees and asset-value guarantees. Credit-based guarantees are disclosed as commitments or contingent liabilities dependent on whether aircraft have been delivered or not. The Group considers asset-value guarantees to be non-financial liabilities and provides for amounts required. As described on page 169, the Directors consider the likelihood of crystallisation in assessing whether provision is required for any contingent liabilities.

The Group's contingent liabilities relating to financing arrangements are spread over many years and relate to a number of customers and a broad product portfolio and are reported on a discounted basis.

1 Accounting policies – continued

Post-retirement benefits
Pensions and similar benefits (principally healthcare) are accounted for under IAS 19 *Employee Benefits*.

For defined benefit plans, obligations are measured at discounted present value, using a discount rate derived from high-quality corporate bonds denominated in the currency of the plan, whilst plan assets are recorded at fair value. Surpluses in schemes are recognised as assets only if they represent economic benefits available to the Group in the future. Actuarial gains and losses are recognised immediately in OCI. The service and financing costs of such plans are recognised separately in the income statement:

— current service costs are spread systematically over the lives of employees;

— past-service costs and settlements are recognised immediately; and

— financing costs are recognised in the periods in which they arise.

UK pension obligations include the estimated impact of the obligation to equalise defined benefit pensions and transfer values for men and women.

Payments to defined contribution schemes are charged as an expense as they fall due.

Key estimate – Estimates of the assumptions for valuing the net defined benefit obligation
The Group's defined benefit pension schemes and similar arrangements are assessed annually in accordance with IAS 19. The valuations, which are based on assumptions determined with independent actuarial advice, resulted in a net deficit of £420m before deferred taxation being recognised on the balance sheet at 31 December 2022 (2021: deficit of £225m). The size of the net surplus/deficit is sensitive to the actuarial assumptions, which include the discount rate, price inflation, pension and salary increases, longevity and, in the UK, the number of plan members who take the option to transfer their pension to a lump sum on retirement or who choose to take the Bridging Pension Option. Following consultation, the UK scheme closed to future accrual on 31 December 2020.

A reduction in the discount rate of 0.25% from 4.80% could lead to an increase in the defined benefit obligations of the RR UK Pension Fund (RRUKPF) of approximately £205m. This would be expected to be broadly offset by changes in the value of scheme assets, as the scheme's investment policies are designed to mitigate this risk.

An increase in the assumed rate of inflation of 0.25% (RPI of 3.50% and CPI of 2.95%) could lead to an increase in the defined benefit obligations of the RRUKPF of approximately £70m.

A one-year increase in life expectancy from 21.9 years (male aged 65) and from 23.2 years (male aged 45) would increase the defined benefit obligations of the RRUKPF by approximately £165m.

Further details and sensitivities are included in note 22.

Share-based payments
The Group provides share-based payment arrangements to certain employees. These are principally equity-settled arrangements and are measured at fair value (excluding the effect of non-market based vesting conditions) at the date of grant. The fair value is expensed on a straight-line basis over the vesting period. The amount recognised as an expense is adjusted to reflect the actual number of shares or options that will vest, except where additional shares vest as a result market-based performance conditions, such as the total shareholder return (TSR) performance condition in the long-term incentive plan (LTIP), where no adjustment is required as allowance for these performance conditions are included in the initial fair value.

Cash-settled share options (grants in the International ShareSave plan) are measured at fair value at the balance sheet date. The Group recognises a liability at the balance sheet date based on these fair values, taking into account the estimated number of options that are expected to vest and the relative completion of the vesting period. Changes in the value of this liability are recognised in the income statement for the year.

The cost of shares of Rolls-Royce Holdings plc held by the Group for the purpose of fulfilling obligations in respect of employee share plans is deducted from equity in the consolidated balance sheet. See note 24 for a further description of the share-based payment plans.

Costs of share issues
The costs of issuing ordinary shares are charged to the share premium account.

Revisions to IFRS not applicable in 2022
Standards and interpretations issued by the IASB are only applicable if endorsed by the UK. Other than IFRS 17 *Insurance Contracts* described on page 125, the Group does not consider that any standards, amendments or interpretations issued by the IASB, but not yet applicable will have a significant impact on the Consolidated Financial Statements.

1 Accounting policies – continued

IFRS 17 Insurance Contracts

IFRS 17 issued in May 2018, establishes the principles for the recognition, measurement, presentation and disclosure of insurance contracts within the scope of the Standard. The Standard is effective for years beginning on or after 1 January 2023 with a requirement to restate comparatives.

The Group has reviewed whether its arrangements meet the accounting definition of an insurance contract. While some contracts, including Civil LTSAs, may transfer an element of insurance risk, they relate to warranty and service type agreements that are issued in connection with the Group's sales of its goods or services and therefore will remain accounted for under the existing revenue and provision standards. The Directors have judged that such arrangements entered into after the original equipment sale remain sufficiently related to the sale of the Group's goods and services.

The Group has identified that the Standard will impact the results of its captive insurance company as it issues insurance contracts, however, the impact is expected to largely consolidate out in the Consolidated Financial Statements. The Standard includes a simplified approach and modifications to its general measurement model that can be applied in certain circumstances. Given the coverage period of these insurance policies within the captive insurance company are 12 months or less, it is intended to make use of the 'premium allocation approach' for the recognition of premiums. The confidence level and risk adjustments have been calculated using a weighted average cost of capital calculation with discount rates based on the European Insurance and Occupational Pension Authority (EIOPA) risk-free interest rates. The opening balances on 1 January 2022, as well as the results for 2022, have been run under IFRS 17, and the expected impact on accumulated losses is less than £1m.

The Group is in the process of concluding its analysis of whether there is any further impact as a result of adopting the new Standard. This will conclude in the first half of 2023. At this time there is no further known or reasonably estimatable information to disclose that is relevant to assessing the possible impact that application of the new IFRS will have on the Consolidated Financial Statements.

Post balance sheet events

The Group has taken the latest legal position in relation to any ongoing legal proceedings and reflected these in the 2022 results as appropriate.

2 Segmental analysis

The analysis by business segment is presented in accordance with IFRS 8 *Operating Segments*, on the basis of those segments whose operating results are regularly reviewed by the Board (who acts as the Chief Operating Decision Maker as defined by IFRS 8). The Group's four businesses are set out below.

Civil Aerospace	development, manufacture, marketing and sales of commercial aero engines and aftermarket services
Defence	development, manufacture, marketing and sales of military aero engines, naval engines, submarine nuclear power plants and aftermarket services
Power Systems	development, manufacture, marketing and sales of integrated solutions for onsite power and propulsion
New Markets	development, manufacture and sales of small modular reactor (SMR) and new electrical power solutions

Other businesses include the trading results of the Bergen Engines AS business until the date of disposal on 31 December 2021, the results of the Civil Nuclear Instrumentation & Control business until the date of disposal on 5 November 2021 and the trading results of the UK Civil Nuclear business.

Underlying results

The Group presents the financial performance of the continuing businesses in accordance with IFRS 8 and consistently with the basis on which performance is communicated to the Board each month.

Underlying results are presented by recording all relevant revenue and cost of sales transactions at the average exchange rate achieved on effective settled derivative contracts in the period that the cash flow occurs. The impact of the revaluation of monetary assets and liabilities using the exchange rate that is expected to be achieved by the use of the effective hedge book is recorded within underlying cost of sales. Underlying financing excludes the impact of revaluing monetary assets and liabilities to period end exchange rates. Transactions between segments are presented on the same basis as underlying results and eliminated on consolidation. Unrealised fair value gains/(losses) on foreign exchange contracts, which are recognised as they arise in the statutory results, are excluded from underlying results. To the extent that the previously forecast transactions are no longer expected to occur, an appropriate portion of the unrealised fair value gain/(loss) on foreign exchange contracts is recorded immediately in the underlying results.

Amounts receivable/(payable) on interest rate swaps which are not designated as hedge relationships for accounting purposes are reclassified from fair value movement on a statutory basis to interest receivable/(payable) on an underlying basis, as if they were in an effective hedge relationship.

In the year to 31 December 2022, the Group was a net seller of USD at an achieved exchange rate GBP:USD of 1.50 (2021: In the first half of the year, the Group was a net purchaser of USD at an achieved exchange rate GBP:USD of 1.39. In the second half of 2021, the Group was a net seller of USD at an achieved exchange rate of GBP:USD of 1.59) based on the USD hedge book.

2 Segmental analysis – continued

Estimates of future USD cash flows have been determined using the Group's base-case forecast. These USD cash flows have been used to establish the extent of future USD hedge requirements. In 2020, the Group took action to reduce the size of the USD hedge book by $11.8bn across 2020-2026, resulting in an underlying charge of £1.7bn being recognised within underlying finance costs and the associated cash settlement costs occurring over the period 2020-2026. The derivatives relating to this underlying charge have been subsequently excluded from the hedge book, and, therefore, are also excluded from the calculation of the average exchange rate achieved in the current and future periods. This charge was reversed in arriving at the 2020 statutory performance on the basis that the cumulative fair value changes on these derivative contracts are recognised as they arise.

Underlying performance also excludes the following:

— the effect of acquisition accounting and business disposals;
— impairment of goodwill, other non-current and current assets where the reasons for the impairment are outside of normal operating activities;
— exceptional items; and
— certain other items which are market driven and outside of the control of management.

Acquisition accounting, business disposals and impairment

The Group exclude these from underlying results so that the current year and comparative results are directly comparable.

Exceptional items

Items are classified as exceptional where the Directors believe that presentation of the results in this way is useful in providing an understanding of the Group's financial performance. Exceptional items are identified by virtue of their size, nature or incidence.

In determining whether an event or transaction is exceptional, the Directors consider quantitative as well as qualitative factors such as the frequency or predictability of occurrence. Examples of exceptional items include one-time costs and charges in respect of aerospace programmes, costs of restructuring programmes and one-time past service charges and credits on post-retirement schemes.

Subsequent changes in exceptional items recognised in a prior period will also be recognised as exceptional. All other changes will be recognised within underlying performance.

Exceptional items are not allocated to segments and may not be comparable to similarly titled measures used by other companies.

Other items

The financing component of the defined benefit pension scheme cost is determined by market conditions and has therefore been included as a reconciling difference between underlying and statutory performance.

The tax effects of the adjustments above are excluded from the underlying tax charge. In addition, changes in tax rates or changes in the amount of recoverable deferred tax or advance corporation tax recognised are also excluded.

The following analysis sets out the results of the Group's businesses on the basis described above and also includes a reconciliation of the underlying results to those reported in the consolidated income statement.

	Civil Aerospace £m	Defence £m	Power Systems £m	New Markets £m	Other businesses £m	Corporate and Inter-segment £m	Total Underlying £m
Year ended 31 December 2022							
Underlying revenue from sale of original equipment	1,982	1,634	2,187	1	–	(5)	5,799
Underlying revenue from aftermarket services	3,704	2,026	1,160	2	–	–	6,892
Total underlying revenue	5,686	3,660	3,347	3	–	(5)	12,691
Gross profit/(loss)	853	726	918	(1)	(29)	10	2,477
Commercial and administrative costs	(371)	(174)	(441)	(23)	(2)	(51)	(1,062)
Research and development costs	(452)	(122)	(204)	(108)	–	–	(886)
Share of results of joint ventures and associates	113	2	8	–	–	–	123
Underlying operating profit/(loss)	143	432	281	(132)	(31)	(41)	652
Year ended 31 December 2021							
Underlying revenue from sale of original equipment	1,612	1,411	1,744	–	155	(11)	4,911
Underlying revenue from aftermarket services	2,924	1,957	1,005	2	148	–	6,036
Total underlying revenue	4,536	3,368	2,749	2	303	(11)	10,947
Gross profit/(loss)	474	721	778	1	32	(10)	1,996
Commercial and administrative costs	(297)	(161)	(383)	(3)	(20)	(35)	(899)
Research and development costs	(434)	(105)	(157)	(68)	(10)	–	(774)
Share of results of joint ventures and associates	85	2	4	–	–	–	91
Underlying operating (loss)/profit	(172)	457	242	(70)	2	(45)	414

2 Segmental analysis – continued

Reconciliation to statutory results

	Total underlying £m	Underlying adjustments and adjustments to foreign exchange £m	Group statutory results £m
Year ended 31 December 2022			
Continuing operations			
Revenue from sale of original equipment	5,799	474	6,273
Revenue from aftermarket services	6,892	355	7,247
Total revenue	12,691	829	13,520
Gross profit	2,477	280	2,757
Commercial and administrative costs	(1,062)	(15)	(1,077)
Research and development costs	(886)	(5)	(891)
Share of results of joint ventures and associates	123	(75)	48
Operating profit	652	185	837
Gain arising on the disposal of businesses	–	81	81
Profit before financing and taxation	652	266	918
Net financing	(446)	(1,974)	(2,420)
Profit/(loss) before taxation	206	(1,708)	(1,502)
Taxation	(48)	356	308
Profit/(loss) for the year from continuing operations	158	(1,352)	(1,194)
Discontinued operations [1]	67	(147)	(80)
Profit/(loss) for the year	225	(1,499)	(1,274)
Attributable to:			
Ordinary shareholders	230	(1,499)	(1,269)
Non-controlling interests	(5)	–	(5)
Year ended 31 December 2021			
Continuing operations			
Revenue from sale of original equipment	4,911	152	5,063
Revenue from aftermarket services	6,036	119	6,155
Total revenue	10,947	271	11,218
Gross profit	1,996	140	2,136
Commercial and administrative costs	(899)	9	(890)
Research and development costs	(774)	(4)	(778)
Share of results of joint ventures and associates	91	(46)	45
Operating profit	414	99	513
Gain arising on the disposal of businesses	–	56	56
Profit before financing and taxation	414	155	569
Net financing	(378)	(485)	(863)
Profit/(loss) before taxation	36	(330)	(294)
Taxation	(26)	444	418
Profit for the year from continuing operations	10	114	124
Discontinued operations [1]	51	(54)	(3)
Profit for the year	61	60	121
Attributable to:			
Ordinary shareholders	60	60	120
Non-controlling interests	1	–	1

[1] Discontinued operations relate to the results of ITP Aero and are presented net of intercompany trading eliminations and related consolidation adjustments

2 Segmental analysis – continued

Disaggregation of revenue from contracts with customers
Analysis by type and basis of recognition

	Civil Aerospace £m	Defence £m	Power Systems £m	New Markets £m	Other businesses £m	Corporate and Inter-segment £m	Total Underlying £m
Year ended 31 December 2022							
Original equipment recognised at a point in time	1,982	689	2,155	1	–	(5)	4,822
Original equipment recognised over time	–	945	32	–	–	–	977
Aftermarket services recognised at a point in time	865	769	1,076	2	–	–	2,712
Aftermarket services recognised over time	2,772	1,257	84	–	–	–	4,113
Total underlying customer contract revenue [1]	5,619	3,660	3,347	3	–	(5)	12,624
Other underlying revenue	67	–	–	–	–	–	67
Total underlying revenue	5,686	3,660	3,347	3	–	(5)	12,691
Year ended 31 December 2021							
Original equipment recognised at a point in time	1,612	604	1,720	–	142	(11)	4,067
Original equipment recognised over time	–	807	24	–	13	–	844
Aftermarket services recognised at a point in time	629	825	871	2	148	–	2,475
Aftermarket services recognised over time	2,223	1,132	134	–	–	–	3,489
Total underlying customer contract revenue [1]	4,464	3,368	2,749	2	303	(11)	10,875
Other underlying revenue	72	–	–	–	–	–	72
Total underlying revenue	4,536	3,368	2,749	2	303	(11)	10,947

[1] Includes £367m, of which £360m relates to Civil LTSA contracts, (2021: £159m, of which £214m relates to Civil LTSA contracts) of revenue recognised in the year relating to performance obligations satisfied in previous years

	Total underlying £m	Underlying adjustments and adjustments to foreign exchange £m	Group statutory results [1] £m
Year ended 31 December 2022			
Original equipment recognised at a point in time	4,822	474	5,296
Original equipment recognised over time	977	–	977
Aftermarket services recognised at a point in time	2,712	164	2,876
Aftermarket services recognised over time	4,113	176	4,289
Total customer contract revenue	12,624	814	13,438
Other revenue	67	15	82
Total revenue	12,691	829	13,520
Year ended 31 December 2021			
Original equipment recognised at a point in time	4,067	152	4,219
Original equipment recognised over time	844	–	844
Aftermarket services recognised at a point in time	2,475	38	2,513
Aftermarket services recognised over time	3,489	75	3,564
Total customer contract revenue	10,875	265	11,140
Other revenue	72	6	78
Total revenue	10,947	271	11,218

[1] During the year to 31 December 2022, revenue recognised within Civil Aerospace, Defence and Power Systems of £1,788m (2021: £1,634m) was received from a single customer

2 Segmental analysis – continued

Analysis by geographical destination

The Group's revenue by destination of the ultimate operator is as follows:

	2022 £m	2021 £m
United Kingdom	1,669	1,497
Germany	855	737
Switzerland	334	164
Ireland	328	5
Turkey	220	146
Spain	188	106
France	255	332
Italy	238	187
Norway	61	146
Rest of Europe	601	629
Europe	4,749	3,949
United States	4,334	3,525
Canada	267	235
North America	4,601	3,760
South America	168	170
Central America	91	76
Saudi Arabia	322	271
Qatar	231	131
United Arab Emirates	180	126
Rest of Middle East	164	107
Middle East	897	635
China	1,246	1,245
Singapore	317	105
Japan	276	233
South Korea	164	137
India	119	140
Rest of Asia	381	359
Asia	2,503	2,219
Africa	282	213
Australasia	229	196
	13,520	11,218

Order backlog

Contracted consideration, translated at the estimated long-term exchange rates, that is expected to be recognised as revenue when performance obligations are satisfied in the future (referred to as order backlog) is as follows:

	2022			2021		
	Within five years £bn	After five years £bn	Total £bn	Within five years £bn	After five years £bn	Total £bn
Civil Aerospace	25.7	22.0	47.7	20.3	20.8	41.1
Defence	7.8	0.7	8.5	6.2	0.3	6.5
Power Systems	3.7	0.3	4.0	2.6	0.2	2.8
New Markets	–	–	–	–	–	–
Other businesses	–	–	–	0.2	–	0.2
	37.2	23.0	60.2	29.3	21.3	50.6

The parties to these contracts have approved the contract and customers do not have a unilateral enforceable right to terminate the contract without compensation. The Group excludes Civil Aerospace OE orders (for deliveries beyond the next 7-12 months) that our customers have placed where they retain a right to cancel. The Group's expectation based on historical experience is that these orders will be fulfilled. Within the 0-5 years category, contracted revenue in Defence will largely be recognised in the next three years and Power Systems will be recognised over the next two years as it is a short cycle business.

2 Segmental analysis – continued

Underlying adjustments

		2022				2021			
		Revenue £m	Profit before financing £m	Net financing £m	Taxation £m	Revenue £m	Profit before financing £m	Net financing £m	Taxation £m
Underlying performance		12,691	652	(446)	(48)	10,947	414	(378)	(26)
Impact of foreign exchange differences as a result of hedging activities on trading transactions [1]	A	829	267	(358)	(81)	271	(34)	62	33
Unrealised fair value changes on derivative contracts held for trading [2]	A	–	(3)	(1,768)	451	–	(6)	(618)	110
Unrealised net gain on closing future over-hedged position [3]	A	–	–	–	–	–	–	(8)	–
Realised net gain on closing over-hedged position [3]	A	–	–	–	–	–	–	(6)	–
Unrealised fair value change to derivative contracts held for financing [4]	A	–	–	191	(47)	–	–	79	(20)
Exceptional programme credits/(charges) [5]	B	–	69	(3)	–	–	105	–	(1)
Exceptional restructuring (charges)/credit [6]	B	–	(47)	–	4	–	45	–	1
Impairment (charges)/reversals [7]	C	–	(65)	–	–	–	9	–	–
Effect of acquisition accounting [8]	C	–	(58)	–	9	–	(50)	–	12
Pension past-service credit [9]	B	–	22	–	(2)	–	47	–	(13)
Other [10]	D	–	–	(36)	(69)	–	(17)	6	(37)
Gain arising on disposals of businesses [11]	C	–	81	–	(2)	–	56	–	2
Impact of tax rate change [12]		–	–	–	–	–	–	–	327
Re-recognition of deferred tax assets [13]		–	–	–	93	–	–	–	30
Total underlying adjustments		829	266	(1,974)	356	271	155	(485)	444
Statutory performance per consolidated income statement		13,520	918	(2,420)	308	11,218	569	(863)	418

A – FX, B – Exceptional, C – M&A and impairment, D – Other

1 The impact of measuring revenues and costs at the average exchange rate during the year and the impact of valuation of assets and liabilities using the year end exchange rate rather than the achieved rate or the exchange rate that is expected to be achieved by the use of the hedge book increased statutory revenues by £829m (2021: increased by £271m) and increased profit before financing and taxation by £267m (2021: reduced profit by £34m). Underlying financing excludes the impact of revaluing monetary assets and liabilities at the year-end exchange rate
2 The underlying results exclude the fair value changes on derivative contracts held for trading. These fair value changes are subsequently recognised in the underlying results when the contracts are settled
3 In 2020, the Group took action to reduce the size of the USD hedge book by $11.8bn across 2020-2026, resulting in an underlying charge of £1.7bn at 31 December 2020. In 2021, this estimate was updated to reflect the actual cash cost and resulted in a £15m gain to underlying finance costs
4 Includes the gains on hedge ineffectiveness in the year of £1m (2021: losses of £1m) and net fair value gains of £190m (2021: gains of £80m) on any interest rate swaps not designated into hedging relationships for accounting purposes
5 During the year to 31 December 2022 and 2021, contract loss provisions previously recognised in respect of the Trent 1000 technical issues which were identified in 2019 have been reversed due to a reduction in the estimated cost of settling the obligation
6 During the year to 31 December 2022, the Group recorded an exceptional restructuring charge of £47m (2021: credit of £45m) which included £57m (2021: £93m) associated with initiatives to enable restructuring offset by £10m (2021: £138m) released from the provision
7 The Group has assessed the carrying value of its assets. Further details are provided in notes 9, 10, 11 and 12
8 The effect of acquisition accounting includes the amortisation of intangible assets arising on previous acquisitions
9 The past-service credit of £22m includes a £23m credit as a result of changes in the schemes in Power Systems, a settlement loss of £7m on the Rolls-Royce North America retirement scheme and a credit of £6m as a result of a constructive obligation recognised for the offering of the Bridging Pension Option (BPO) to other deferred members in the RRUKPF. Further details are provided in note 22
10 Includes £(14)m (2021: £14m) reclassification of amounts (received)/paid on interest rate swaps which are not designated as hedge relationship for accounting purposes from interest payable on an underlying basis to fair value movement
11 Gains arising on the disposals of businesses are set out in note 27
12 The 2021 tax credit relates to the increase in the UK tax rate from 19% to 25%
13 The re-recognition of deferred tax assets relates to foreign exchange derivatives

2 Segmental analysis – continued

Balance sheet analysis

Year ended 31 December 2022	Civil Aerospace £m	Defence £m	Power Systems £m	New Markets £m	Total reportable segments £m
Segment assets	17,537	3,430	4,084	135	25,186
Interests in joint ventures and associates	387	4	31	–	422
Segment liabilities	(25,357)	(3,146)	(1,802)	(97)	(30,402)
Net (liabilities)/assets	(7,433)	288	2,313	38	(4,794)
Investment in intangible assets, property, plant and equipment, right-of-use assets and joint ventures and associates	415	146	177	16	754
Depreciation, amortisation and impairment	755	128	193	6	1,082
Year ended 31 December 2021					
Segment assets	15,846	2,766	3,531	90	22,233
Interests in joint ventures and associates	378	9	16	–	403
Segment liabilities	(20,745)	(2,635)	(1,503)	(33)	(24,916)
Net (liabilities)/assets	(4,521)	140	2,044	57	(2,280)
Investment in intangible assets, property, plant and equipment, right-of-use assets and joint ventures and associates	323	97	187	15	622
Depreciation, amortisation and impairment	660	117	177	4	958

Reconciliation to the balance sheet

	2022 £m	2021 £m
Total reportable segment assets excluding held for sale	25,186	22,233
Other businesses	19	14
Corporate and Inter-segment	(2,460)	(2,255)
Interests in joint ventures and associates	422	403
Assets held for sale [1]	–	2,028
Cash and cash equivalents and short-term investments	2,618	2,629
Fair value of swaps hedging fixed rate borrowings	194	135
Deferred and income tax assets	2,858	2,339
Post-retirement scheme surpluses	613	1,148
Total assets	29,450	28,674
Total reportable segment liabilities excluding held for sale	(30,402)	(24,916)
Other businesses	(34)	(11)
Corporate and Inter-segment	2,456	2,139
Liabilities associated with assets held for sale [1]	–	(723)
Borrowings and lease liabilities	(5,955)	(7,776)
Fair value of swaps hedging fixed rate borrowings	(108)	(98)
Deferred and income tax liabilities	(390)	(552)
Post-retirement scheme deficits	(1,033)	(1,373)
Total liabilities	(35,466)	(33,310)
Net liabilities	(6,016)	(4,636)

[1] At 31 December 2021, assets and liabilities relating to ITP Aero, the investment in Airtanker Holdings and other non-current assets related to the Group's site rationalisation activities were classified as held for sale. For further details see note 27

The carrying amounts of the Group's non-current assets including investments but excluding financial instruments, deferred tax assets and post-retirement scheme surpluses/(deficits), by the geographical area in which the assets are located, are as follows:

	2022 £m	2021 £m
United Kingdom	5,202	5,489
Germany	2,151	2,086
United States	1,465	1,282
Other	735	744
	9,553	9,601

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3 Research and development

	2022 £m	2021 £m
Gross research and development costs	(1,287)	(1,179)
Contributions and fees [1]	359	366
Expenditure in the year	(928)	(813)
Capitalised as intangible assets	131	105
Amortisation and impairment of capitalised costs [2]	(94)	(70)
Net cost recognised in the income statement	**(891)**	**(778)**
Underlying adjustments relating to effects of acquisition accounting and foreign exchange	5	4
Net underlying cost recognised in the income statement	**(886)**	**(774)**

[1] Includes government funding
[2] See note 9 for analysis of amortisation and impairment. During the year, amortisation of £nil (2021: £5m) has been incurred within the disposal group recognised as a discontinued operation

4 Net financing

	2022		2021	
	Statutory £m	Underlying [1] £m	Statutory £m	Underlying [1] £m
Interest receivable	35	35	7	7
Net fair value gains on foreign currency contracts	–	–	80	–
Net fair value gains on non-hedge accounted interest rate swaps [2]	190	–	–	–
Net fair value gains on commodity contracts	106	–	63	–
Financing on post-retirement scheme surpluses	24	–	17	–
Net foreign exchange gains	–	–	62	–
Realised net gains on closing over-hedged position [3]	–	–	–	6
Unrealised net gains on closing over-hedged position [3]	–	–	–	8
Financing income	**355**	**35**	229	21
Interest payable	(343)	(320)	(252)	(262)
Net fair value losses on foreign currency contracts	(1,875)	–	(681)	–
Foreign exchange differences and changes in forecast payments relating to financial RRSAs	(7)	–	(7)	–
Financing on post-retirement scheme deficits	(26)	–	(20)	–
Net foreign exchange losses	(358)	–	–	–
Cost of undrawn facilities	(61)	(61)	(62)	(62)
Other financing charges	(105)	(100)	(70)	(75)
Financing costs	**(2,775)**	**(481)**	(1,092)	(399)
Net financing costs	**(2,420)**	**(446)**	(863)	(378)
Analysed as:				
Net interest payable	(308)	(285)	(245)	(255)
Net fair value (losses)/gains on derivative contracts	(1,579)	–	(538)	14
Net post-retirement scheme financing	(2)	–	(3)	–
Net foreign exchange (losses)/gains	(358)	–	62	–
Net other financing	(173)	(161)	(139)	(137)
Net financing costs	**(2,420)**	**(446)**	(863)	(378)

[1] See note 2 for definition of underlying result
[2] The consolidated income statement shows the net fair value gain/(loss) on any interest rate swaps not designated into hedging relationships for accounting purposes. Underlying financing reclassifies the fair value movements on these interest rate swaps to net interest payable
[3] In 2020, the Group took action to reduce the size of the USD hedge book by $11.8bn across 2020-2026, resulting in an underlying charge of £1,689m at 31 December 2020. In 2021, this estimate was updated to reflect the actual cash settlement cost of £1,674m and resulted in a £15m gain to underlying finance costs in the year to 31 December 2021. The cash settlement costs of £1,674m covers the period 2020-2026, £326m was incurred in the year to 31 December 2022 (2021: £452m, 2020: £186m). The Group estimates that future cash outflows of £389m will be incurred in 2023 and £321m spread over 2024-2026

5 Taxation

	UK		Overseas		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Current tax charge for the year	18	17	159	151	177	168
Adjustments in respect of prior years	(5)	2	(8)	12	(13)	14
Current tax	13	19	151	163	164	182
Deferred tax credit for the year	(427)	(173)	(61)	(59)	(488)	(232)
Adjustments in respect of prior years	4	(15)	12	(26)	16	(41)
Deferred tax credit resulting from an increase in UK tax rate	–	(327)	–	–	–	(327)
Deferred tax	(423)	(515)	(49)	(85)	(472)	(600)
(Credited)/charged in the income statement	(410)	(496)	102	78	(308)	(418)

Other tax credits/(charges)

	OCI				Equity	
	Items that will not be reclassified		Items that will be reclassified			
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Deferred tax:						
Movement in post-retirement schemes	89	(79)	–	–	–	–
Cash flow hedge	–	–	12	(2)	–	–
Net investment hedge	–	–	2	(3)	–	–
Share-based payments – direct to equity	–	–	–	–	1	17
Other tax credits/(charges)	89	(79)	14	(5)	1	17

Tax reconciliation on continuing operations

	2022 £m	2021 £m
Loss before taxation from continuing operations	(1,502)	(294)
Less share of results of joint ventures and associates (note 12)	(9)	(22)
Loss before taxation from continuing operations excluding joint ventures and associates	(1,511)	(316)
Nominal tax credit at UK corporation tax rate 19% (2021: 19%)	(287)	(60)
UK tax rate differential [1]	(69)	(33)
Overseas rate differences [2]	18	26
Exempt gain on disposal of businesses [3]	(14)	(15)
R&D credits	(7)	(10)
Other permanent differences	23	13
Benefit to deferred tax from previously unrecognised tax losses and temporary differences [4]	(134)	(47)
Tax losses and other temporary differences not recognised in deferred tax [5]	159	62
Adjustments in respect of prior years	3	(27)
Increase in closing deferred taxes resulting from a change in the UK tax rate [6]	–	(327)
	(308)	(418)
Underlying items (note 2)	48	26
Non-underlying items	(356)	(444)
	(308)	(418)

Tax on discontinued operations

	2022 £m	2021 £m
Tax charge/(credit) on profit/(loss) before taxation from discontinued operations	10	(34)
Tax credit on disposal of discontinued operations	(31)	–
	(21)	(34)

[1] The UK tax rate differential arises on the difference between the deferred tax rate and the statutory tax rate
[2] Overseas rate differences mainly relate to tax on profits or losses in countries such as the US and Germany, which have higher tax rates than the UK
[3] The exempt gain mainly relates to the disposal of Airtanker Holdings Ltd. The 2021 exempt gain relates to the disposal of the Civil Nuclear Instrumentation and Controls business
[4] Benefit to deferred tax from previously unrecognised tax losses and temporary differences mainly relates to foreign exchange derivatives
[5] Tax losses and other temporary differences not recognised mainly relate to the UK
[6] The 2021 tax credit arising on the change in the UK tax rate represents the impact of re-measurement of the UK deferred tax asset balances from 19% to 25%

5 Taxation – continued

Deferred taxation assets and liabilities

	2022 £m	2021 £m
At 31 December (as previously reported)	1,798	1,332
Adoption of amendment to IAS 37	(6)	–
At 1 January	1,792	1,332
Amount credited to income statement	495	636
Amount credited/(charged) to OCI	91	(82)
Amount credited/(charged) to hedging reserves	12	(2)
Amount credited to equity	1	17
On disposal of businesses [1]	28	(4)
Transferred to assets held for sale [2]	–	(85)
Exchange differences	26	(14)
At 31 December	2,445	1,798
Deferred tax assets	2,731	2,249
Deferred tax liabilities	(286)	(451)
	2,445	1,798

[1] The 2022 deferred tax relates to the disposal of ITP Aero. The 2021 deferred tax relates to the disposal of Bergen Engines AS and the Civil Nuclear Instrumentation and Control business
[2] The 2021 deferred tax transferred to assets held for sale relates to ITP Aero

The analysis of the deferred tax position is as follows:

	At 31 December (as previously reported) £m	On adoption of amendment to IAS 37	At 1 January £m	Recognised in income statement £m	Recognised in OCI £m	Recognised in equity £m	Disposals related activity £m	Transferred to held for sale £m	Exchange differences £m	At 31 December £m
2022										
Intangible assets	(464)	–	(464)	29	–	–	–	–	(1)	(436)
Property, plant and equipment	193	–	193	33	–	–	6	–	(2)	230
Other temporary differences [1]	471	(6)	465	133	(1)	1	44	–	8	650
Net contract liabilities	73	–	73	(9)	–	–	–	–	–	64
Pensions and other post-retirement scheme benefits	(140)	–	(140)	(19)	89	–	–	–	13	(57)
Foreign exchange and commodity financial assets and liabilities	362	–	362	329	15	–	(22)	–	9	693
Losses	1,085	–	1,085	(12)	–	–	–	–	(1)	1,072
R&D credit	56	–	56	11	–	–	–	–	–	67
Advance corporation tax	162	–	162	–	–	–	–	–	–	162
	1,798	(6)	1,792	495	103	1	28	–	26	2,445
Recognised in:										
Continuing operations				472						
Discontinued operations				23						
2021										
Intangible assets			(567)	(102)	–	–	–	188	17	(464)
Property, plant and equipment			34	145	–	–	–	23	(9)	193
Other temporary differences [1]			343	185	(12)	–	(4)	(49)	8	471
Net contract liabilities			56	17	–	–	–	–	–	73
Pensions and other post-retirement scheme benefits			(8)	(47)	(79)	–	–	–	(6)	(140)
Foreign exchange and commodity financial assets and liabilities			187	165	7	–	–	1	2	362
Losses			850	254	–	17	–	(33)	(3)	1,085
R&D credit			274	20	–	–	–	(215)	(23)	56
Advance corporation tax			163	(1)	–	–	–	–	–	162
			1,332	636	(84)	17	(4)	(85)	(14)	1,798
Recognised in:										
Continuing operations				600						
Discontinued operations				36						

[1] Other temporary differences mainly relate to the deferral of relief for interest expenses in the UK and revenue recognised earlier under local GAAP compared to IFRS in Germany

5 Taxation – continued

Unrecognised deferred tax assets

	2022 £m	2021 £m
Advance corporation tax	19	19
UK losses	2,040	1,563
Foreign exchange and commodity financial assets and liabilities	218	392
Losses and other unrecognised deferred tax assets	33	73
Deferred tax not recognised on unused tax losses and other items on the basis that future economic benefit is uncertain	2,310	2,047

Gross amount and expiry of losses and other deductible temporary differences for which no deferred tax asset has been recognised.

	2022					2021				
	Total gross losses and deductible temporary differences £m	UK losses £m	Foreign exchange and commodity financial assets and liabilities £m	Other losses £m	Other deductible temporary differences £m	Total gross losses and deductible temporary differences £m	UK losses £m	Foreign exchange and commodity financial assets and liabilities £m	Other losses £m	Other deductible temporary differences £m
Expiry within 5 years	83	–	–	83	–	4	–	–	4	–
Expiry within 6 to 30 years	265	–	–	265	–	282	–	–	282	–
No expiry	9,057	8,157	871	27	2	7,992	6,251	1,567	66	108
	9,405	8,157	871	375	2	8,278	6,251	1,567	352	108

In addition to the gross balances shown above, advance corporation tax of £19m (2021: £19m) has not been recognised. Advance corporation tax has no expiry.

Of the total deferred tax asset of £2,731m, £2,183m (2021: £1,736m) relates to the UK and is made up as follows:

- £1,054m (2021: £1,054m) relating to tax losses;
- £668m (2021: £339m) arising on unrealised losses on derivative contracts;
- £162m (2021: £162m) of advance corporation tax; and
- £299m (2021: £181m) relating to other deductible temporary differences, in particular tax depreciation and relief for interest expenses.

The UK deferred tax assets primarily arise in Rolls-Royce plc and have been recognised based on the expectation that the business will generate taxable profits and tax liabilities in the future against which the losses and deductible temporary differences can be utilised.

Most of the UK tax losses relate to the Civil Aerospace large engine business which makes initial losses through the investment period of a programme and then makes a profit through its contracts for services. The programme lifecycles are typically in excess of 30 years.

Deferred tax assets are recognised only to the extent that it is probable that future taxable profits will be available against which the assets can be utilised. A recoverability assessment has been undertaken, taking account of deferred tax liabilities against which the reversal can be offset and using latest UK forecasts, which are mainly driven by the Civil Aerospace large engine business, to assess the level of future taxable profits.

The recoverability of deferred tax assets has been assessed on the following basis:

- using the most recent UK profit forecasts which are consistent with past experience and external sources on market conditions. These forecasts cover the next five years;
- the long-term forecast profit profile of certain major large engine programmes which is typically in excess of 30 years from initial investment to retirement of the fleet, including the aftermarket revenues earned from airline customers;
- taking into account the risk that regulatory changes could materially impact demand for our products and shifting investment focus towards more sustainable products and solutions;
- consideration that all commercial aero-engines will be compatible with sustainable fuels by the end of 2023;
- a 25% probability of the severe but plausible downside forecast materialising in relation to the civil aviation industry; and
- the long-term forecast profit and cost profile of the other parts of the business.

5 Taxation – continued

The assessment takes into account UK tax laws that, in broad terms, restrict the offset of the carried forward tax losses to 50% of current year profits. In addition, management's assumptions relating to the amounts and timing of future taxable profits include the impact of macroeconomic factors and climate change on existing large engine programmes. Based on this assessment, the Group has recognised a total UK deferred tax asset of £2,183m. This reflects the conclusions that:

— It is probable that the business will generate taxable income and tax liabilities in the future against which these losses can be utilised.

— Based on current forecasts and using various scenarios these losses and other deductible temporary differences will be used in full within the expected large engine programme lifecycles. An explanation of the potential impact of climate change on forecast profits and sensitivity analysis can be found in note 1.

The Group has not recognised a deferred tax asset in respect of 2022 UK tax losses. This includes the impact of the IAS 37 amendment.

The other significant deferred tax asset arises in Rolls-Royce Deutschland Ltd & Co KG, where the main activity is business aviation. The total net deferred tax asset is £284m (2021: £254m), which has been recognised in full. The deferred tax asset relates to revenue being recognised and taxed earlier under local tax rules resulting in a benefit when revenue is recognised in the accounts.

Any future changes in tax law or the structure of the Group could have a significant effect on the use of losses and other deductible temporary differences, including the period over which they can be used. In view of this and the significant judgement involved the Board continuously reassesses this area.

The temporary differences associated with investments in subsidiaries, joint ventures and associates, for which a deferred tax liability has not been recognised, aggregate to £1,062m (2021: £957m). No deferred tax liability has been recognised on the potential withholding tax due on the remittance of undistributed profits as the Group is able to control the timing of such remittances and it is probable that consent will not be given in the foreseeable future.

The Group is reviewing the impact of the OECD Pillar Two (global minimum tax) rules and the associated UK draft legislation, which was released on 20 July 2022. These rules will apply to the Group from 2024.

6 Earnings per ordinary share

Basic earnings per ordinary share (EPS) is calculated by dividing the (loss)/profit attributable to ordinary shareholders by the weighted average number of ordinary shares in issue during the year, excluding ordinary shares held under trust, which have been treated as if they had been cancelled.

As there is a continuing loss during the year, the effect of potentially dilutive ordinary shares is anti-dilutive.

	2022			2021		
	Basic	Potentially dilutive share options	Diluted	Basic	Potentially dilutive share options	Diluted
(Loss)/profit attributable to ordinary shareholders (£m):						
Continuing operations	(1,189)		(1,189)	123		123
Discontinued operations	(80)		(80)	(3)		(3)
	(1,269)		(1,269)	120		120
Weighted average number of ordinary shares (millions)	8,349	–	8,349	8,332	20	8,352
EPS (pence):						
Continuing operations	(14.24)	–	(14.24)	1.48	(0.01)	1.47
Discontinued operations	(0.96)	–	(0.96)	(0.04)	–	(0.04)
	(15.20)	–	(15.20)	1.44	(0.01)	1.43

The reconciliation between underlying EPS and basic EPS is as follows:

	2022		2021	
	Pence	£m	Pence	£m
Underlying EPS/Underlying profit from continuing operations attributable to ordinary shareholders	1.95	163	0.11	9
Total underlying adjustments to (loss)/profit before taxation (note 2)	(20.45)	(1,708)	(3.96)	(330)
Related tax effects	4.26	356	5.33	444
EPS/(Loss)/profit from continuing operations attributable to ordinary shareholders	(14.24)	(1,189)	1.48	123
Diluted underlying EPS from continuing operations attributable to ordinary shareholders	1.95		0.11	

7 Auditors' remuneration

	2022 £m	2021 £m
Fees payable to the Company's auditor for the audit of the Company's annual Financial Statements	3.5	3.3
Fees payable to the Company's auditor and its associates for the audit of the Company's subsidiaries pursuant to legislation	8.5	8.3
Total fees payable for audit services	12.0	11.6
Fees payable to the Company's auditor and its associates for other services:		
Audit related assurance services [1]	1.3	1.7
Other assurance services [2]	0.2	0.2
Total fees payable to the Company's auditor and its associates [3]	13.5	13.5
Fees payable in respect of the Group's pension schemes:		
Audit	0.1	0.1

[1] This includes £0.7m (2021: £0.7m) for the review of the half-year report, £0.6m (2021: £0.8m) in respect of the audit of grant claims
[2] This includes £0.1m in respect of agreed upon procedures in respect of levies payable to BEIS (Department of Business, Energy and Industrial Strategy) (2021: £0.1m) and £0.1m in respect of sustainability assurance work (2021: £nil)
[3] Audit fees for overseas entities are reported at the average exchange rate for the year

8 Employee information

	2022 Number	2021 Number
United Kingdom	19,900	19,700
Germany	9,700	9,500
United States	5,000	5,000
Spain	1,800	2,700
Italy	900	900
Singapore	700	900
Canada	700	700
India	500	600
France	100	600
Nordics	–	700
Rest of world	2,500	2,700
Monthly average number of employees	41,800	44,000
Civil Aerospace	17,700	17,900
Defence	11,000	11,100
Power Systems	9,400	9,100
New Markets	800	400
Other businesses [1]	–	1,400
Corporate [2]	100	100
Monthly average number of employees excluding discontinued operations	39,000	40,000
ITP Aero (classified as discontinued operation) [3]	2,800	4,000
Monthly average number of employees	41,800	44,000

	2022			2021		
	Continuing operations £m	Discontinued operations £m	Total £m	Continuing operations £m	Discontinued operations £m	Total £m
Wages, salaries and benefits	2,629	117	2,746	2,392	154	2,546
Social security costs	378	27	405	343	36	379
Share-based payments (note 24)	47	–	47	28	–	28
Pensions and other post-retirement scheme benefits (note 22)	268	2	270	250	3	253
Group employment costs [4]	3,322	146	3,468	3,013	193	3,206

1 Other businesses are set out in note 2 on page 125
2 Corporate consists of employees who do not provide a shared service to the segments. Where corporate functions provide such a service, employees have been allocated to the segments on an appropriate basis
3 ITP Aero was disposed of on 15 September 2022. The monthly average number of employees over the nine months to disposal was 4,200
4 Remuneration of key management personnel is shown in note 26

9 Intangible assets

	Goodwill £m	Certification costs £m	Development expenditure £m	Customer relationships £m	Software [1] £m	Other £m	Total £m
Cost:							
At 1 January 2021	1,112	963	3,564	1,403	968	893	8,903
Additions	–	1	104	–	83	35	223
Transferred to assets held for sale [2]	–	(6)	(179)	(868)	(15)	(59)	(1,127)
Disposals	(4)	(22)	–	–	(51)	(2)	(79)
Reclassifications [3]	–	–	–	–	(2)	8	6
Exchange differences	(48)	(3)	(96)	(60)	(5)	(42)	(254)
At 31 December 2021	1,060	933	3,393	475	978	833	7,672
Additions	–	–	131	–	78	21	230
Disposals	–	–	–	–	(90)	(1)	(91)
Exchange differences	75	2	80	37	12	33	239
At 31 December 2022	**1,135**	**935**	**3,604**	**512**	**978**	**886**	**8,050**
Accumulated amortisation and impairment:							
At 1 January 2021	38	429	1,803	478	607	403	3,758
Charge for the year [4]	–	21	75	59	97	29	281
Impairment	–	–	–	–	1	8	9
Transferred to assets held for sale [2]	–	(4)	(51)	(176)	(10)	–	(241)
Disposals	(4)	(21)	–	–	(48)	(1)	(74)
Reclassifications [3]	–	–	(1)	–	6	1	6
Exchange differences	–	–	(66)	(19)	(3)	(20)	(108)
At 31 December 2021	34	425	1,760	342	650	420	3,631
Charge for the year [4]	–	21	77	35	86	33	252
Impairment	–	–	17	–	13	5	35
Disposals	–	–	–	–	(82)	(1)	(83)
Exchange differences	2	1	58	29	8	19	117
At 31 December 2022	**36**	**447**	**1,912**	**406**	**675**	**476**	**3,952**
Net book value at:							
At 31 December 2022	**1,099**	**488**	**1,692**	**106**	**303**	**410**	**4,098**
At 31 December 2021	1,026	508	1,633	133	328	413	4,041

[1] Includes £93m (2021: £115m) of software under course of construction which is not amortised
[2] ITP Aero was classified as a disposal group held for sale at 30 June 2021
[3] Includes reclassifications within intangible assets or from property, plant and equipment when available for use
[4] Charged to cost of sales and commercial and administrative costs except development costs, which are charged to research and development costs

At 31 December 2022, the Group had expenditure commitments for software of £37m (2021: £49m).

9 Intangible assets – continued

Goodwill

In accordance with the requirements of IAS 36, goodwill is allocated to the Group's CGUs, or groups of CGUs, that are expected to benefit from the synergies of the business combination that gave rise to the goodwill as follows:

Cash-generating unit (CGU) or group of CGUs

	Primary operating segment	2022 £m	2021 £m
Rolls-Royce Power Systems AG	Power Systems	818	760
Rolls-Royce Deutschland Ltd & Co KG	Civil Aerospace	241	229
Other	Various	40	37
		1,099	1,026

Goodwill has been tested for impairment during 2022 on the following basis:

— The carrying values of goodwill have been assessed by reference to the recoverable amount, being the higher of value in use or fair value less costs of disposal (FVLCOD).

— The recoverable amount has been estimated using cash flows from the most recent forecasts prepared by the Directors, which are consistent with past experience and external sources of information on market conditions. These forecasts generally cover the next five years. Growth rates for the period not covered by the forecasts are based on growth rates of 1% to 2% which reflects the products, industries and countries in which the relevant CGU or group of CGUs operate. Inflation has been included based on contractual commitments where relevant. Where general inflation assumptions have been required, these have been estimated based on externally sourced data. General inflation assumptions of 3% to 4% have been included in the forecasts, depending on the nature and geography of the flows.

— The key forecast assumptions for the impairment tests are the discount rate and the cash flow projections, in particular the programme assumptions (such as sales volumes and product costs), the impact of foreign exchange rates on the relationship between selling prices and costs, and growth rates. Impairment tests are performed using prevailing exchange rates.

— The Group believe there are significant business growth opportunities to come from Rolls-Royce playing a leading role in the transition to net zero, whilst at the same time climate change poses potentially significant risks. The assumptions used by the Directors are based on past experience and external sources of information. The main climate-related areas that have been considered are the risk that regulatory changes could materially impact demand for its products (and hence the utilisation of the products whilst in service and their useful lives) and shifting investment focus towards more sustainable products and solutions. Based on the climate scenarios prepared, the forecasts do not assume a significant deterioration of demand for Civil Aerospace (including Rolls-Royce Deutschland) programmes given that all commercial aero-engines will be compatible with sustainable fuels by the end of 2023. Similarly, the most popular reciprocating engines in Power Systems will be compatible with sustainable fuels by the end of 2023. The investment required to ensure our new products will be compatible with net zero operation by 2030, and to achieve net zero scope 1 and 2 GHG emissions is reflected in the forecasts used.

A 1.5°C scenario has been prepared using key data points from external sources including Oxford Economics, Global Climate Service and Databank and the International Energy Agency. This scenario has been used as the basis of a sensitivity. It is assumed that governments adopt stricter product and behavioural standards and measures that result in higher carbon pricing. Under these conditions it is assumed that markets are willing to pay for low carbon solutions and that there is an economic return from strategic investments in low carbon alternatives. The sensitivity has considered the likelihood of demand changes for our products based on their relative fuel efficiency in the marketplace and the probability of alternatives being introduced earlier than currently expected. The sensitivity also reflects the impact of a broad range of potential costs imposed by policy or regulatory interventions (through carbon pricing). This sensitivity does not indicate the need for an impairment charge.

The principal assumptions for goodwill balances considered to be individually significant are:

Rolls-Royce Power Systems AG

— Recoverable amount represents FVLCOD to reflect the future strategy of the business. Whilst there are no indicators of impairment under the value in use method presented in 2021, the Directors consider that disclosing information prepared on a FVLCOD basis here is a more useful representation of the recoverable amount when considering the future strategy of the business, including the impact of climate-related risks and opportunities. Due to the unavailability of observable market inputs or inputs based on market evidence, the fair value is estimated by discounting future cash flows (Level 3 as defined by IFRS 13 *Fair Value Measurement*) modified for market participants views;

— Trading assumptions (e.g. volume of equipment deliveries, pricing achieved and cost escalation) that are based on current and known future programmes, estimates of market share and long-term economic forecasts;

— Severe but plausible downside scenario in relation to macro-economic factors included with a 20% weighting;

— Cash flows beyond the five-year forecasts are assumed to grow at 1.0% (2021: 2.0%); and

— Nominal post-tax discount rate 10.0% (2021: 8.2%).

The Directors do not consider that any reasonably possible changes in the key assumptions (including taking consideration of the climate-related risks above) would cause the FVLCOD of the business to fall below its carrying value of goodwill.

9 Intangible assets – continued

Rolls-Royce Deutschland Ltd & Co KG

- Recoverable amount represents the value in use of the assets in their current condition;
- Trading assumptions (e.g. volume of engine deliveries, flying hours of installed fleet, including assumptions on the recovery of the aerospace industry, and cost escalation) that are based on current and known future programmes, estimates of market share and long-term economic forecasts;
- Severe but plausible downside scenario in relation to macro-economic factors included with a 25% weighting;
- Cash flows beyond the five-year forecasts are assumed to grow at 2.0% (2021: 2.0%).
- Nominal pre-tax discount rate 13.2% (2021: 11.9%).

The Directors do not consider that any reasonably possible changes in the key assumptions (including taking consideration of the climate-related risks above) would cause the value in use of the goodwill to fall below its carrying value.

Other CGUs

Goodwill balances across the Group that are not considered to be individually significant were also tested for impairment, resulting in no impairment charge (2021: no impairment charge) being recognised at 31 December 2022.

The carrying amount and the residual life of the material intangible assets (excluding goodwill) for the Group is as follows:

	Residual life [1]	Net book value	
		2022 £m	2021 £m
Trent programme intangible assets [2]	3-15 years	**1,826**	1,787
Business aviation programme intangible assets [3]	12-15 years	**250**	237
Intangible assets related to Power Systems [4]		**466**	491
		2,542	2,515

[1] Residual life reflects the remaining amortisation period of those assets where amortisation has commenced. As per page 120, the amortisation period of 15 years will commence on those assets which are not being amortised as the units are delivered
[2] Included within the Trent programmes are the Trent 1000, Trent 7000 and Trent XWB
[3] Included within business aviation are the Pearl 700 and Pearl 15
[4] Includes £114m (2021: £108m) in respect of a brand intangible asset which is not amortised. Remaining assets are amortised over a range of three to 20 years

The carrying amount of goodwill or intangible assets allocated across multiple CGUs is not significant in comparison with the Group's total carrying amount of goodwill or intangible assets with indefinite useful lives.

Other intangible assets (including programme intangible assets) have been reviewed for impairment in accordance with IAS 36. Assessments have considered potential triggers of impairment such as external factors, including climate change, significant changes with an adverse effect on a programme and by analysing latest management forecasts against those prepared in 2021 to identify any deterioration in performance.

Where a trigger event has been identified, an impairment test has been carried out. Where an impairment was required the test was performed on the following basis:

- The carrying values have been assessed by reference to value in use. These have been estimated using cash flows from the most recent forecasts prepared by the Directors, which are consistent with past experience and external sources of information on market conditions over the lives of the respective programmes; and
- The key assumptions underpinning cash flow projections are based on estimates of product performance related estimates, future market share and pricing and cost for uncontracted business. Climate-related risks are considered when making these estimates consistent with the assumptions above.

There have been no (2021: none) individually material impairment charges or reversals recognised during the year.

10 Property, plant and equipment

	Land and buildings £m	Plant and equipment £m	Aircraft and engines £m	In course of construction £m	Total £m
Cost:					
At 1 January 2021	1,994	5,442	1,025	451	8,912
Additions	19	120	6	154	299
Transferred to assets held for sale [1]	(200)	(305)	(22)	(8)	(535)
Disposals/write-offs	(59)	(264)	(11)	(23)	(357)
Reclassifications [2]	144	75	53	(271)	1
Exchange differences	(33)	(82)	(5)	(3)	(123)
At 31 December 2021	1,865	4,986	1,046	300	8,197
Additions	34	127	26	162	349
Disposals/write-offs	(38)	(142)	(81)	(1)	(262)
Reclassifications [2]	3	82	(3)	(82)	–
Exchange differences	72	172	11	21	276
At 31 December 2022	**1,936**	**5,225**	**999**	**400**	**8,560**
Accumulated depreciation and impairment:					
At 1 January 2021	679	3,336	374	8	4,397
Charge for the year [3]	70	312	57	–	439
Impairment	1	18	–	–	19
Transferred to assets held for sale [1]	(74)	(127)	(5)	–	(206)
Disposals/write-offs	(48)	(254)	(1)	–	(303)
Reclassifications [2]	(7)	11	(10)	–	(6)
Exchange differences	(7)	(52)	(1)	–	(60)
At 31 December 2021	614	3,244	414	8	4,280
Charge for the year [3]	79	296	55	–	430
Impairment [4]	5	(5)	–	–	–
Disposals/write-offs	(24)	(142)	(57)	–	(223)
Reclassifications [2]	(2)	5	(3)	–	–
Exchange differences	23	109	4	1	137
At 31 December 2022	**695**	**3,507**	**413**	**9**	**4,624**
Net book value at:					
At 31 December 2022	**1,241**	**1,718**	**586**	**391**	**3,936**
At 31 December 2021	1,251	1,742	632	292	3,917

1 ITP Aero and certain property, plant and equipment related to the Group's site rationalisation activities were classified as a disposal group or assets held for sale during the year to 31 December 2021
2 Includes reclassifications of assets under construction to the relevant classification in property, plant and equipment, right-of-use assets or intangible assets when available for use
3 Depreciation is charged to cost of sales and commercial and administrative costs or included in the cost of inventory as appropriate
4 The carrying values of property, plant and equipment have been assessed during the year in line with IAS 36. Material items of plant and equipment and aircraft and engines are assessed for impairment together with other assets used in individual programmes – see assumptions in note 9. Land and buildings are generally used across multiple programmes and are considered based on future expectations of the use of the site, which includes any implications from climate-related risks as explained in note 9. As a result of this assessment, there are no individually material impairment charges or reversals in the year. The reversal in the year relates to an element of the non-underlying impairments recorded in 2020 in Civil Aerospace for site rationalisation where there has been a subsequent change in strategy to continue production on those sites

Property, plant and equipment includes:

	2022 £m	2021 £m
Assets held for use in leases where the Group is the lessor:		
Cost	779	808
Depreciation	(343)	(311)
Net book value	436	497
Capital expenditure commitments	221	121
Cost of fully depreciated assets	2,184	2,001

The Group's share of equity accounted entities' capital commitments is £34m (2021: £22m).

11 Right-of-use assets

	Land and buildings £m	Plant and equipment £m	Aircraft and engines £m	Total £m
Cost:				
At 1 January 2021	447	150	1,833	2,430
Additions/modification of leases	37	15	30	82
Transferred to assets held for sale [1]	(16)	(2)	–	(18)
Disposals	(8)	(16)	(66)	(90)
Reclassifications to PPE	–	–	(8)	(8)
Exchange differences	(4)	(4)	(4)	(12)
At 31 December 2021	456	143	1,785	2,384
Additions/modification of leases	**52**	**34**	**59**	**145**
Disposals	**(30)**	**(19)**	**(22)**	**(71)**
Exchange differences	**28**	**4**	**5**	**37**
At 31 December 2022	**506**	**162**	**1,827**	**2,495**
Accumulated depreciation and impairment:				
At 1 January 2021	159	60	806	1,025
Charge for the year	43	30	199	272
Impairment [2]	(2)	(6)	(7)	(15)
Transferred to assets held for sale [1]	(4)	(1)	–	(5)
Disposals	(8)	(16)	(66)	(90)
Reclassifications to PPE	–	–	(1)	(1)
Exchange differences	(2)	(1)	(2)	(5)
At 31 December 2021	186	66	929	1,181
Charge for the year	**43**	**37**	**190**	**270**
Impairment [2]	**(2)**	**(1)**	**20**	**17**
Disposals	**(13)**	**(19)**	**(22)**	**(54)**
Exchange differences	**16**	**1**	**3**	**20**
At 31 December 2022	**230**	**84**	**1,120**	**1,434**
Net book value at:				
At 31 December 2022	**276**	**78**	**707**	**1,061**
At 31 December 2021	270	77	856	1,203
Right-of-use assets held for use in operating leases where the Group is the lessor				
Cost	**6**	**–**	**1,827**	**1,833**
Depreciation	**(3)**	**–**	**(1,120)**	**(1,123)**
Net book value at 31 December 2022	**3**	**–**	**707**	**710**
Cost	2	1	1,785	1,788
Depreciation	(1)	(1)	(929)	(931)
Net book value at 31 December 2021	1	–	856	857

[1] ITP Aero was classified as a disposal group held for sale at 30 June 2021

[2] The carrying values of right-of-use assets have been assessed during the year in line with IAS 36. Material items of plant and equipment and aircraft and engines are assessed for impairment together with other assets used in individual programmes – see assumptions in note 9. Land and buildings are generally used across multiple programmes and are considered based on future expectations of the use of the site (which includes any implications from climate-related risks as explained in note 9). During the year, a reversal was recognised relating to an element of the non-underlying impairments recorded in 2020 in Civil Aerospace for site rationalisation where there has been a subsequent change in strategy to continue production on those sites. In addition, a charge of £20m was recognised due to the current sanctions applicable over assets in Russia. At the balance sheet date the Group could not access the assets that were on lease and it is not known when this situation would be resolved to enable the Group to generate a recoverable amount

12 Investments

Composition of the Group

The entities contributing to the Group's financial results are listed on pages 179 to 184.

Where the Group does not own 100% of the shares of a group undertaking, there are a number of arrangements with the other shareholder(s) that give the Group the option or potential obligation to acquire the third parties' shares. These arrangements have been assessed and are not considered to have a significant value, individually or in aggregate.

The Group does not have any material non-wholly owned subsidiaries.

Equity accounted and other investments

	Equity accounted			Other [1]
	Joint ventures £m	Associates £m	Total £m	£m
At 1 January 2021	393	1	394	19
Additions	2	1	3	27
Disposals	–	–	–	(1)
Impairment	(2)	–	(2)	(5)
Share of retained profit/(loss) [2]	19	(1)	18	–
Reclassification of deferred profit to deferred income [3]	(24)	–	(24)	–
Transferred to assets held for sale [4]	(35)	–	(35)	–
Repayment of loans	(3)	–	(3)	–
Revaluation of other investments accounted for at FVOCI	–	–	–	(2)
Exchange differences	8	–	8	(2)
Share of OCI [5]	45	–	45	–
At 1 January 2022	403	1	404	36
Additions [6]	29	–	29	7
Disposals	–	(1)	(1)	(2)
Impairment [7]	(74)	–	(74)	(1)
Share of retained loss [2]	(25)	–	(25)	–
Reclassification of deferred profit to deferred income [3]	(4)	–	(4)	–
Repayment of loans	(5)	–	(5)	–
Revaluation of other investments accounted for at FVOCI	–	–	–	(4)
Exchange differences	96	–	96	–
Share of OCI	2	–	2	–
At 31 December 2022	422	–	422	36

[1] Other investments includes unlisted investments of £26m (2021: £29m) and listed investments of £10m (2021: £7m)
[2] See table below
[3] The Group's share of unrealised profit on sales to joint ventures is eliminated against the carrying value of the investment in the entity. Any excess amount, once the carrying value is reduced to nil, is recorded as deferred income
[4] The Group's investment in Airtanker Holdings Limited was classified as a non-current asset held for sale at 13 September 2021. Further detail can be found in note 27
[5] Up to 13 September 2021, when Airtanker Holdings Limited was transferred to held for sale, the Group recognised share of OCI relating to cash flow hedges of £43m
[6] During the year, additions to investments of £29m include the following significant transactions: On 20 June 2022, the Group acquired a 54% investment in Hoeller Electrolyzer. Although the Group has acquired a 54% stake, the Group has considered whether the majority stake constitutes a subsidiary as per the basis of consolidation on page 113 and 114. Based on key decisions requiring consent from both shareholders, the Group has concluded that Hoeller Electrolyser is jointly controlled and is equity accounted in the Consolidated Financial Statements. On 1 September 2022, the Group and Air China established a joint venture called Beijing Aero Engine Services Company Limited
[7] During the year, one of the Group's investments in its Civil Aerospace joint venture repair and overhaul facilities has been impaired by £74m. This reflects the Directors' updated judgement of the recoverable amount from that investment when measured on a value in use basis by discounting expected future dividends at 12.4% cost of equity. The charge in the year reflects a higher discount rate and revised assumptions taking into account the impact of inflation and interest rates on that business, reflecting current market conditions

Reconciliation of share of retained (loss)/profit to the income statement and cash flow statement:

	2022 £m	2021 £m
Share of results of joint ventures and associates	9	22
Adjustments for intercompany trading [1]	39	23
Share of results of joint ventures and associates to the Group	48	45
Dividends paid by joint ventures and associates to the Group (cash flow statement)	(73)	(27)
Share of retained (loss)/profit attributable to continuing operations (above)	(25)	18

[1] During the year, the Group sold spare engines to Rolls-Royce & Partners Finance, a joint venture and subsidiary of Alpha Partners Leasing Limited. The Group's share of the profit on these sales is deferred and released to match the depreciation of the engines in the joint venture's financial statements. In 2022 and 2021, profit deferred on the sale of engines was lower than the release of that deferred in prior years

12 Investments – continued

The following joint ventures are considered to be individually material to the Group:

	Principal location	Activity	Ownership interest
Alpha Partners Leasing Limited (APL)	UK	Aero engine leasing	50.0%
Hong Kong Aero Engine Services Limited (HAESL)	Hong Kong	Aero engine repair and overhaul	50.0%
Singapore Aero Engine Services Pte Limited (SAESL)	Singapore	Aero engine repair and overhaul	50.0%

Summarised financial information of the Group's individually material joint ventures is as follows:

	APL		HAESL		SAESL	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Revenue	310	278	2,388	1,605	2,012	1,057
Profit/(loss) and total comprehensive income/(expense) for the year	55	(16)	72	51	31	20
Dividends paid during the year	(22)	–	(66)	(46)	–	–
Profit/(loss) for the year included the following:						
Depreciation and amortisation	(190)	(165)	(13)	(14)	(21)	(20)
Interest income	–	–	–	–	1	–
Interest expense	(89)	(65)	(2)	(1)	(3)	(3)
Income tax expense	(13)	(77)	(14)	(10)	(2)	–
Current assets	375	314	886	533	865	676
Non-current assets	3,199	2,978	98	90	154	151
Current liabilities	(480)	(287)	(716)	(343)	(687)	(554)
Non-current liabilities	(2,389)	(2,401)	(26)	(73)	(60)	(65)
Net assets	705	604	242	207	272	208
Included in the above:						
Cash and cash equivalents	239	239	6	30	61	105
Current financial liabilities [1]	(411)	(217)	(135)	–	–	–
Non-current financial liabilities [1]	(2,003)	(2,048)	(17)	(67)	(60)	(65)
Reconciliation to the carrying amount recognised in the Consolidated Financial Statements:						
Ownership interest	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Group share of net assets above	353	302	121	104	136	104
Goodwill	–	–	38	34	11	78
Adjustments for intercompany trading	(353)	(302)	(2)	(1)	–	–
Included in the balance sheet	–	–	157	137	147	182

[1] Excluding trade payables and other liabilities

The summarised aggregated results of the Group's share of equity accounted investments is as follows:

	Individually material joint ventures (above)		Other joint ventures [1]		Associates		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Assets:								
Non-current assets	1,726	1,610	199	205	–	–	1,925	1,815
Current assets	1,063	762	327	316	–	1	1,390	1,079
Liabilities: [2]								
Current liabilities	(942)	(592)	(245)	(232)	–	–	(1,187)	(824)
Non-current liabilities	(1,237)	(1,270)	(58)	(84)	–	–	(1,295)	(1,354)
Group adjustment for goodwill	49	112	–	–	–	–	49	112
Adjustment for intercompany trading	(355)	(303)	(105)	(121)	–	–	(460)	(424)
Included in the balance sheet	304	319	118	84	–	1	422	404
[2] Liabilities include borrowings of:	*(1,313)*	*(1,198)*	*(84)*	*(534)*	–	–	*(1,397)*	*(1,732)*

[1] The aggregate value of the Group's share of profit/(loss) and total comprehensive (expense)/income of individually immaterial joint ventures is £(68)m (2021: £39m)

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13 Inventories

	2022 £m	2021 £m
Raw materials	479	376
Work in progress	1,633	1,135
Finished goods	2,593	2,146
Payments on account	3	9
	4,708	3,666

Inventories stated at net realisable value	209	215
Amount of inventory write-down	85	92
Reversal of inventory write-down	27	26

14 Trade receivables and other assets

	Current		Non-current		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Trade receivables [1,2]	2,376	2,141	43	52	2,419	2,193
Prepayments	886	572	893	378	1,779	950
Receivables due on RRSAs [2]	928	702	255	67	1,183	769
Amounts owed by joint ventures and associates	632	598	16	1	648	599
Other taxation and social security receivable	147	197	9	8	156	205
Costs to obtain contracts with customers [3]	12	13	67	41	79	54
Other receivables [4]	617	593	55	20	672	613
	5,598	4,816	1,338	567	6,936	5,383

Trade receivables and other assets are analysed as follows:		
Financial instruments (note 20):		
Trade receivables and similar items	4,147	3,466
Other non-derivative financial assets	775	705
Non-financial instruments	2,014	1,212
	6,936	5,383

1 Non-current trade receivables relate to amounts not expected to be received in the next 12 months from customers on payment plans
2 Includes receivables due from ITP Aero that were previously eliminated on consolidation
3 These are amortised over the term of the related contract in line with engine deliveries, resulting in amortisation of £11m (2021: £9m) in the year. There were no impairment losses
4 Other receivables includes unbilled recoveries relating to completed overhaul activity where the right to consideration is unconditional

The Group has adopted the simplified approach to provide for ECLs, measuring the loss allowance at a probability weighted amount incorporated by using credit ratings which are publicly available, or through internal risk assessments derived using the customer's latest available financial information.

The ECLs for trade receivables and other assets has increased by £87m to £346m (2021: £7m to £259m). This movement is mainly driven by the Civil Aerospace business of £90m, of which £83m relates to specific customers and £7m relates to updates to the recoverability of other receivables.

The assumptions and inputs used for the estimation of the ECLs are disclosed in the table below:

	2022			2021 [1]		
	Trade receivables and other financial assets £m	Loss allowance £m	Average ECL rate %	Trade receivables and other financial assets £m	Loss allowance £m	Average ECL rate %
Investment grade [2]	1,637	(177)	11%	1,296	(68)	5%
Non-investment grade	124	(16)	13%	48	(2)	4%
Without credit rating	3,507	(153)	4%	3,086	(189)	6%
	5,268	(346)	7%	4,430	(259)	6%

1 During the year, the presentation of ECLs has been analysed in greater detail. This has resulted in comparative balances being represented in more appropriate line items. Trade receivables and other financial assets that are classified as investment grade has increased by £204m, with a decrease of £99m and £105m to those classified as non-investment grade and without credit rating respectively. The loss allowance against assets classified as investment grade has increased by £41m with the respective decrease in the loss allowance for those without a credit rating. The total amount of trade receivables and other financial assets and loss allowance as at 31 December 2021 has remained unchanged
2 Counterparties with a credit rating of 'C' or above are classified as investment grade

14 Trade receivables and other assets – continued

The movements of the Group ECLs provision are as follows:

	2022 £m	2021 £m
At 1 January	(259)	(252)
Increases in loss allowance recognised in the income statement during the year	(118)	(124)
Loss allowance utilised	22	46
Releases of loss allowance previously provided	45	46
Transferred to assets held for sale	–	2
Exchange differences	(36)	23
At 31 December	(346)	(259)

15 Contract assets and liabilities

	Current		Non-current [1]		Total [2]	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Contract assets						
Contract assets with customers	621	586	617	641	1,238	1,227
Participation fee contract assets	28	27	215	219	243	246
	649	613	832	860	1,481	1,473

[1] Contract assets and contract liabilities have been presented on the face of the balance sheet in line with the operating cycle of the business. Contract liabilities are further split according to when the related performance obligation is expected to be satisfied and, therefore, when revenue is estimated to be recognised in the income statement. Further disclosure of contract assets is provided in the table above, which shows within current the element of consideration that will become unconditional in the next year

[2] Contract assets are classified as non-financial instruments

The balance includes £885m (2021: £915m) of Civil Aerospace LTSA assets, with most of the remaining balance relating to Defence. The decrease in the Civil Aerospace balance is due to collection of higher cash receipts than revenue recognised in relation to completion of performance obligations on those contracts with a contract asset balance. Revenue recognised relating to performance obligations satisfied in previous years was £26m in Civil Aerospace. No impairment losses in relation to these contract assets (2021: none) have arisen during the year.

Participation fee contract assets have reduced by £3m (2021: £188m) due to amortisation exceeding additions by £7m, offset by foreign exchange on consolidation of £4m.

The absolute value of ECLs for contract assets has increased by £6m to £21m (2021: £15m).

	Current		Non-current		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Contract liabilities	4,825	3,599	7,337	6,710	12,162	10,309

Contract liabilities are analysed as follows:		
Financial instruments (note 20)	420	264
Non-financial instruments	11,742	10,045
	12,162	10,309

During the year £3,321m (2021: £2,713m) of the opening contract liability was recognised as revenue.

Contract liabilities have increased by £1,853m. The movement in the Group balance is as a result of increases in Civil Aerospace of £1,395m and Defence of £324m. The main reason for the Civil Aerospace increase is a growth in LTSA liabilities of £1,128m to £8,257m (2021: £7,129m) driven by growth in customer payments as engine flying hours continue to recover from the COVID-19 pandemic and price escalation. There have also been additional buy-in fees received in relation to new contracts. This has been partly offset by revenue being recognised in relation to performance obligations satisfied in previous years of £334m as contract performance improves, which decreases the contract liability. An increase in Defence is from the receipt of deposits in advance of performance obligations being completed.

16 Cash and cash equivalents

	2022 £m	2021 £m
Cash at bank and in hand	847	795
Money-market funds	34	49
Short-term deposits	1,726	1,777
Cash and cash equivalents per the balance sheet	2,607	2,621
Cash and cash equivalents included within assets held for sale (note 27)	–	25
Overdrafts (note 17)	(2)	(7)
Cash and cash equivalents per cash flow statement (page 106)	2,605	2,639

Cash and cash equivalents at 31 December 2022 includes £235m (2021: £89m) that is not available for general use by the Group. This balance includes £40m which is held in an account that is exclusively for the general use of Rolls-Royce Submarines Limited and £138m which is held exclusively for the use of Rolls-Royce Saudi Arabia Limited. This cash is not available for use by other entities within the Group. The remaining balance relates to cash held in non-wholly owned subsidiaries and joint arrangements.

Balances are presented on a net basis when the Group has both a legal right of offset and the intention to either settle on a net basis or realise the asset and settle the liability simultaneously.

17 Borrowings and lease liabilities

	Current		Non-current		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Unsecured						
Overdrafts	2	7	–	–	2	7
Bank loans [1]	1	2	–	1,975	1	1,977
0.875% Notes 2024 €550m [2]	–	–	472	471	472	471
3.625% Notes 2025 $1,000m [2]	–	–	801	781	801	781
3.375% Notes 2026 £375m [3]	–	–	351	394	351	394
4.625% Notes 2026 €750m [4]	–	–	661	624	661	624
5.75% Notes 2027 $1,000m [4]	–	–	825	735	825	735
5.75% Notes 2027 £545m	–	–	541	540	541	540
1.625% Notes 2028 €550m [2]	–	–	444	493	444	493
Other loans	–	–	10	10	10	10
Total unsecured	3	9	4,105	6,023	4,108	6,032
Lease liability – Land and buildings	46	46	400	365	446	411
Lease liability – Aircraft and engines	278	198	1,047	1,053	1,325	1,251
Lease liability – Plant and equipment	31	26	45	56	76	82
Total lease liabilities	355	270	1,492	1,474	1,847	1,744
Total borrowings and lease liabilities	358	279	5,597	7,497	5,955	7,776

All outstanding items described as notes above are listed on the London Stock Exchange

[1] On 16 September 2022, the Group repaid the £2,000m loan maturing in 2025 (supported by an 80% guarantee from UK Export Finance)

[2] These notes are the subject of cross-currency interest rate swap agreements under which the Group has undertaken to pay floating rates of GBP interest, which form a fair value hedge. They are also subject to interest rate swap agreements under which the Group has undertaken to pay fixed rates of interest, which are classified as fair value through profit and loss

[3] These notes are the subject of interest rate swap agreements under which the Group has undertaken to pay floating rates of interest, which form a fair value hedge. They are also subject to interest rate swap agreements under which the Group has undertaken to pay fixed rates of interest, which are classified as fair value through profit and loss

[4] These notes are the subject of cross-currency interest rate swap agreements under which the Group has undertaken to pay fixed rates of GBP interest, which form a cash flow hedge

During the year ended 31 December 2022, the Group entered into a new £1,000m sustainability-linked facility, maturing in 2027 (supported by an 80% guarantee from UK Export Finance). The facility was undrawn at 31 December 2022.

At 31 December 2022, the Group had total undrawn facilities of £5,500m (2021: £4,500m).

Under the terms of certain recent loan facilities, the Company is restricted from declaring, making or paying distributions to shareholders on or prior to 31 December 2022 and from declaring, making or paying distributions to shareholders from 1 January 2023 unless certain conditions are satisfied. The restrictions on distributions do not prevent the Company from redeeming any unredeemed C Shares issued prior to March 2021.

18 Leases

Leases as lessee

The net book value of right-of-use assets at 31 December 2022 was £1,061m (2021: £1,203m), with a lease liability of £1,847m (2021: £1,744m), per notes 11 and 17 respectively. Leases that have not yet commenced to which the Group is committed have a future liability of £39m and consist of mainly plant and equipment and properties. The consolidated income statement shows the following amounts relating to leases:

	2022 £m	2021 £m
Land and buildings depreciation and impairment [1]	(41)	(41)
Plant and equipment depreciation and impairment [2]	(36)	(24)
Aircraft and engines depreciation and impairment [3]	(210)	(192)
Total depreciation and impairment charge for right-of-use assets	**(287)**	(257)
Adjustment of amounts payable under residual value guarantees within lease liabilities [3,4]	3	4
Expense relating to short-term leases of 12 months or less recognised as an expense on a straight line basis [2]	(28)	(16)
Expense relating to variable lease payments not included in lease liabilities [3,5]	(2)	(2)
Total operating costs	**(314)**	(271)
Interest expense [6]	(68)	(63)
Total lease expense	**(382)**	(334)
Income from sub-leasing right-of-use assets	32	35
Total amount recognised in the income statement	**(350)**	(299)

[1] Included in cost of sales and commercial and administration costs depending on the nature and the use of the right-of-use asset
[2] Included in cost of sales, commercial and administration costs, or research and development depending on the nature and use of the right-of-use asset
[3] Included in cost of sales
[4] Where the cost of meeting residual value guarantees is less than that previously estimated, as costs have been mitigated or liabilities waived by the lessor, the lease liability has been remeasured. Where the value of this remeasurement exceeds the value of the right-of use asset, the reduction in the lease liability is credited to cost of sales
[5] Variable lease payments primarily arise on a small number of contracts where engine lease payments are dependent upon utilisation rather than a periodic charge
[6] Included in financing costs

The total cash outflow for leases in 2022 was £316m (2021: £448m). Of this, £286m related to leases reflected in the lease liability, £28m to short-term leases where lease payments are expensed on a straight-line basis and £2m for variable lease payments where obligations are only due when the assets are used. The timing difference between income statement charge and cash flow relates to costs incurred at the end of leases for residual value guarantees and restoration costs that are recognised within depreciation over the term of the lease, the most significant amounts relate to engine leases.

Leases as lessor

The Group acts as lessor for engines to Civil Aerospace customers when they require engines to support their fleets. Lease agreements with the lessees provide protection over the assets. Usage in excess of specified limits and damage to the engine while on lease are covered by variable lease payment structures. Lessee bankruptcy risk is managed through the Cape Town Convention on International Interests in Mobile Equipment (including a specific protocol relating to aircraft equipment); an international treaty that creates common standards for the registration of lease contracts and establishes various legal remedies for default in financing agreements, including repossession and the effect of particular states' bankruptcy laws. Engines are only leased once the Group confirm that appropriate insurance documentation is established that covers the engine assets to pre-agreed amounts. All such contracts are operating leases. The Group also leases out a small number of properties, or parts of properties, where there is excess capacity under operating leases.

	2022 £m	2021 £m
Operating lease income – credited within revenue from aftermarket services [1,2]	84	80

[1] Includes variable lease payments received of £73m (2021: £71m) that do not depend on an index or a rate
[2] Items of property, plant and equipment subject to an operating lease are disclosed in note 10

Total non-cancellable future operating lease rentals (undiscounted) of £95m (2021: £58m) are receivable over the next 12 years. £12m (2021: £9m) is due within one year, £45m (2021: £28m) between one to five years and £38m (2021: £21m) after five years.

In a limited number of circumstances, the Group sublets properties that are treated as a finance lease when the arrangement transfers substantially all the risks and rewards of ownership of the asset. At 31 December 2022, the total undiscounted lease payments receivable is £39m (2021: £19m) on annual lease income of £4m (2021: £2m). The discounted finance lease receivable at 31 December 2022 is £32m (2021: £17m). There was nil (2021: nil) finance income recognised during the year.

19 Trade payables and other liabilities

	Current		Non-current		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Trade payables [1]	1,735	1,272	–	–	1,735	1,272
Accruals	1,477	1,361	199	192	1,676	1,553
Customer concession credits [2]	616	1,106	864	399	1,480	1,505
Payables due on RRSAs [1]	1,392	739	–	–	1,392	739
Deferred receipts from RRSA workshare partners	32	23	829	484	861	507
Amounts owed to joint ventures and associates	567	486	–	–	567	486
Warranty credits	212	201	152	161	364	362
Government grants [3]	21	28	41	39	62	67
Other taxation and social security	88	40	–	–	88	40
Other payables [4]	843	760	279	300	1,122	1,060
	6,983	6,016	2,364	1,575	9,347	7,591

Trade payables and other liabilities are analysed as follows [5]:		
Financial instruments (note 20):		
Trade payables and similar items	5,739	4,409
Other non-derivative financial liabilities	2,385	2,403
Non-financial instruments	1,223	779
	9,347	7,591

1 Includes payables due to ITP Aero that were previously eliminated on consolidation
2 Customer concession credits are a form of discount and are reported within revenue as set out on page 114
3 During the year, £20m, including £5m in discontinued operations, (2021: £13m) of government grants were released to the income statement
4 Other payables includes parts purchase obligations, payroll liabilities, HM Government UK levies and payables associated with business disposals
5 During the year, the classification between financial instruments and non-financial instruments has been reviewed and resulted in an increase to the 2021 classification of trade payables and other liabilities disclosed as financial instruments of £364m

The Group's payment terms with suppliers vary on the products and services being sourced, the competitive global markets the Group operates in and other commercial aspects of suppliers' relationships. Industry average payment terms vary between 90-120 days. The Group offers reduced payment terms for smaller suppliers, so that they are paid in 30 days. In line with aerospace industry practice, the Group offers a SCF programme in partnership with banks to enable suppliers, including joint ventures, who are on standard 75-day payment terms to receive their payments sooner. The SCF programme is available to suppliers at their discretion and does not change rights and obligations with suppliers nor the timing of payment to suppliers. At 31 December 2022, suppliers had drawn £422m under the SCF scheme (2021: £540m).

20 Financial instruments

Carrying values and fair values of financial instruments

	Notes	Basis for determining fair value	Assets FVPL £m	Assets FVOCI £m	Assets Amortised cost £m	Liabilities FVPL £m	Liabilities Other £m	Total £m
2022								
Other non-current asset investments	12	A	26	10	–	–	–	36
Trade receivables and similar items	14	B/C	–	10	4,137	–	–	4,147
Other non-derivative financial assets	14	B	–	–	775	–	–	775
Other assets		D	35	–	–	–	–	35
Derivative financial assets [1]		C	648	–	–	–	–	648
Short-term investments		B	–	–	11	–	–	11
Cash and cash equivalents	16	B	34	–	2,573	–	–	2,607
Borrowings	17	E/F	–	–	–	–	(4,108)	(4,108)
Lease liabilities	17	G	–	–	–	–	(1,847)	(1,847)
Derivative financial liabilities [1]		C	–	–	–	(4,099)	–	(4,099)
Financial RRSAs		H	–	–	–	–	(22)	(22)
Other liabilities		H	–	–	–	–	(101)	(101)
C Shares		B	–	–	–	–	(24)	(24)
Trade payables and similar items	19	B	–	–	–	–	(5,739)	(5,739)
Other non-derivative financial liabilities	19	B	–	–	–	–	(2,385)	(2,385)
Contract liabilities	15	B	–	–	–	–	(420)	(420)
			743	20	7,496	(4,099)	(14,646)	(10,486)
2021								
Other non-current asset investments	12	A	36	–	–	–	–	36
Trade receivables and similar items	14	B/C	–	17	3,449	–	–	3,466
Other non-derivative financial assets	14	B	–	–	705	–	–	705
Other assets		D	28	–	–	–	–	28
Derivative financial assets [1]		C	379	–	–	–	–	379
Short-term investments		B	–	–	8	–	–	8
Cash and cash equivalents	16	B	49	–	2,572	–	–	2,621
Borrowings	17	E/F	–	–	–	–	(6,032)	(6,032)
Lease liabilities	17	G	–	–	–	–	(1,744)	(1,744)
Derivative financial liabilities [1]		C	–	–	–	(3,292)	–	(3,292)
Financial RRSAs		H	–	–	–	–	(12)	(12)
Other		H	–	–	–	–	(75)	(75)
C Shares		B	–	–	–	–	(25)	(25)
Trade payables and similar items [2]	19	B	–	–	–	–	(4,409)	(4,409)
Other non-derivative financial liabilities	19	B	–	–	–	–	(2,403)	(2,403)
Contract liabilities	15	B	–	–	–	–	(264)	(264)
			492	17	6,734	(3,292)	(14,964)	(11,013)

[1] In the event of counterparty default relating to derivative financial assets and liabilities, offsetting would apply and financial assets and liabilities held with the same counterparty would net off. If this occurred with every counterparty, total financial assets would be £8m (2021: nil) and liabilities £3,459m (2021: £2,913m)

[2] During the year trade payables and similar items have been analysed in greater detail and consequently have been represented to include items previously classified as non-financial instruments

20 Financial instruments – continued

Fair values equate to book values for both 2022 and 2021, with the following exceptions:

	Basis for determining fair value	2022 Book value £m	2022 Fair value £m	2021 Book value £m	2021 Fair value £m
Borrowings	E	**(4,095)**	**(3,812)**	(4,038)	(4,106)
Borrowings	F	**(13)**	**(15)**	(1,994)	(2,122)
Financial RRSAs	H	**(22)**	**(22)**	(12)	(13)

The fair value of a financial instrument is the price at which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's-length transaction. There have been no transfers during the year from or to Level 3 valuation. Fair values have been determined with reference to available market information at the balance sheet date, using the methodologies described below.

A These primarily comprise unconsolidated companies where fair value approximates to the book value. Listed investments are valued using Level 1 methodology

B Fair values are assumed to approximate to cost either due to the short-term maturity of the instruments or because the interest rate of the investments is reset after periods not exceeding six months. Money market funds are valued using Level 1 methodology

C Fair values of derivative financial assets and liabilities and trade receivables held to collect or sell are estimated by discounting expected future contractual cash flows using prevailing interest rate curves. For commodity derivatives, forward commodity prices are used to determine expected future cash flows. Amounts denominated in foreign currencies are valued at the exchange rate prevailing at the balance sheet date. These financial instruments are included on the balance sheet at fair value, derived from observable market prices (Level 2)

D Other assets are included on the balance sheet at fair value, derived from observable market prices or latest forecast (Level 2/Level 3). At 31 December 2022, Level 3 assets totalled £25m (2021: £15m)

E Borrowings are carried at amortised cost. Amounts denominated in foreign currencies are valued at the exchange rate prevailing at the balance sheet date. The fair value of borrowings is estimated using quoted prices (Level 1)

F Borrowings are carried at amortised cost. Amounts denominated in foreign currencies are valued at the exchange rate prevailing at the balance sheet date. The fair value of borrowings is estimated by discounting contractual future cash flows (Level 2)

G The fair value of lease liabilities are estimated by discounting future contractual cash flows using either the interest rate implicit in the lease or the Group's incremental cost of borrowing (Level 2)

H The fair value of RRSAs and other liabilities are estimated by discounting expected future cash flows. The contractual cash flows are based on future trading activity, which is estimated based on latest forecasts (Level 3)

IFRS 13 *Fair Value Measurement* defines a three-level valuation hierarchy:
Level 1 – quoted prices for similar instruments;
Level 2 – directly observable market inputs other than Level 1 inputs; and
Level 3 – inputs not based on observable market data.

Carrying values of other financial assets and liabilities

	Foreign exchange contracts £m	Commodity contracts £m	Interest rate contracts [1] £m	Total derivatives £m	Financial RRSAs £m	Other £m	C Shares £m	Total £m
2022								
Non-current assets	**58**	**25**	**436**	**519**	**–**	**23**	**–**	**542**
Current assets	**87**	**40**	**2**	**129**	**–**	**12**	**–**	**141**
Assets	**145**	**65**	**438**	**648**	**–**	**35**	**–**	**683**
Current liabilities	**(966)**	**(1)**	**(2)**	**(969)**	**(8)**	**(15)**	**(24)**	**(1,016)**
Non-current liabilities	**(3,030)**	**(2)**	**(98)**	**(3,130)**	**(14)**	**(86)**	**–**	**(3,230)**
Liabilities	**(3,996)**	**(3)**	**(100)**	**(4,099)**	**(22)**	**(101)**	**(24)**	**(4,246)**
	(3,851)	**62**	**338**	**(3,451)**	**(22)**	**(66)**	**(24)**	**(3,563)**
2021								
Non-current assets	159	11	176	346	–	15	–	361
Current assets	12	21	–	33	–	13	–	46
Assets	171	32	176	379	–	28	–	407
Current liabilities	(629)	–	–	(629)	(7)	(28)	(25)	(689)
Non-current liabilities	(2,581)	–	(82)	(2,663)	(5)	(47)	–	(2,715)
Liabilities	(3,210)	–	(82)	(3,292)	(12)	(75)	(25)	(3,404)
	(3,039)	32	94	(2,913)	(12)	(47)	(25)	(2,997)

[1] Includes the foreign exchange impact of cross-currency interest rate swaps

20 Financial instruments – continued

Derivative financial instruments

The Group uses various financial instruments to manage its exposure to movements in foreign exchange rates. The Group uses commodity swaps to manage its exposure to movements in the price of commodities (jet fuel and base metals). To hedge the currency risk associated with a borrowing denominated in a foreign currency, the Group has currency derivatives designated as part of fair value or cash flow hedges. The Group uses interest rate swaps and forward rate agreements to manage its exposure to movements in interest rates.

Movements in the fair values of derivative financial assets and liabilities were as follows:

	Foreign exchange instruments		Commodity instruments		Interest rate instruments – hedge accounted [1]		Interest rate instruments - non-hedge accounted		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
At 1 January	(3,039)	(2,871)	32	(11)	57	233	37	(57)	(2,913)	(2,706)
Movements in fair value hedges	–	–	–	–	(74)	(143)	–	–	(74)	(143)
Movements in cash flow hedges	(56)	(13)	–	4	142	(2)	–	–	86	(11)
Movements in other derivative contracts [2]	(1,875)	(681)	106	63	–	–	190	80	(1,579)	(538)
Contracts settled	1,119	538	(76)	(9)	–	(31)	(14)	14	1,029	512
Reclassification to held for sale	–	(12)	–	(15)	–	–	–	–	–	(27)
At 31 December	(3,851)	(3,039)	62	32	125	57	213	37	(3,451)	(2,913)

[1] Includes the foreign exchange impact of cross-currency interest rate swaps
[2] Included in net financing

Financial RRSAs and other financial assets and liabilities

The Group has financial liabilities arising from financial RRSAs. These financial liabilities are valued at each reporting date using the amortised cost method. This involves calculating the present value of the forecast cash flows of the arrangements using the internal rate of return at the inception of the arrangements as the discount rate.

Movements in the carrying values were as follows:

	Financial RRSAs		Other – assets		Other – liabilities	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
At 1 January	(12)	(81)	15	15	(75)	(73)
Exchange adjustments included in OCI	(2)	4	2	–	(4)	4
Additions	(6)	–	11	–	(35)	(9)
Financing charge [1]	–	–	–	–	(4)	(1)
Excluded from underlying profit/(loss):						
Changes in forecast payments [1]	(7)	(7)	–	–	–	–
Cash paid	5	3	(3)	–	8	3
Other	–	–	–	–	9	1
Reclassification to assets held for sale	–	69	–	–	–	–
At 31 December	(22)	(12)	25	15	(101)	(75)

[1] Included in financing

20 Financial instruments – continued

Effect of hedging instruments on the financial position and performance

To manage the risk of changes in the fair values of fixed rate borrowings (the hedged items), the Group has entered into fixed-to-floating interest rate swaps (the hedging instruments), which, for accounting purposes, are designated as fair value hedges. The impact of fair value hedges on the financial position and performance of the Group is as follows:

	Hedged item [1]				Hedging instrument [2]						
	Nominal £m	FV adjustment in the period £m	FV adjustment since inception £m	Carrying amount £m	Nominal £m	Carrying amount asset £m	Carrying amount liability £m	FV movement in the period £m	Hedge ineffect-iveness in the period [3] £m	Weighted average FX rate	Weighted average interest rate
At 31 December 2022											
Sterling	**(375)**	**43**	**24**	**(351)**	**375**	**–**	**(24)**	**(43)**	**–**	**1.00**	**SONIA + 0.89**
USD	**(658)**	**(20)**	**(143)**	**(801)**	**658**	**134**	**–**	**18**	**(2)**	**1.52**	**SONIA + 1.47**
Euro	**(968)**	**49**	**52**	**(916)**	**968**	**–**	**(72)**	**(51)**	**(2)**	**1.14**	**SONIA + 0.92**
At 31 December 2021											
Sterling	(375)	27	(19)	(394)	375	19	–	(27)	–	1.00	SONIA + 0.89
USD	(658)	19	(125)	(781)	658	116	–	(20)	(1)	1.52	SONIA + 1.47
Euro	(968)	91	1	(965)	968	–	(21)	(90)	1	1.14	SONIA + 0.92

[1] Hedged items are included in borrowings in the balance sheet
[2] Hedging instruments are included in other financial assets or liabilities in the balance sheet
[3] Hedge ineffectiveness is included in net financing in the income statement

To manage the foreign exchange rate risk in cash flows on fixed rate non-GBP borrowings (the hedged items), the Group has entered into fixed-to-fixed cross-currency interest rate swaps (the hedging instruments) to hedge the cash flows into GBP, which, for accounting purposes, are designated as cash flow hedges.

During the year to 31 December 2022, the Group entered into deal contingent forwards with a nominal amount of €1,500m to manage the foreign exchange risk in Euro proceeds expected from the disposal of ITP Aero (hedged item). These contracts were designated as the hedging instrument in cash flow hedges with hedge ratio of 1:1. At inception, the existence of an economic relationship between the hedged item and the hedging instrument is verified. Both the spot component and the contingent element were designated as the hedging instrument.

At deal completion, these contracts had a fair value of £(56)m, based on the weighted average foreign exchange rate of 1.1992. £52m was reclassified to loss on disposal in the income statement from hedging reserves (£62m from hedging reserve and £(10)m from cost of hedging reserve). There was ineffectiveness of £4m recognised in net financing during the year. The forward element and basis were excluded from the hedging instrument designation and separately accounted for in the equity reserve for cost of hedging.

The impact of cash flow hedges on the financial position and performance of the Group is as follows:

	Hedged item		Hedging instrument [1]						Hedging reserves		
	Nominal £m	FV movement in the period £m	Nominal £m	Carrying amount asset/ (liability) £m	FV movement in the period £m	Hedge ineffect-iveness in the period £m	Weighted average FX rate	Weighted average interest rate	Amount recognised in OCI £m	Recycled to net financing £m	Closing cash flow hedge reserve £m
At 31 December 2022											
USD	**(772)**	**(104)**	**772**	**89**	**109**	**5**	**1.29**	**5.33**	**(111)**	**96**	**(25)**
Euro	**(677)**	**(35)**	**677**	**(2)**	**35**	**–**	**1.11**	**5.45**	**(27)**	**28**	**(9)**
At 31 December 2021											
USD	(772)	(35)	772	(20)	35	–	1.29	5.33	(36)	10	(10)
Euro	(677)	32	677	(37)	(32)	(1)	1.11	5.45	39	(51)	(10)

[1] Hedging instruments are included in other financial assets or liabilities in the balance sheet

20 Financial instruments – continued

Risk management policies and hedging activities

The principal financial risks to which the Group is exposed are: foreign currency exchange rate risk; liquidity risk; credit risk; interest rate risk; and commodity price risk. The Board has approved policies for the management of these risks.

Foreign currency exchange rate risk – The Group has significant cash flows (most significantly USD, followed by the euro) denominated in currencies other than the functional currency of the relevant trading entity. To manage its exposures to changes in values of future foreign currency cash flows, so as to maintain relatively stable long-term foreign exchange rates on settled transactions, the Group enters into derivative forward foreign currency transactions.

During the year, the Board approved a revised FX hedging policy reducing the time horizon from 10 years to 5 years. The Group economically hedges its GBP/USD exposure by forecasting highly probable net USD receipts up to five years forward. Hedges are taken out within prescribed maximum and minimum hedge positions set out in the Group FX Policy. Transition of the existing hedge book to the levels stated with the new policy will be completed in the near term. The maximum and minimum policy bands decline gradually over the five-year horizon and are calculated as a percentage of forecast net income. A similar policy is operated for the Group's EUR/USD exposure. For accounting purposes, these derivative contracts are not designated in hedging relationships.

The Group also has exposures to cash flows on EUR and USD denominated fixed rate borrowings. To manage its exposures to changes in values of future foreign currency cash flows, the Group has entered into fixed-to-fixed cross-currency interest rate swaps, which, for accounting purposes, are designated as cash flow hedges. The swaps have similar critical terms to the hedged items, such as the initial exchange amounts, payment dates and maturities. Therefore, there is an economic relationship and the hedge ratio is established as 1:1. Possible sources of ineffectiveness in the cash flow hedge relationship are changes in the credit risk of either party to the interest rate swap. Another possible source of ineffectiveness would be if the notional of the borrowings is less than the notional of the derivative, for example, in the event of a partial repayment of hedged debt prior to its maturity.

The Group regards its interests in overseas subsidiary companies as long-term investments. The Group aims to match its translational exposures by matching the currencies of assets and liabilities.

Liquidity risk – The Group's policy is to hold financial investments and maintain undrawn committed facilities at a level sufficient to ensure that the Group has available funds to meet its medium-term capital and funding obligations and to meet any unforeseen obligations and opportunities. The Group holds cash and short-term investments, which, together with the undrawn committed facilities, enable the Group to manage its liquidity risk.

Credit risk – The Group is exposed to credit risk to the extent of non-payment by either its customers or the counterparties of its financial instruments. The effective monitoring and controlling of credit risk is a key component of the Group's risk management activities. The Group has credit policies covering both trading and financial exposures. Credit risks arising from treasury activities are managed by a central treasury function in accordance with the Group credit policy. The objective of the policy is to diversify and minimise the Group's exposure to credit risk from its treasury activities by ensuring the Group transacts strictly with 'BBB' or higher rated financial institutions based on pre-established limits per financial institution. At the balance sheet date, there were no significant concentrations of credit risk to individual customers or counterparties. The Group's revenue is generated from customers located across multiple geographical locations (see note 2). These customers are typically: airframers and airline operators relating to Civil Aerospace; government defence departments for the UK and US; and multiple smaller entities for Power Systems. Whilst there are a limited number of customers related to Civil Aerospace and Defence, they are spread across various geographical locations. The maximum exposure to credit risk at the balance sheet date is represented by the carrying value of each financial asset, including derivative financial instruments.

Interest rate risk – The Group's interest rate risk is primarily in relation to its fixed rate borrowings (fair value risk), floating rate borrowings and cash and cash equivalents (cash flow risk). Interest rate derivatives are used to manage the overall interest rate profile of the Group. The fixed or floating rate interest rate decision on long-term borrowings is determined for each new agreement at the point it is entered into. The aggregate interest rate position of the Group is reviewed regularly and can be revised at any time in order to react to changes in market conditions or circumstances.

The Group also has exposures to the fair values of non-derivative financial instruments such as EUR, GBP and USD fixed rate borrowings. To manage the risk of changes in these fair values, the Group has entered into fixed-to-floating interest rate swaps and cross-currency interest rate swaps, which, for accounting purposes, are designated as fair value hedges. The swaps have similar critical terms to the hedged items, such as the reference rate, reset dates, notional amounts, payment dates and maturities. Therefore, there is an economic relationship and the hedge ratio is established as 1:1. Possible sources of ineffectiveness in the fair value hedge relationship are changes in the credit risk of either party to the interest rate swap and, for cross-currency interest rate swaps, the cross-currency basis risk as this risk is present in the hedging instrument only. Another possible source of ineffectiveness would be if the notional of the borrowings is less than the notional of the derivative, for example in the event of a partial repayment of hedged debt prior to its maturity.

The Group has exposure to changes in cash flows due to changes in interest rates. To manage this risk the Group has entered into floating-to-fixed interest rate swaps to hedge a proportion of its floating rate exposure to fixed rates. The swaps have similar critical terms to the floating leg of swaps that form part of the fair value hedges, such as the reference rate, reset dates, notional amounts, payment dates and maturities. For accounting purposes, these derivative contracts are generally not designated as hedging instruments.

Commodity price risk – The Group has exposures to the price of jet fuel and base metals arising from business operations. To minimise its cash flow exposures to changes in commodity prices, the Group enters into derivative commodity transactions. The commodity hedging policy is similar to the Group FX policy, in that the Group forecasts highly probable exposures to commodities, and takes out hedges within prescribed maximum and minimum levels as set out in the policy. The maximum and minimum policy bands decline gradually over time. For accounting purposes, these derivative contracts are generally not designated in hedging relationships.

Other price risk – The Group's cash equivalent balances represent investments in money-market instruments, with a term of up to three months. The Group does not consider that these are subject to significant price risk.

20 Financial instruments – continued

Derivative financial instruments

The nominal amounts, analysed by year of expected maturity, and fair values of derivative financial instruments are as follows:

		Expected maturity				Fair value	
	Nominal amount £m	Within one year £m	Between one and two years £m	Between two and five years £m	After five years £m	Assets £m	Liabilities £m
At 31 December 2022							
Foreign exchange contracts:							
Non-hedge accounted	22,844	9,539	4,180	8,898	227	145	(3,996)
Interest rate contracts:							
Fair value hedges	2,001	–	484	1,033	484	135	(97)
Cash flow hedges	1,449	–	–	1,449	–	89	(2)
Non-hedge accounted	2,001	–	484	1,033	484	214	(1)
Commodity contracts:							
Non-hedge accounted	219	97	79	43	–	65	(3)
	28,514	9,636	5,227	12,456	1,195	648	(4,099)
At 31 December 2021							
Foreign exchange contracts:							
Non-hedge accounted	28,767	6,975	8,139	12,471	1,182	171	(3,210)
Interest rate contracts:							
Fair value hedges	2,001	–	–	1,517	484	135	(21)
Cash flow hedges	1,449	–	–	677	772	–	(57)
Non-hedge accounted	2,001	–	–	1,517	484	41	(4)
Commodity contracts:							
Non-hedge accounted	179	85	60	34	–	32	–
	34,397	7,060	8,199	16,216	2,922	379	(3,292)

As described above, all derivative financial instruments are entered into for risk management purposes, although these may not be designated into hedging relationships for accounting purposes.

Currency analysis

Foreign exchange contracts are denominated in the following currencies:

	Nominal amount of currencies purchased forward				
	Sterling £m	USD £m	Euro £m	Other £m	Total £m
At 31 December 2022					
Currencies sold forward:					
Sterling	–	4,321	45	146	4,512
USD	16,246	–	1,578	253	18,077
Euro	30	160	–	40	230
Other	–	8	17	–	25
At 31 December 2021					
Currencies sold forward:					
Sterling	–	5,479	–	250	5,729
USD	19,916	–	2,430	325	22,671
Euro	–	263	–	46	309
Other	2	41	14	1	58

The nominal value of interest rate and commodity contracts are denominated in the following currencies:

	2022 £m	2021 £m
Sterling	2,376	2,376
USD	1,629	1,600
Euro	1,665	1,654

20 Financial instruments – continued

Non-derivative financial instruments are denominated in the following currencies:

	Sterling £m	USD £m	Euro £m	Other £m	Total £m
At 31 December 2022					
Other non-current investments	10	16	10	–	36
Trade receivables and similar items	231	3,270	565	81	4,147
Other non-derivative financial assets	61	666	33	15	775
Other assets	–	24	11	–	35
Short-term investments	–	–	11	–	11
Cash and cash equivalents	398	897	1,155	157	2,607
Assets	700	4,873	1,785	253	7,611
Borrowings	(893)	(1,627)	(1,587)	(1)	(4,108)
Lease liabilities	(181)	(1,401)	(49)	(216)	(1,847)
Financial RRSAs	–	(7)	(15)	–	(22)
Other liabilities	(11)	(90)	–	–	(101)
C Shares	(24)	–	–	–	(24)
Trade payables and similar items	(690)	(4,315)	(675)	(59)	(5,739)
Other non-derivative financial liabilities	(271)	(1,941)	(129)	(44)	(2,385)
Contract liabilities	–	(420)	–	–	(420)
Liabilities	(2,070)	(9,801)	(2,455)	(320)	(14,646)
	(1,370)	(4,928)	(670)	(67)	(7,035)
At 31 December 2021					
Other non-current investments	12	23	1	–	36
Trade receivables and similar items	176	2,776	450	64	3,466
Other non-derivative financial assets	17	640	30	18	705
Other assets	–	28	–	–	28
Short-term investments	–	–	8	–	8
Cash and cash equivalents	700	673	1,135	113	2,621
Assets	905	4,140	1,624	195	6,864
Borrowings	(2,915)	(1,518)	(1,598)	(1)	(6,032)
Lease liabilities	(188)	(1,300)	(48)	(208)	(1,744)
Financial RRSAs	–	–	(12)	–	(12)
Other liabilities	(17)	(58)	–	–	(75)
C Shares	(25)	–	–	–	(25)
Trade payables and similar items [1]	(503)	(3,399)	(444)	(63)	(4,409)
Other non-derivative financial liabilities	(287)	(1,957)	(113)	(46)	(2,403)
Contract liabilities	–	(264)	–	–	(264)
Liabilities	(3,935)	(8,496)	(2,215)	(318)	(14,964)
	(3,030)	(4,356)	(591)	(123)	(8,100)

[1] During the year, trade payables and similar items have been analysed in greater detail and consequently have been represented to include items previously classified as non-financial instruments

20 Financial instruments – continued

Currency exposures

The Group's actual currency exposures on financial instruments after taking account of derivative foreign currency contracts, which are not designated as hedging instruments for accounting purposes are as follows:

Functional currency of Group operations	Sterling £m	USD £m	Euro £m	Other £m	Total £m
At 31 December 2022					
Sterling	–	–	1	4	5
USD	(7)	–	(2)	7	(2)
Euro	(1)	–	–	–	(1)
Other	108	26	86	–	220
At 31 December 2021					
Sterling	–	1	1	(4)	(2)
USD	(8)	–	–	4	(4)
Euro	1	(4)	–	3	–
Other	82	14	51	2	149

Ageing beyond contractual due date of financial assets

	Within terms £m	Up to three months overdue £m	Between three months and one year overdue £m	More than one year overdue £m	Total £m
At 31 December 2022					
Other non-current asset investments	36	–	–	–	36
Trade receivables and similar items	3,646	219	169	113	4,147
Other non-derivative financial assets	755	9	10	1	775
Other assets	35	–	–	–	35
Derivative financial assets	648	–	–	–	648
Short-term investments	11	–	–	–	11
Cash and cash equivalents	2,607	–	–	–	2,607
	7,738	228	179	114	8,259
At 31 December 2021					
Other non-current asset investments	36	–	–	–	36
Trade receivables and similar items	2,749	369	211	137	3,466
Other non-derivative financial assets	699	–	5	1	705
Other assets	28	–	–	–	28
Derivative financial assets	379	–	–	–	379
Short-term investments	8	–	–	–	8
Cash and cash equivalents	2,621	–	–	–	2,621
	6,520	369	216	138	7,243

20 Financial instruments – continued

Contractual maturity analysis of non-derivative financial liabilities

	Gross values				
	Within one year £m	Between one and two years £m	Between two and five years £m	After five years £m	Carrying value £m
At 31 December 2022					
Borrowings	**(168)**	**(653)**	**(3,612)**	**(510)**	**(4,108)**
Lease liabilities	**(435)**	**(311)**	**(886)**	**(734)**	**(1,847)**
Financial RRSAs	**(10)**	**(7)**	**(1)**	**(5)**	**(22)**
Other liabilities	**(15)**	**(10)**	**(30)**	**(46)**	**(101)**
C Shares	**(24)**	**–**	**–**	**–**	**(24)**
Trade payables and similar items	**(5,352)**	**(147)**	**(107)**	**(133)**	**(5,739)**
Other non-derivative financial liabilities	**(1,367)**	**(427)**	**(234)**	**(357)**	**(2,385)**
Contract liabilities	**(420)**	**–**	**–**	**–**	**(420)**
	(7,791)	**(1,555)**	**(4,870)**	**(1,785)**	**(14,646)**
At 31 December 2021					
Borrowings	(259)	(265)	(4,806)	(1,849)	(6,032)
Lease liabilities	(322)	(261)	(724)	(852)	(1,744)
Financial RRSAs	(6)	(5)	(2)	–	(12)
Other liabilities	(27)	(9)	(24)	(15)	(75)
C Shares	(25)	–	–	–	(25)
Trade payables and similar items [1]	(4,019)	(33)	(131)	(226)	(4,409)
Other non-derivative financial liabilities	(1,812)	(83)	(207)	(301)	(2,403)
Contract liabilities	(264)	–	–	–	(264)
	(6,734)	(656)	(5,894)	(3,243)	(14,964)

[1] During the year trade payables and similar items have been analysed in greater detail and consequently have been represented to include items previously classified as non-financial instruments.

Expected maturity analysis of derivative financial instruments

	Gross values				
	Within one year £m	Between one and two years £m	Between two and five years £m	After five years £m	Carrying value £m
At 31 December 2022					
Derivative financial assets:					
Cash inflows	**3,002**	**551**	**3,179**	**–**	
Cash outflows	**(2,907)**	**(540)**	**(2,886)**	**–**	
Other net cash flows [1]	**131**	**90**	**98**	**7**	
	226	**101**	**391**	**7**	**648**
Derivative financial liabilities:					
Cash inflows	**6,658**	**4,238**	**8,290**	**722**	
Cash outflows	**(8,019)**	**(5,162)**	**(10,604)**	**(745)**	
Other net cash flows [1]	**(10)**	**(10)**	**(4)**	**–**	
	(1,371)	**(934)**	**(2,318)**	**(23)**	**(4,099)**
At 31 December 2021					
Derivative financial assets:					
Cash inflows	840	1,051	3,145	456	
Cash outflows	(811)	(1,017)	(2,922)	(445)	
Other net cash flows [1]	26	27	43	2	
	55	61	266	13	379
Derivative financial liabilities:					
Cash inflows	6,246	7,198	11,441	1,987	
Cash outflows	(6,917)	(8,022)	(13,200)	(2,314)	
Other net cash flows [1]	(2)	(1)	–	–	
	(673)	(825)	(1,759)	(327)	(3,292)

[1] Derivative financial assets and liabilities that are settled on a net cash basis

20 Financial instruments – continued

Interest rate risk

In respect of income-earning financial assets and interest-bearing financial liabilities, the following table indicates their effective interest rates. The value shown is the carrying amount before taking account of swaps.

	2022			2021		
	Fixed rate £m	Floating rate £m	Total £m	Fixed rate £m	Floating rate £m	Total £m
Short-term investments	–	11	11	–	8	8
Cash and cash equivalents [1]	–	2,607	2,607	–	2,621	2,621
Borrowings	(4,096)	(12)	(4,108)	(4,041)	(1,991)	(6,032)
Lease liabilities	(1,235)	(612)	(1,847)	(1,084)	(660)	(1,744)
	(5,331)	1,994	(3,337)	(5,125)	(22)	(5,147)
Weighted average interest rates						
Borrowings	3.7%	4.7%		3.7%	4.1%	
Lease liabilities [2]	3.9%	6.3%		4.0%	2.0%	

[1] Cash and cash equivalents comprises bank balances and term deposits and earn interest based on short-term floating market interest rates
[2] Interest rates for lease liabilities are considered to be the discount rates at the balance sheet date

None (2021: £8m (including borrowings classified as held for sale)) of the Group's borrowings are subject to the Group meeting certain obligations, including customary financial covenants. There are no rating triggers contained in any of the Group's facilities that could require the Group to accelerate or repay any facility for a given movement in the Group's credit rating.

£111m (2021: £99m) of the Group's lease liabilities include a customary loan-to-value covenant. The Group has several contractual cures available in the event the stipulated loan-to-value ratio is exceeded. Failure by the Group to satisfy its contractual obligations under the covenant gives rights to the lessor to terminate its lease and claim termination amounts for the outstanding lease balance. At 31 December 2022 none (2021: none) of these were in breach.

Sensitivity analysis

Sensitivities at 31 December (all other variables held constant) – impact on profit after taxation and equity	2022 £m	2021 £m
Sterling 10% weaker against the USD	(1,600)	(1,687)
Sterling 10% stronger against the USD	1,309	1,382
Euro 10% weaker against the USD	(46)	(227)
Euro 10% stronger against the USD	38	185
Sterling 10% weaker against the Euro	(17)	(15)
Sterling 10% stronger against the Euro	14	12
Commodity prices 10% lower	(21)	(17)
Commodity prices 10% higher	21	17
Interest rates 50 basis points lower	(65)	(67)
Interest rates 50 basis points higher	64	65

C Shares and payments to shareholders

The Company issues non-cumulative redeemable preference shares (C Shares) as an alternative to paying a cash dividend. C Shares in respect of a year are issued in the following year. Shareholders are able to redeem any number of their C Shares for cash. Any C Shares retained attract a dividend of Bank of England base rate on the 0.1p nominal value of each share, paid on a twice-yearly basis, and have limited voting rights. The Company has the option to compulsorily redeem the C Shares, at any time, if the aggregate number of C Shares in issue is less than 10% of the aggregate number of C Shares issued, or on the acquisition or capital restructuring of the Company.

Movements in issued and fully paid C Shares during the year were as follows:

	2022		2021	
	Millions	Nominal value £m	Millions	Nominal value £m
At 1 January	24,928	25	27,540	28
Redeemed	(1,073)	(1)	(2,612)	(3)
At 31 December	23,855	24	24,928	25

Payments to shareholders represent the value of C Shares to be issued in respect of the results for the year. There have been no issues (2021: no issues) of C Shares declared in respect of the year to 31 December 2022.

21 Provisions for liabilities and charges

	At 31 December 2021 as previously reported £m	On adoption of amendment to IAS 37 £m	At 1 January 2022 £m	Charged to income statement [1] £m	Reversed £m	Utilised £m	Exchange differences £m	At 31 December 2022 £m
Contract losses	845	723	1,568	520	(395)	(106)	5	1,592
Warranty and guarantees	305	–	305	98	(20)	(87)	21	317
Trent 1000 wastage costs	157	–	157	106	–	(84)	–	179
Insurance	52	–	52	15	(20)	(7)	–	40
Employer liability claims	47	–	47	3	(14)	(3)	–	33
Restructuring	21	–	21	–	(10)	(6)	1	6
Customer financing	17	–	17	–	(7)	(10)	–	–
Tax related interest and penalties	14	–	14	3	(2)	–	1	16
Other	124	–	124	47	(18)	(7)	4	150
	1,582	723	2,305	792	(486)	(310)	32	2,333
Current liabilities	475		513					632
Non-current liabilities	1,107		1,792					1,701

[1] The charge to the income statement includes £33m (2021: £32m) as a result of the unwinding of the discounting of provisions previously recognised

Contract losses

Provisions for contract losses are recorded when the direct costs to fulfil a contract are assessed as being greater than the expected revenue. As a result of the amendment to IAS 37 for Onerous Contracts, from 1 January 2022 provisions for contract losses have been measured on a fully costed basis resulting in a £723m increase of the total contract loss provision as at 1 January 2022 (see note 1 for details). During the year, additional contract losses for the Group of £520m have been recognised as a result of changes in future cost estimates, primarily in relation to LTSA shop visits, exchange rate movements and also includes £157m which arose from the sale of ITP Aero resulting in the recognition of additional costs which were previously eliminated on consolidation. Contract losses of £395m previously recognised have been reversed following improvements to cost estimates across various large engine programmes as a result of operational improvements and updates to the discount rate. The Group continues to monitor the contract loss provision for changes in the market and revises the provision as required. The value of the remaining contract loss provisions reflect, in each case, the single most likely outcome. The provisions are expected to be utilised over the term of the customer contracts, typically within 8 to 16 years.

Warranty and guarantees

Provisions for warranty and guarantees primarily relate to products sold and are calculated based on an assessment of the remediation costs related to future claims based on past experience. The provision generally covers a period of up to three years.

Trent 1000 wastage costs

In November 2019, the Group announced the outcome of testing and a thorough technical and financial review of the Trent 1000 TEN programme, following technical issues which were identified in 2019, resulting in a revised timeline and a more conservative estimate of durability for the improved HP turbine blade for the TEN variant. During the year, the Group has utilised £84m of the Trent 1000 wastage costs provision. This represents customer disruption costs and remediation shop visit costs. During the year, additional Trent 1000 costs of £106m relating to wastage have been recognised reflecting delays in certification which have led to revised cost and timing estimates. The value of the remaining provision reflects the single most likely outcome and is expected to be utilised over the period 2023-2024.

Insurance

The Group's captive insurance company retains a portion of the exposures it insures on behalf of the remainder of the Group, which include policies for aviation claims, employer liabilities and healthcare claims. Significant delays can occur in the notification and settlement of claims, and judgement is involved in assessing outstanding liabilities, the ultimate cost and timing of which cannot be known with certainty at the balance sheet date. The insurance provisions are based on information currently available, however, it is inherent in the nature of the business that ultimate liabilities may vary if the frequency or severity of claims differs from estimated. Provisions for outstanding claims are established to cover the outstanding expected liability as well as claims incurred but not yet reported.

Employer liability claims

The provision relating to employer healthcare liability claims is as a result of an historical insolvency of the previous provider and is expected to be utilised over the next 30 years.

Customer financing

Customer financing provisions are made to cover guarantees provided for asset value and/or financing where it is probable that a payment will be made. These are reported on a discounted basis at the Group's borrowing rate to better reflect the time span over which these exposures could arise. The values of aircraft providing security are based on advice from a specialist aircraft appraiser. There were no provisions for Customer financing provisions at 31 December 2022 (2021: £17m). The Group has contingent liabilities for customer financing arrangements where the payment is not probable. See note 25.

21 Provisions for liabilities and charges – continued

Tax related interest and penalties

Provisions for tax related interest and penalties relate to uncertain tax positions in some of the jurisdictions in which the Group operates. Utilisation of the provisions will depend on the timing of resolution of the issues with the relevant tax authorities.

Other

During the year, £47m of other provisions have been charged to the income statement. The items that make up the charge in the year are individually immaterial and predominately relate to claims. At 31 December 2022, other provisions includes those items, as well as others (predominantly supplier claims), where the related legal proceedings are ongoing and utilisation will depend upon their resolution. The value of the provision reflects the single most likely outcome in each case.

22 Post-retirement benefits

The Group operates a number of defined benefit and defined contribution schemes:

- The UK defined benefit scheme is funded, with the assets held in a separate UK trust. The scheme closed to future accrual on 31 December 2020 for all active members and there are no new defined benefit accruals in the UK scheme. As at 31 December 2022 the scheme was estimated to be funded at 109% on the Technical Provisions basis.
- The Group also operates a large trust-based defined contribution scheme for current employees in the UK (RRRST). Pension contributions are generally paid as a salary sacrifice under which employees agree to a reduction in gross contractual pay in return for the Group making additional pension contributions on their behalf. As a result, there is a decrease in wages and salaries and a corresponding increase in pension costs of £46m (2021: £45m) in the year.
- Overseas defined benefit schemes are a mixture of funded and unfunded plans and provide benefits in line with local practice. Additionally, in the US, and to a lesser extent in some other countries, the Group's employment practices include the provision of healthcare and life insurance benefits for retired employees. These healthcare schemes are unfunded.

The valuations of the defined benefit schemes are based on the results of the most recent funding valuation, where relevant, updated by the scheme actuaries to 31 December 2022.

Changes to the defined benefit scheme

As at 31 December 2022, a constructive obligation has been recognised for the extension of the Bridging Pension Option (BPO) to other deferred members in RRUKPF. As a result, a past service credit of £6m has been recognised within non-underlying operating profit.

The Rolls-Royce North America salaried plan was closed to future accruals in 2021. On 1 December 2022, the remaining assets and liabilities were transferred to Legal and General America Group as a bulk annuity purchase and were derecognised from the balance sheet. This resulted in a settlement loss of £7m.

During the year, Power Systems replaced a number of their existing defined benefit schemes with a new company pension scheme to offer payment options at time of retirement. The new system, which is similar in structure to a defined contribution scheme with a guarantee from the Company in accordance with German legislation, significantly reduces interest risks and longevity risks for the employer for future commitments. Invested assets for the scheme will be managed by Swiss Life. A past service credit of £23m has been recognised within non-underlying operating profit.

22 Post-retirement benefits – continued

Amounts recognised in the income statement

	2022			2021		
	UK schemes £m	Overseas schemes £m	Total £m	UK schemes £m	Overseas schemes £m	Total £m
Defined benefit schemes:						
Current service cost and administrative expenses	8	44	52	10	61	71
Past-service credit and settlement loss	(6)	(19)	(25)	(15)	(33)	(48)
	2	25	27	(5)	28	23
Defined contribution schemes	154	87	241	146	81	227
Operating cost	156	112	268	141	109	250
Net financing (credit)/charge in respect of defined benefit schemes	(21)	23	2	(16)	19	3
Total income statement charge	135	135	270	125	128	253

The operating cost is charged as follows:

	Defined benefit		Defined contribution		Total	
	2022 £m	2021 £m	2022 £m	2021 £m	2022 £m	2021 £m
Cost of sales	37	50	168	158	205	208
Commercial and administrative costs	(17)	(38)	38	32	21	(6)
Research and development costs	7	11	33	35	40	46
	27	23	239	225	266	248
Discontinued operations	–	–	2	2	2	2
	27	23	241	227	268	250

Net financing comprises:

	2022			2021		
	UK schemes £m	Overseas schemes £m	Total £m	UK schemes £m	Overseas schemes £m	Total £m
Financing on scheme obligations	149	46	195	137	41	178
Financing on scheme assets	(170)	(23)	(193)	(153)	(22)	(175)
Net financing (income)/charge in respect of defined benefit schemes	(21)	23	2	(16)	19	3
Financing income on scheme surpluses	(21)	(3)	(24)	(16)	(1)	(17)
Financing cost on scheme deficits	–	26	26	–	20	20

Amounts recognised in OCI in respect of defined benefit schemes

	2022			2021		
	UK schemes £m	Overseas schemes £m	Total £m	UK schemes £m	Overseas schemes £m	Total £m
Actuarial gains and losses arising from:						
Demographic assumptions [1]	19	–	19	(101)	(2)	(103)
Financial assumptions [2]	3,423	602	4,025	416	159	575
Experience adjustments [3]	(235)	(7)	(242)	(88)	12	(76)
Return on scheme assets excluding financing income [2]	(3,751)	(207)	(3,958)	(112)	(30)	(142)
	(544)	388	(156)	115	139	254

[1] For the UK Scheme, this reflects latest available CMI mortality projections and an update of the post-retirement mortality assumptions based on an analysis prepared for the 31 March 2020 funding valuation

[2] Actuarial gains and losses arising from financial assumptions arise primarily due to changes in interest rates and inflation

[3] This reflects realised inflation being higher than expected in the period, resulting in increases in actual pension increases and deferred pension expectations

22 Post-retirement benefits – continued

Amounts recognised in the balance sheet in respect of defined benefit schemes

	2022			2021		
	UK schemes £m	Overseas schemes £m	Total £m	UK schemes £m	Overseas schemes £m	Total £m
Present value of funded obligations	(4,621)	(944)	(5,565)	(8,010)	(863)	(8,873)
Fair value of scheme assets	5,215	493	5,708	9,128	861	9,989
Net asset/(liability) on funded schemes	594	(451)	143	1,118	(2)	1,116
Present value of unfunded obligations	–	(563)	(563)	–	(1,341)	(1,341)
Net asset/(liability) recognised in the balance sheet	594	(1,014)	(420)	1,118	(1,343)	(225)
Post-retirement scheme surpluses [1]	594	19	613	1,118	30	1,148
Post-retirement scheme deficits	–	(1,033)	(1,033)	–	(1,373)	(1,373)

[1] The surplus in the UK scheme is recognised as on an ultimate wind-up when there are no longer any remaining members, any surplus would be returned to the Group, which has the power to prevent the surplus being used for other purposes in advance of this event

Overseas schemes are located in the following countries:

	2022			2021		
	Assets £m	Obligations £m	Net £m	Assets £m	Obligations £m	Net £m
Canada	187	(226)	(39)	245	(275)	(30)
Germany	10	(638)	(628)	2	(883)	(881)
US pension schemes	296	(308)	(12)	614	(643)	(29)
US healthcare schemes	–	(333)	(333)	–	(400)	(400)
Other	–	(2)	(2)	–	(3)	(3)
Net asset/(liability) recognised in the balance sheet	493	(1,507)	(1,014)	861	(2,204)	(1,343)

Defined benefit schemes

Assumptions

Significant actuarial assumptions for UK schemes at the balance sheet date were as follows:

		2022	2021
Discount rate		4.80%	1.90%
Inflation assumption (RPI)		3.50%	3.60%
Inflation assumption (CPI)		2.95%	3.05%
Transfer assumption (employed deferred/deferred)		50%/40%	50%/40%
Bridging Pension Option assumption		30%	25%
Life expectancy from age 65:	current male pensioner	21.9 years	21.8 years
	future male pensioner currently aged 45	23.2 years	23.2 years
	current female pensioner	23.7 years	23.6 years
	future female pensioner currently aged 45	25.5 years	25.4 years

Discount rates are determined by reference to the market yields on AA rated corporate bonds. The rate is determined by using the profile of forecast benefit payments to derive a weighted average discount rate from the yield curve.

The inflation assumption is determined by the market-implied assumption based on the yields on long-term index-linked government securities.

The mortality assumptions adopted for the UK pension schemes are derived from the SAPS S3 'All' actuarial tables, with future improvements in line with the CMI 2021 core projections updated to reflect use of an 'A' parameter of 0.25% for future improvements and long-term improvements of 1.25%. Where appropriate, these are adjusted to take account of the scheme's actual experience.

The assumption for transfers and the BPO is based on actual experience and actuarial advice.

Other assumptions have been set on advice from the actuary, having regard to the latest trends in scheme experience and the assumptions used in the most recent funding valuation. The rate of increase of pensions in payment is based on the rules of the scheme, combined with the inflation assumption where the increase is capped.

22 Post-retirement benefits – continued

Assumptions for overseas schemes are less significant and are based on advice from local actuaries. The principal assumptions are:

	2022	2021
Discount rate	4.70%	2.20%
Inflation assumption	2.30%	2.10%
Long-term healthcare cost trend rate	4.75%	4.75%
Male life expectancy from age 65: current pensioner	20.5 years	20.7 years
future pensioner currently aged 45	22.4 years	22.5 years

Changes in present value of defined benefit obligations

	2022			2021		
	UK schemes £m	Overseas schemes £m	Total £m	UK schemes £m	Overseas schemes £m	Total £m
At 1 January	(8,010)	(2,204)	(10,214)	(8,879)	(2,463)	(11,342)
Exchange differences	–	(165)	(165)	–	49	49
Current service cost	(4)	(43)	(47)	(4)	(60)	(64)
Past-service cost	6	24	30	15	33	48
Finance cost	(149)	(49)	(198)	(137)	(41)	(178)
Contributions by employees	–	(4)	(4)	–	(2)	(2)
Benefits paid out	329	102	431	768	101	869
Disposal of businesses	–	–	–	–	12	12
Actuarial gains	3,207	599	3,806	227	169	396
Transfers	–	(2)	(2)	–	(2)	(2)
Settlement	–	235	235	–	–	–
At 31 December	(4,621)	(1,507)	(6,128)	(8,010)	(2,204)	(10,214)
Funded schemes	(4,621)	(944)	(5,565)	(8,010)	(863)	(8,873)
Unfunded schemes	–	(563)	(563)	–	(1,341)	(1,341)
The defined benefit obligations are in respect of:						
Active plan participants [1]	(1,681)	(693)	(2,374)	(3,451)	(1,193)	(4,644)
Deferred plan participants	(1,172)	(93)	(1,265)	(2,258)	(176)	(2,434)
Pensioners	(1,768)	(721)	(2,489)	(2,301)	(835)	(3,136)
Weighted average duration of obligations (years)	17	13	16	22	15	21

[1] Although the UK scheme closed to future accrual on 31 December 2020, members who became deferred as a result of the closure and remain employed by the Group retain some additional benefits compared to other deferred members. The obligations for these members are shown as active plan participants

Changes in fair value of scheme assets

	2022			2021		
	UK schemes £m	Overseas schemes £m	Total £m	UK schemes £m	Overseas schemes £m	Total £m
At 1 January	9,128	861	9,989	9,762	894	10,656
Exchange differences	–	77	77	–	12	12
Administrative expenses	(4)	(1)	(5)	(6)	(1)	(7)
Financing	170	23	193	153	22	175
Return on plan assets excluding financing	(3,751)	(207)	(3,958)	(112)	(30)	(142)
Contributions by employer	1	80	81	99	63	162
Contributions by employees	–	4	4	–	2	2
Benefits paid out	(329)	(102)	(431)	(768)	(101)	(869)
Settlement	–	(242)	(242)	–	–	–
At 31 December	5,215	493	5,708	9,128	861	9,989
Total return on scheme assets	(3,581)	(184)	(3,765)	41	(8)	33

22 Post-retirement benefits – continued

Fair value of scheme assets at 31 December

	2022			2021		
	UK schemes £m	Overseas schemes £m	Total £m	UK schemes £m	Overseas schemes £m	Total £m
Sovereign debt	3,574	120	3,694	5,756	217	5,973
Corporate debt instruments	1,492	257	1,749	3,122	389	3,511
Interest rate swaps	196	–	196	54	–	54
Inflation swaps	212	–	212	106	–	106
Cash and similar instruments [1]	(1,066)	–	(1,066)	(811)	144	(667)
Liability driven investment (LDI) portfolios [2]	4,408	377	4,785	8,227	750	8,977
Listed equities	–	78	78	–	101	101
Unlisted equities	40	–	40	54	–	54
Synthetic equities [3]	(8)	–	(8)	43	4	47
Sovereign debt	–	–	–	–	4	4
Corporate debt instruments	772	–	772	802	–	802
Cash	–	5	5	–	2	2
Other	3	33	36	2	–	2
At 31 December	5,215	493	5,708	9,128	861	9,989

[1] UK cash and similar instruments include repurchase agreements on UK Government bonds amounting to £(1,221)m (2021: £(1,087)m). The latest maturity date for these short-term borrowings is April 2024

[2] A portfolio of gilt and swap contracts, backed by investment-grade credit instruments and diversified liquidity funds, that is designed to hedge the majority of the interest rate and inflation risks associated with the schemes' obligations

[3] Portfolios of swap contracts designed to provide investment returns in line with global equity markets. The maximum exposure (notional value and accrued returns) on the portfolios was £344m (2021: £550m)

The investment strategy for the UK scheme is controlled by the Trustee in consultation with the Group. The scheme assets do not directly include any of the Group's own financial instruments, nor any property occupied by, or other assets used by, the Group. At 31 December 2022, there was no indirect holding of the Group's financial instruments (2021: none).

The liquidity of the UK scheme was not significantly impacted by the rapid rise in UK Government bond yields in the second half of 2022. The UK scheme (and its predecessor schemes) benefited from prudent cash funding from the Group in previous financial years coupled with long-term liability hedging programmes. These factors have resulted in the scheme being relatively well funded and consequently enabled it to keep leverage relatively low. Throughout 2022, the UK scheme maintained adequate levels of liquidity and eligible collateral to service its leveraged positions.

Future contributions

The Group expects to contribute approximately £70m to its overseas defined benefit schemes in 2023 (2022: £66m).

In the UK, any cash funding of RRUKPF is based on a statutory triennial funding valuation process. The Group and the Trustee negotiate and agree the actuarial assumptions used to value the liabilities (Technical Provisions); assumptions which may differ from those used for accounting set out above. The assumptions used to value Technical Provisions must be prudent rather than a best estimate of the liability. Most notably, the Technical Provision discount rate is currently based upon UK Government yields plus a margin (0.5% at the 31 March 2020 valuation) rather than being based on yields of AA corporate bonds. Once each valuation is signed, a Schedule of Contributions (SoC) must be agreed which sets out the cash contributions to be paid. The most recent valuation, as at 31 March 2020, agreed by the Trustee in June 2021, showed that RRUKPF was estimated to be 105% funded on the Technical Provisions basis (estimated to be 109% at 31 December 2022). All cash due has been paid in full and the current SoC does not require any cash contributions to be made by the Group. The current SoC does include an agreement for contributions between 2024 to 2027 (capped at £145m in total) if the Technical Provisions funding position is below 107% at 31 March 2023.

22 Post-retirement benefits – continued

Sensitivities

The calculations of the defined benefit obligations are sensitive to the assumptions set out above. The following table summarises how the estimated impact of a change in a significant assumption would affect the UK defined benefit obligation at 31 December 2022, while holding all other assumptions constant. This sensitivity analysis may not be representative of the actual change in the defined benefit obligation as it is unlikely that the change in assumptions would occur in isolation of one another as some of the assumptions may be correlated.

For the most significant funded schemes, the investment strategies hedge the risks from interest rates and inflation measured on a proxy solvency basis.

For the UK scheme, the interest rate and inflation hedging is currently based on UK Government bond yields without any adjustment for any credit spread. The sensitivity analysis set out below have been determined based on a method that estimates the impact on the defined benefit obligation as a result of reasonable changes in key assumptions occurring at the end of the reporting period.

		2022 £m	2021 £m
Reduction in the discount rate of 0.25% [1]	Obligation	(205)	(460)
	Plan assets (LDI portfolio)	235	484
Increase in inflation of 0.25% [1]	Obligation	(70)	(210)
	Plan assets (LDI portfolio)	91	147
Increase of 1% in transfer value assumption	Obligations	(30)	(55)
Increase of 5% of transfers instead of BPO	Obligations	(5)	(30)
One year increase in life expectancy	Obligations	(165)	(365)

[1] The differences between the sensitivities on obligations and plan assets arise largely due to differences in the methods used to value the obligations for accounting purposes and the adopted proxy solvency basis

23 Share capital

	Non-equity		Equity	
	Special Share of £1	Nominal value £m	Ordinary shares of 20p each Millions	Nominal value £m
Issued and fully paid				
At 1 January 2021	1	–	8,368	1,674
At 31 December 2021	1	–	8,368	1,674
At 31 December 2022	**1**	**–**	**8,368**	**1,674**

The rights attaching to each class of share are set out on page 207.

In accordance with IAS 32 *Financial Instruments: Presentation*, the Company's non-cumulative redeemable preference shares (C Shares) are classified as financial liabilities. Accordingly, movements in C Shares are included in note 20.

24 Share-based payments

Effect of share-based payment transactions on the Group's results and financial position

	2022 £m	2021 £m
Total expense recognised for equity-settled share-based payments transactions	46	28
Total cost recognised for cash-settled share-based payments transactions	1	–
Share-based payments recognised in the consolidated income statement	47	28
Liability for cash-settled share-based payment transactions	1	–

A description of the share-based payment plans is included in the Directors' Remuneration Report on pages 77 to 95.

Movements in the Group's share-based payment plans during the year

	ShareSave		LTIP	DSBP
	Number Millions	Weighted average exercise price Pence	Number Millions	Number Millions
Outstanding at 1 January 2021	49.6	239	67.6	1.4
Granted	56.8	97	33.8	0.1
Forfeited	(31.3)	239	(14.3)	(0.1)
Exercised	–	–	(10.1)	(0.6)
Outstanding at 31 December 2021	75.1	132	77.0	0.8
Granted	0.1	104	47.2	12.3
Forfeited	(9.6)	161	(13.4)	(0.2)
Exercised	–	–	(17.8)	(0.7)
Outstanding at 31 December 2022	**65.6**	**127**	**93.0**	**12.2**
Exercisable at 31 December 2022	**–**	**–**	**–**	**–**
Exercisable at 31 December 2021	–	–	–	–

The weighted average share price at the date share options were exercised was 95p (2021: 119p). The closing price at 31 December 2022 was 93p (2021: 123p).

The weighted average remaining contractual life for the share options as at 31 December 2022 was two years (2021: two years) and the range of exercise prices for the share options as at 31 December 2022 was 97p to 261p.

Fair values of share-based payment plans

The weighted average fair value per share of equity-settled share-based payment plans granted during the year, estimated at the date of grant, are as follows:

	2022	2021
LTIP	90p	104p
ShareSave – three year grant	n/a	67p
DSBP	91p	105p

Long-term incentive plans (LTIP)

The fair value of shares awarded is calculated using a pricing model that takes account of the non-entitlement to dividends (or equivalent) during the vesting period and the market-based performance condition based on expectations about volatility and the correlation of share price returns in the group of FTSE 100 companies and which incorporates into the valuation the interdependency between share price performance and TSR vesting. This adjustment decreases the fair value of the award relative to the share price at the date of grant.

ShareSave

The fair value of the options granted is calculated using a pricing model that assumes that participants will exercise their options at the beginning of the six-month window if the share price is greater than the exercise price. Otherwise it assumes that options are held until the expiration of their contractual term. This results in an expected life that falls somewhere between the start and end of the exercise window.

Deferred Share Bonus Plan (DSBP)

The fair value of shares awarded under DSBP is calculated as the share price on the date of the award, excluding expected dividends (or equivalent).

25 Contingent liabilities

In January 2017, after full cooperation, the Company concluded deferred prosecution agreements (DPA) with the SFO and the US Department of Justice (DoJ) and a leniency agreement with the MPF, the Brazilian federal prosecutors. The terms of both DPAs have now expired. The Company continues to co-operate with the Controller General, Brazil (CGU) under the terms of a two-year leniency agreement signed in October 2021 relating to the same historical matters. Certain authorities are investigating members of the Group for matters relating to misconduct in relation to historical matters. The Group is responding appropriately. Action may be taken by further authorities against the Company or individuals. In addition, the Group could still be affected by actions from other parties, including customers, customers' financiers and the Company's current and former investors, including certain potential claims in respect of the Group's historical ethics and compliance disclosures which have been notified to the Company. The Directors are not currently aware of any matters that are likely to lead to a material financial loss over and above the penalties imposed to date, but cannot anticipate all the possible actions that may be taken or their potential consequences.

Contingent liabilities exist in respect of guarantees provided by the Group in the ordinary course of business for product delivery, commitments made for future service demand in respect of maintenance, repair and overhaul, and performance and reliability. The Group has, in the normal course of business, entered into arrangements in respect of export finance, performance bonds, countertrade obligations and minor miscellaneous items. Various Group undertakings are parties to legal actions and claims (including with tax authorities) which arise in the ordinary course of business, some of which are for substantial amounts. As a consequence of the insolvency of an insurer as previously reported, the Group is no longer fully insured against known and potential claims from employees who worked for certain of the Group's UK based businesses for a period prior to the acquisition of those businesses by the Group.

In connection with the sale of its products, the Group will, on some occasions, provide financing support for its customers, generally in respect of civil aircraft. The Group's commitments relating to these financing arrangements are spread over many years, relate to a number of customers and a broad product portfolio and are generally secured on the asset subject to the financing. These include commitments of $1.2bn (2021: $1.7bn) (on a discounted basis) to provide facilities to enable customers to purchase aircraft (of which approximately $0.9bn could be called during 2023). These facilities may only be used if the customer is unable to obtain financing elsewhere and are priced at a premium to the market rate. Significant events impacting the international aircraft financing market, the failure by customers to meet their obligations under such financing agreements, or inadequate provisions for customer financing liabilities may adversely affect the Group's financial position.

The Group has responded appropriately to the Russia-Ukraine conflict to comply with international sanctions and export control regime, and also to implement our business decision to exit from Russia. The Group could be subject to action by impacted customers and other contract parties.

While the outcome of the above matters cannot precisely be foreseen, the Directors do not expect any of these arrangements, legal actions or claims, after allowing for provisions already made, to result in significant loss to the Group.

26 Related party transactions

	2022 £m	2021 £m
Sales of goods and services [1]	5,074	3,548
Purchases of goods and services [1]	(4,915)	(3,677)
Lease payments to joint ventures and associates	(163)	(225)
Guarantees of joint arrangements' and associates' borrowings	3	1
Guarantees of non-wholly owned subsidiaries' borrowings	3	3
Dividends received from joint ventures and associates	73	27
Other income received from joint ventures and associates	2	3

[1] Sales of goods and services to related parties and purchases of goods and services from related parties, including joint ventures and associates, are included at the average exchange rate, consistent with the statutory income statement

Included in sales of goods and services to related parties are sales of spare engines amounting to £19m (2021: £157m). Profit recognised in the year on such sales amounted to £50m (2021: £47m), including profit on current year sales and recognition of profit deferred on similar sales in previous years. Cash receipts relating to the sale of spare engines amounted to £40m (2021: £181m).

The aggregated balances with joint ventures are shown in notes 14 and 19. Transactions with Group pension schemes are shown in note 22.

In the course of normal operations, related party transactions entered into by the Group have been contracted on an arm's-length basis.

Key management personnel are deemed to be the Directors (pages 62 to 63) and the members of the Executive Team (described on page 59). Remuneration for key management personnel is shown below:

	2022 £m	2021 £m
Salaries and short-term benefits	18	20
Post-retirement schemes	–	–
Share-based payments	10	4
	28	24

26 Related party transactions – continued

More detailed information regarding the Directors' remuneration, shareholdings, pension entitlements, share options and other long-term incentive plans is shown in the Directors' Remuneration Report on pages 77 to 95. The charge for share-based payments above is based on when the award is charged to the income statement in accordance with IFRS 2 *Share-based Payment*, rather than when the shares vest, which is the basis used in the Directors' Remuneration Report.

27 Disposals, held for sale and discontinued operations

Disposals

On 13 September 2021, the Group signed an agreement with Equitix Investment Management Limited to dispose its 23.1% shareholding in Airtanker Holdings Ltd for a cash consideration of £189m. In accordance with IFRS 5, the Group had classified £47m of the assets as held for sale at 31 December 2021. The sale completed on 9 February 2022 for a value of £189m. On disposal, the Group has recycled the Group's share of cash flow hedge reserve through the income statement during the year.

On 27 September 2021, the Group signed an agreement for the sale of ITP Aero to Bain Capital for £1.3bn. In accordance with IFRS 5, at 31 December 2021, the Group classified the net assets of the ITP Aero disposal group of £1.2bn as held for sale. The sale completed on 15 September 2022 for a value of £1.3bn. On disposal, the Group recycled the Group's share of hedging reserves and the cumulative currency translation reserve through the income statement. In addition, as part of the disposal, costs have been recognised in loss on disposal for continuing obligations (£157m), in particular where previous amounts were eliminated on consolidation in the Group's results. ITP Aero was acquired in 2017, resulting in a gain on bargain purchase of £303m recognised in 2018. The consideration for the acquisition was settled by issue of shares and the premium on the share issues, of £650m, recognised as merger reserve. As a result of the sale of ITP Aero for qualifying consideration, the merger reserve arising has been realised in accumulated losses.

	ITP Aero – Total subsidiaries £m	Airtanker £m	**Total £m**
Proceeds			
Cash consideration at prevailing exchange rate	1,387	189	1,576
Impact of deal contingent forward	(52)	–	(52)
Cash consideration at effective hedged rate	1,335	189	1,524
Cash and cash equivalents disposed	(60)	–	(60)
Net cash consideration	1,275	189	1,464
Intangible assets	912	–	912
Property, plant and equipment	338	–	338
Right-of-use assets	13	–	13
Investments	1	34	35
Deferred tax assets	57	–	57
Inventory	283	–	283
Trade receivables and other assets [1]	768	14	782
Borrowings and lease liabilities	(53)	–	(53)
Trade payables and other liabilities [1]	(1,148)	–	(1,148)
Provisions for liabilities and charges	(22)	–	(22)
Less: Net assets disposed	1,149	48	1,197
Profit on disposal before disposal costs and accounting adjustments	126	141	267
Disposal costs	(33)	(3)	(36)
De-recognition of NCI	(1)	–	(1)
Cumulative currency translation loss	(65)	–	(65)
Cumulative hedging reserves loss	(49)	(62)	(111)
Impact of disposal on consolidated position of onerous contracts [2]	(157)	–	(157)
(Loss)/profit before taxation	(179)	76	(103)
Tax on disposal	31	–	31
(Loss)/profit on disposal of business after taxation	(148)	76	(72)

[1] At 15 September 2022, trading balances that ITP Aero held with other group undertakings, that were previously eliminated on consolidation, have been reclassified as external balances and are included in the net assets disposed

[2] Reflects increased future costs in Civil Aerospace in respect of amounts charged by ITP Aero that were previously eliminated on consolidation. These future costs relate to onerous contract provisions and have therefore crystallised on disposal as a result of the ongoing trading with ITP Aero no longer being classified as intra-group

27 Disposals, held for sale and discontinued operations – continued

Reconciliation of profit on disposal of businesses in continuing operations to the income statement:

	Total £m
Profit before taxation on disposal (see above)	76
Adjustment to consideration on disposals completed in prior periods	5
Profit on disposal of businesses per income statement	**81**

Reconciliation of cash flow on disposal of businesses to the cash flow statement:

	Total £m
Proceeds on disposal (see above)	1,464
Disposal costs paid	(45)
Cash outflow on disposals completed in prior periods	(21)
Cash flow on disposal of businesses per cash flow statement	**1,398**

Discontinued operations

ITP Aero represented a separate major line of business and was classified as a disposal group held for sale up to the date of disposal. Therefore, in line with IFRS 5, the financial results of ITP Aero up to disposal have been classified as a discontinued operation.

The financial performance and cash flow information presented reflects the operations for the year that have been classified as discontinued operations.

	2022 £m	2021 £m
Revenue	275	365
Operating profit/(loss) [1]	86	(4)
Profit before taxation [1]	78	2
Income tax (charge)/credit [1]	(10)	34
Profit for the year from discontinued operations on ordinary activities	68	36
Costs of disposal on discontinued operations [2]	–	(39)
Loss on disposal of discontinued operations (see above)	(148)	–
Loss for the year from discontinued operations	(80)	(3)
Net cash inflow from operating activities [2]	85	12
Net cash outflow from investing activities [2]	(67)	(32)
Net cash outflow from financing activities	(25)	(25)
Exchange gain	–	4
Net change in cash and cash equivalents	(7)	(41)

[1] Profit/(loss) from discontinued operations on ordinary activities is presented net of intercompany trading eliminations and related consolidation adjustments

[2] Cash flows from investing activities include £42m (2021: cash flows from operating activities include £39m) costs of disposal paid during the year to 31 December 2022 that are not a movement in the cash balance of the disposal group as they were borne centrally

28 Derivation of summary funds flow statement

	2022					2021
	Cash flow £m	Impact of hedge book £m	Impact of acquisition accounting £m	Impact of other non-underlying items £m	Funds flow £m	Funds flow £m
Operating profit	837	(264)	58	21	652	414
Operating profit/(loss) from discontinued operations	86	–	–	–	86	(43)
Depreciation, amortisation and impairment	1,076	–	(58)	(65)	953	971
Movement in provisions	(197)	91	–	83	(23)	(136)
Movement in Civil LTSA balance	1,158	(366)	–	–	792	66
Loss on disposal of property, plant and equipment	18	–	–	–	18	9
Joint venture trading	25	–	–	–	25	(18)
Interest received	36	–	–	–	36	9
Contributions to defined benefit schemes in excess of underlying operating profit charge	(54)	–	–	22	(32)	(92)
Share-based payments	47	–	–	–	47	28
Other	–	(53)	–	–	(53)	(26)
Cash flow before working capital and taxation	3,032	(592)	–	61	2,501	1,182
Increase in inventories	(887)	–	–	–	(887)	(169)
Movement in trade receivables/payables and other assets/liabilities	(386)	(348)	–	(19)	(753)	(469)
Movement in contract assets/liabilities (excluding Civil LTSA)	595	297	–	–	892	(289)
Revaluation of trading assets (excluding exceptional items) [1]	(407)	(114)	–	–	(521)	32
Realised derivatives in financing [1]	737	–	–	–	737	85
Cash flows on other financial assets and liabilities held for operating purposes	(660)	737	–	–	77	(85)
Income tax	(174)	–	–	–	(174)	(185)
Cash from operating activities	1,850	(20)	–	42	1,872	102
Capital element of lease payments	(218)	20	–	–	(198)	(374)
Capital expenditure and investment	(512)	–	–	36	(476)	(426)
Interest paid	(352)	–	–	–	(352)	(331)
Settlement of excess derivatives	(326)	–	–	–	(326)	(452)
Other (M&A, restructuring and financial penalties paid)	49	–	–	(78)	(29)	39
Free cash flow	491	–	–	–	491	(1,442)
– of which is continuing operations	*505*				*505*	*(1,485)*

[1] Included in working capital

The comparative information to 31 December 2021 has been presented in a different format to align to the current year presentation. In some instances, the groupings of items may have changed. All comparative figures remain unchanged versus those reported in the 2021 Annual Report.

Free cash flow is a measure of financial performance of the business' cash flow to see what is available for distribution among those stakeholders funding the business (including debt holders and shareholders). Free cash flow is calculated as trading cash flow less recurring tax and post-employment benefit expenses. It excludes payments made to shareholders, amounts spent (or received) on business acquisitions or disposals, financial penalties paid and foreign exchange changes on net funds. The Board considers that free cash flow reflects cash generated from the Group's underlying trading.

Cash flow from operating activities is determined to be the nearest statutory measure to free cash flow. The reconciliation between free cash flow and cash flow from operating activities can be found on page 205.

Company balance sheet

At 31 December 2022

	Notes	2022 £m	2021 £m
ASSETS			
Investments – subsidiary undertakings	2	14,762	14,716
Trade receivables and other assets	3	–	1
Current assets		–	1
TOTAL ASSETS		14,762	14,717
LIABILITIES			
Trade payables and other liabilities	4	(335)	(335)
Other financial liabilities	5	(24)	(25)
Current liabilities		(359)	(360)
NET ASSETS	7	14,403	14,357
EQUITY			
Called-up share capital	6	1,674	1,674
Share premium		1,012	1,012
Merger reserve		6,962	6,962
Capital redemption reserve		2,748	2,747
Other reserve		349	303
Retained earnings		1,658	1,659
TOTAL EQUITY		14,403	14,357

The Company has elected to take the exemption under section 408 of the Companies Act 2006 from presenting the parent company income statement. The result for the Company for the year was nil (2021: nil).

The Financial Statements on pages 173 to 178 were approved by the Board on 23 February 2023 and signed on its behalf by:

Tufan Erginbilgic	**Panos Kakoullis**
Chief Executive	Chief Financial Officer

Company's registered number: 7524813

Company statement of changes in equity

For the year ended 31 December 2022

	Attributable to ordinary shareholders						
	Share capital £m	Share premium £m	Merger reserve [1] £m	Capital redemption reserve £m	Other reserve [2] £m	Retained earnings [3, 4] £m	Total equity £m
At 1 January 2021	1,674	1,012	6,962	2,744	275	1,662	14,329
Result for the year	–	–	–	–	–	–	–
Redemption of C Shares	–	–	–	3	–	(3)	–
Share-based payments – direct to equity	–	–	–	–	28	–	28
At 1 January 2022	**1,674**	**1,012**	**6,962**	**2,747**	**303**	**1,659**	**14,357**
Result for the year	–	–	–	–	–	–	–
Redemption of C Shares	–	–	–	1	–	(1)	–
Share-based payments – direct to equity	–	–	–	–	46	–	46
At 31 December 2022	**1,674**	**1,012**	**6,962**	**2,748**	**349**	**1,658**	**14,403**

[1] The Company's merger reserve was created as a result of a High Court approved scheme of arrangement in 2011, when the Company became the holding company for the Rolls-Royce Group. The merger reserve that was created as a result of the transactions in 2018 and 2019 on the acquisition of ITP Aero has not been realised in the Company financial statements as this relates to the Company's investment in Rolls-Royce plc. The merger reserve in Rolls-Royce plc has been realised at 31 December 2022

[2] Other reserve represents the value of the share-based payments in respect of employees of subsidiary undertakings for which payment has not been received

[3] The reserves, which are distributable to the Company's equity shareholders, are determined with reference to the Companies Act 2006 and requires judgement in determining the amount available for distribution, subject to the restrictions explained in note 17 of the Consolidated Financial Statements. Further guidance is given in the Institute of Chartered Accountants in England and Wales technical release 02/17BL in relation to what profits can be treated as distributable. At 31 December 2022, all the Company's retained earnings are distributable, however, the available amount may be different at the point any future distributions are made

[4] At 31 December 2022, 11,402,796 ordinary shares with a net book value of £27m (2021: 29,405,191 ordinary shares with a net book value of £65m) were held for the purpose of share-based payment plans and included in accumulated losses. During the year, 18,488,558 ordinary shares with a net book value of £39m (2021: 10,667,095 ordinary shares with a net book value of £24m) vested in share-based payment plans. During the year, the Company acquired none (2021: none) of its ordinary shares via reinvestment of dividends received on its own shares and purchased 486,163 (2021: none) of its ordinary shares through purchases on the London Stock Exchange

1 Accounting policies

Basis of accounting

Rolls-Royce Holdings plc (the Company) is a public company limited by shares incorporated and domiciled in England in the United Kingdom. These Financial Statements have been prepared in accordance with Financial Reporting Standard 101 *Reduced Disclosure Framework* on the historical cost basis.

These financial statements have been prepared on a going concern basis. Further details are given in the Going Concern Statement on page 48. After due consideration, the Directors consider that the Group has sufficient liquidity headroom to continue in operational existence for a period of at least 18 months from the date of this report and there are no material uncertainties that may cast doubt on the Company's going concern status, accordingly they are satisfied that it is appropriate to adopt the going concern basis of accounting in preparing the Company Financial Statements.

In preparing these financial statements, the Company applies the recognition, measurement and disclosure requirements of International Financial Reporting Standards as adopted by the UK (UK-adopted international accounting standards), but makes amendments where necessary in order to comply with the Companies Act 2006 and to take advantage of FRS 101 disclosure exemptions:

- a cash flow statement and related notes;
- comparative period reconciliation for investments and financial liabilities;
- comparative period reconciliation for share capital;
- the effects of new, but not yet effective accounting standards; and
- the requirements of IAS 24 *Related Party Transactions* and has, therefore, not disclosed transactions between the Company and its wholly-owned subsidiaries.

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

There were no changes to accounting standards that had a material impact on these Financial Statements.

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

As permitted by section 408 of the Companies Act 2006, a separate income statement for the Company has not been included in these Financial Statements. As permitted by the audit fee disclosure regulations, disclosure of non-audit fees information is not included in respect of the Company.

Key areas of judgement and sources of estimation uncertainty

The preparation of financial statements requires the use of certain critical accounting estimates. It also requires the Directors to exercise their judgement in the process of applying the accounting policies. The Directors have not identified any critical estimates, apart from the carrying value of investments in subsidiary undertakings, where there is a significant risk of material change in the next 12 months at 31 December 2022.

Key source of estimation uncertainty – carrying value of investments in subsidiary undertakings

The carrying value of the investment in subsidiary undertakings is reviewed for indicators of impairment on an annual basis. Where such indicators are present, a quantified impairment test would be required and the value in use calculated based upon a discounted cash flow methodology using the most recent forecasts prepared by the Directors of the Rolls-Royce Holdings plc Group. At 31 December 2022, the Directors identified indicators of impairment and performed a quantified impairment test. As part of this assessment, the Directors considered the areas of estimation uncertainty discussed in note 2. As a result of this, no impairment was required.

Significant accounting policies

Investments in subsidiary undertakings

Investments included in fixed assets are investments in subsidiary companies and these are held at historical cost less impairments which is considered annually by the Directors.

Trade receivables

Trade receivables are recognised initially at the transaction price. They are subsequently measured at amortised cost using the effective interest method, less provision for impairment. A provision for the impairment of trade receivables is established when there is objective evidence that the Company will not be able to collect all amounts due according to the original terms of the receivables. The Company applies the IFRS 9 *Financial Instruments* simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables.

1 Accounting policies – continued

Trade payables

Trade payables are recognised initially at the transaction price and subsequently measured at amortised cost using the effective interest method.

Financial instruments

In accordance with IAS 32 *Financial Instruments: Presentation*, the Company's C Shares are classified as financial liabilities and held at amortised cost from the date of issue until redeemed.

Equity

Ordinary shares are classified as equity. Equity instruments are measured at the fair value of the cash or other resources received or receivable, net of the direct costs of issuing the equity instruments. The cost of issuing ordinary shares are charged to the share premium account.

Share-based payments

As described in the Directors' Remuneration Report on pages 77 to 95, the Company grants awards of its own shares to employees of its subsidiary undertakings (see note 24 of the Consolidated Financial Statements). The costs of share-based payments in respect of these awards are accounted for, by the Company, as an additional investment in its subsidiary undertakings. The costs are determined in accordance with IFRS 2 *Share-based Payment*. Any payments made by the subsidiary undertakings in respect of these arrangements are treated as a return of this investment.

2 Investments – subsidiary undertakings

	£m
Cost:	
At 1 January 2022	14,716
Cost of share-based payments in respect of employees of subsidiary undertakings less receipts from subsidiaries in respect of those payments	46
At 31 December 2022	**14,762**

Details of the Company's subsidiary undertakings and joint venture and associates undertakings are listed on pages 179 to 184.

The carrying value of the Company's investments in subsidiary undertakings has been reviewed for impairment in accordance with IAS 36. The carrying value is compared to the asset's recoverable amount and has been assessed by reference to value in use. The value in use has been calculated based upon a discounted cash flow methodology using the most recent forecasts prepared and considered by the Directors of the Rolls-Royce Holdings plc Group. These forecasts:

- are consistent with past experience and external sources on market conditions;
- cover the next five years for each business together with a terminal value. The growth rate used within the terminal value reflects average growth of 1%-2% based on inflation forecasts by recognised bodies and also utilises long-term cash flow forecasts specific to each of the businesses. These reflect the best estimate of the impact of macro-economic factors and estimated cash flows from each major product line; and
- reflect estimation uncertainty through the use of a probability downside scenario for the businesses. These assumptions are consistent with those set out in the Going Concern Statement on page 48. The weighting applied is 75%-80% to a base case and 20%-25% to a downside scenario.

Management estimates nominal discount rates that reflect current market assessments of the time value of money and the rate of return a market participant would require. The rates used to discount the forecast cash flows reflects the individual businesses in the Group and is 11.6% to 13.7% pre-tax. An increase in the pre-tax discount rate of 1.6% would cause the carrying amount of the Company's investment to equal its recoverable amount.

The key assumptions for the value in use calculation are assumed market share, programme timings, unit cost assumptions, discount rates and foreign exchange. When making these considerations, the Group has also assessed the impact of climate change by considering the potential impact of carbon prices, commodity prices and aviation demand on the value in use under a 1.5ºC and 3.6ºC aligned scenario, based on specific pathway assumptions. The assumptions are consistent with those detailed in note 1 of the Consolidated Financial Statements. As a stress test, the potential impact of the full scenario occurring has been evaluated and it would not result in an impairment.

As a result of this analysis, the Directors have determined that no impairment charge is required.

3 Trade receivables and other assets

	2022 £m	2021 £m
Other receivables	–	1

4 Trade payables and other liabilities

	2022 £m	2021 £m
Amounts owed to subsidiary undertakings	335	335

Amounts owed to subsidiary undertakings are interest-free and repayable on demand.

5 Financial liabilities

C Shares

Movements during the year were as follows:

	C Shares of 0.1p Millions	Nominal value £m
At 1 January 2022	24,928	25
Redeemed	(1,074)	(1)
At 31 December 2022	23,854	24

The rights attaching to C Shares are set out on page 207.

6 Share capital

	Non-equity			Equity	
	Special Share of £1	Preference shares of £1 each	Nominal value £m	Ordinary shares of 20p each Millions	Nominal value £m
Issued and fully paid					
At 1 January 2022	1	–	–	8,368	1,674
At 31 December 2022	1	–	–	8,368	1,674

The rights attaching to each class of share are set out on page 207.

In accordance with IAS 32, the Company's non-cumulative redeemable preference shares (C Shares) are classified as financial liabilities. Accordingly, movements in C Shares are included in note 5.

7 Reconciliation of net assets between Rolls-Royce Holdings plc Group and Company

As at 31 December 2022, Rolls-Royce Holdings plc consolidated Group had net liabilities of £6.0bn (2021: £4.6bn) compared to £14.4bn (2021: £14.4bn) of net assets of the Company. The Company is a holding company and does not trade in its own right. The Company was incorporated in 2011 and became the Rolls-Royce Holdings company through a Scheme of Arrangement. On becoming the Rolls-Royce Holdings company, the value of the Company's investment in subsidiaries was based on the market capitalisation of the Rolls-Royce Group at that time. There was an increase in the investment as a result of a capital injection to Rolls-Royce Group Limited during 2020. The Group's consolidated financial statements are prepared on a historical cost basis except where UK adopted international accounting standards requires a valuation basis to be applied (see page 175 for further details). As different principles are applied in preparing the Company and consolidated group balance sheets there is a difference in the financial position reported. Examples of such differences include the following items that are in the Consolidated balance sheet but not reflected in the Company's balance sheet: liabilities of £10,681m (2021: £8,836m) as a result of IFRS 15; and financial liabilities of £3,851m (2021: £3,039m) arising from the recognition at fair value of foreign exchange derivatives held to manage exposure on the Group's future trading.

8 Contingent liabilities

Where the Company enters into financial guarantee contracts to guarantee the indebtedness of other companies within its group, these guarantee contracts are considered to be contingent liabilities until such time as it becomes probable that the Company will be required to make a payment under the guarantee.

At 31 December 2022, these guarantees amounted to £9,724m (2021: £10,458m) of which total drawn is £4,224m (2021: £5,958m).

For further details on action related to historical matters that could have an impact on the Company, see page 169.

9 Other information

Employees
The Company had no employees in 2022 (2021: none).

Share-based payments
Shares in the Company have been granted to employees of the Group as part of share-based payment plans, and are charged in the employing company.

Emoluments of Directors
The remuneration of the Directors of the Company is shown below, further information is in the Directors' Remuneration Report on pages 77 to 95.

The total amount of remuneration paid to Directors for the year ended 31 December 2022 was £7,577,000 (2021: £6,920,000). £3,718,000 of this was attributed to the highest paid Director (2021: £3,840,000). A cash allowance in lieu of company contributions to a pensions scheme was also paid to two Directors (2021: three), which totalled £199,000 (2021: £185,000). No Directors exercised share options during the year (2021: none) nor received vested shares under the Long-Term Incentive Plan (2021: none).

No Director accrued any retirement benefits in the year (2021: none).

SUBSIDIARIES

As at 31 December 2022, the companies listed below and on the following pages are indirectly held by Rolls-Royce Holdings plc except Rolls-Royce Group Limited which is 100% directly owned by Rolls-Royce Holdings plc and Rolls-Royce plc which Rolls-Royce Holdings plc directly owns 3.54%. The financial year end of each company is 31 December unless otherwise indicated.

Company name	Address	Class of shares	% of class held
Aerospace Transmission Technologies GmbH [1]	Adelheidstrasse 40, D-88046, Friedrichshafen, Germany	Capital Stock	50
Amalgamated Power Engineering Limited [2]	London [3]	Deferred Ordinary	100 100
Bristol Siddeley Engines Limited [4]	London [3]	Ordinary	100
Brown Brothers & Company, Limited [4]	Taxiway, Hillend Industrial Estate, Dalgety Bay, Dunfermline, Fife, KY11 9JT, Scotland	Ordinary	100
C.A. Parsons & Company Limited [4]	London [3]	Ordinary	100
Derby Specialist Fabrications Limited [2]	London [3]	Ordinary	100
Europea Microfusioni Aerospaziali S.p.A.	Zona Industriale AS1, 83040 Morra de Sanctis, Avellino, Italy	Ordinary	100
Heaton Power Limited [2]	London [3]	Ordinary	100
John Thompson Cochran Limited [2]	Taxiway, Hillend Industrial Estate, Dalgety Bay, Dunfermline, Fife, KY11 9JT, Scotland	6% Cumulative Preference Ordinary	100 100
Karl Maybach-Hilfe GmbH	Maybachplatz 1, 88045, Friedrichshafen, Germany	Capital Stock	100
Kinolt Immo SA	Rue de l'Avenir 61, 4460, Grace-Hollogne, Belgium	Ordinary	100
Kinolt Immobilien SA	Rue de l'Avenir 61, 4460, Grace-Hollogne, Belgium	Ordinary	100
Kinolt Trading and Contracting LLC [5]	REGUS Service Office, Office No. 1034, Shoumoukh Tower, 10th Floor, Tower B, C-Ring Road, Al Sadd, PO Box 207207, Doha, Qatar	Ordinary	49
Kinolt Sistemas de UPS SpA	Bucarest No 17 Oficina, No 33, Previdencia, Santiago, Chile	Ordinary	100
Kinolt UK Limited [4]	London [3]	Ordinary	100
LLC Rolls-Royce Solutions Rus	Shabolovka Street 2, 119049, Moscow, Russian Federation	Ordinary	100
MTU India Private Limited [6]	6th Floor, RMZ Galleria, S/Y No. 144 Bengaluru, Bangalore, Kamataka 560,064, India	Ordinary	100
MTU Polska Sp. z o.o.	Ul. Lekka 3., Lokal U4. Raum, PLZ: 01-910, Ort: Warszawa, Poland	Ordinary	100
NEI International Combustion Limited [2]	London [3]	Ordinary	100
NEI Mining Equipment Limited [2]	London [3]	Ordinary	100
NEI Nuclear Systems Limited [2]	London [3]	Ordinary	100
NEI Parsons Limited [2]	London [3]	Ordinary	100
NEI Peebles Limited [2]	London [3]	Ordinary	100
NEI Power Projects Limited [2]	London [3]	Ordinary	100
Nightingale Insurance Limited	PO Box 33, Dorey Court, Admiral Park, St Peter Port, GY1 4AT, Guernsey	Ordinary	100
No-Break Power Limited [2]	Unit 29 Birches Industrial Estate, East Grinstead, RH19 1XZ, England	Ordinary	100
Powerfield Limited [2]	Derby [7]	Ordinary	100
PT Rolls-Royce	Secure Building Blok B, Jl. Raya Protokol Halim, Perdanakusuma, Jakarta, 13610, Indonesia	Ordinary	100
PT Rolls Royce Solutions Indonesia	Secure Building Blok B, Jl. Raya Protokol Halim, Perdanakusuma, Jakarta, 13610, Indonesia	Ordinary	100
Rolls-Royce (Ireland) Unlimited Company [2]	Ulster International Finance, 1st Floor IFSC House, IFSC, Dublin 1, Ireland	Ordinary	100
Rolls-Royce (Thailand) Limited	989 Floor 12A, Unit B1, B2, Siam Piwat Tower, Rama 1, Pathumwan, Bangkok, 10330, Thailand	Ordinary	100
Rolls-Royce Aero Engine Services Limited [2]	London [3]	Ordinary	100
Rolls-Royce Australia Pty Limited	Level 1, 60 Martin Place, Sydney NSW 2000, Australia	Ordinary	100
Rolls-Royce Australia Services Pty Limited	Level 1, 60 Martin Place, Sydney NSW 2000, Australia	Ordinary	100
Rolls-Royce Brasil Limitada	Rua Jose Versolato, No. 111, Torre B, Sala 2502, Centro, São Bernando do Campo, Sao Paulo, CEP 09750-730, Brazil	Quotas	100
Rolls-Royce Canada Limited	9500 Côte de Liesse, Lachine, Québec H8T 1A2, Canada	Common Stock	100

Company name	Address	Class of shares	% of class held
Rolls-Royce Chile SpA	Alcantra 200 office 601, Piso 6, C.O, 7550159 Las Condes, Santiago, Chile	Ordinary	100
Rolls-Royce China Holding Limited	305 Indigo Building 1, 20 Jiuxianqiao Road, Beijing, 100016, China	Registered Capital	100
Rolls-Royce Commercial Aero Engines Limited [2]	London [3]	Ordinary	100
Rolls-Royce Controls and Data Services Limited [2]	London [3]	Ordinary	100
Rolls-Royce Controls and Data Services (NZ) Limited	c/o Deloitte, 80 Queen Street, Auckland Central, Auckland 1010, New Zealand	Ordinary	100
Rolls-Royce Controls and Data Services (UK) Limited	Derby [7]	Ordinary	100
Rolls-Royce Corporation	Wilmington [8]	Common Stock	100
Rolls-Royce Crosspointe LLC	Wilmington [8]	Partnership (no equity)	100
Rolls-Royce Defense Products and Solutions, Inc.	Wilmington [8]	Common Stock	100
Rolls-Royce Defense Services, Inc.	Wilmington [8]	Common Stock	100
Rolls-Royce Deutschland Ltd & Co KG	Amtsgericht Potsdam, Blankenfelde-Mahlow, Germany	Ordinary	100
Rolls-Royce Electrical Norway AS	Jarleveien 8A, 7041, Trondheim 500, Norway	Ordinary	100
Rolls-Royce Energy Angola, Limitada [2]	Rua Rei Katyavala, Edificio Rei Katyavala, Entrada B, Piso 8, Luanda, Angola	Quota	100
Rolls-Royce Energy Systems Inc. [2]	Wilmington [8]	Common Stock	100
Rolls-Royce Engine Services Holdings Co.	Wilmington [8]	Common Stock	100
Rolls-Royce Engine Services Limitada Inc. [9]	Bldg. 06 Berthaphil Compound, Jose Abad Santos Avenue, Clark Special Economic Zone, Clark, Pampanga, Philippines	Capital Stock	100
Rolls-Royce Erste Beteiligungs GmbH	Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany	Capital Stock	100
Rolls-Royce Finance Company Limited [2]	London [3]	Deferred Ordinary	100 100
Rolls-Royce Finance Holdings Co.	Wilmington [8]	Common Stock	100
Rolls-Royce Fuel Cell Systems Limited [4]	Derby [7]	Ordinary	100
Rolls-Royce General Partner (Ireland) Limited	29 Earlshot Terrace, Dublin 2, Ireland	Ordinary	100
Rolls-Royce General Partner Limited [2]	London [3]	Ordinary	100
Rolls-Royce Group Limited	London [3]	Ordinary Ordinary A	100
Rolls-Royce High Temperature Composites, Inc.	Corporation Service Company, 2710 Gateway Oaks Drive, Suite 150N, Sacramento, California 95833, United States	Ordinary	100
Rolls-Royce Holdings Canada Inc.	9500 Côte de Liesse, Lachine, Québec H8T 1A2, Canada	Common C	100
Rolls-Royce Hungary Kft	Gizella U. 51–57, 1143 Budapest, Hungary	Cash shares	100
Rolls-Royce India Limited [2, 6, 10]	Derby [8]	Ordinary	100
Rolls-Royce India Private Limited [6]	Birla Tower West, 2nd Floor 25, Barakhamba Road, New Delhi, 110001, India	Equity	100
Rolls-Royce Industrial & Marine Power Limited [4]	London [3]	Ordinary	100
Rolls-Royce Industrial Power (India) Limited [2, 6]	Derby [7]	Ordinary	100
Rolls-Royce Industrial Power Engineering (Overseas Projects) Limited	Derby [7]	Ordinary	100
Rolls-Royce Industries Limited [4]	Derby [7]	Ordinary	100
Rolls-Royce International Limited	Derby [7]	Ordinary	100
Rolls-Royce Japan Co., Limited	31st Floor, Kasumigaseki Building, 3-2-5 Kasumigaseki, Chiyoda-Ku, Tokyo, 100-6031, Japan	Ordinary	100
Rolls-Royce Leasing Limited	Derby [7]	Ordinary	100
Rolls-Royce Malaysia Sdn. Bhd.	C-2-3A TTDI Plaza, Jalan Wan Kadir 3, Taman Tun Dr Ismail, 6000 Kuala Lumpur, Malaysia	Ordinary	100
Rolls-Royce Marine North America, Inc.	Wilmington [8]	Common Stock	100
Rolls-Royce Military Aero Engines Limited [2, 6, 10]	London [3]	Ordinary	100

Company name	Address	Class of shares	% of class held
Rolls-Royce New Zealand Limited	c/o Deloitte, 80 Queen Street, Auckland Central, Auckland 1010, New Zealand	Ordinary	100
Rolls-Royce North America (USA) Holdings Co.	Wilmington [8]	Common Stock	100
Rolls-Royce North America Holdings, Inc.	Wilmington [8]	Common Stock	100
Rolls-Royce North America Ventures, Inc.	Wilmington [8]	Common Stock	100
Rolls-Royce North America, Inc.	Wilmington [8]	Common Stock	100
Rolls-Royce North American Technologies, Inc.	Wilmington [8]	Common Stock	100
Rolls-Royce Oman LLC	Bait Al Reem, Business Office #131, Building No 81, Way No 3409, Block No 234, Al Thaqafa Street, Al Khuwair, PO Box 20, Postal Code 103, Oman	Ordinary	100
Rolls-Royce Operations (India) Private Limited [2, 6]	Birla Tower West, 2nd Floor, 25 Barakhamba Road, New Delhi, 110001, India	Ordinary	100
Rolls-Royce Overseas Holdings Limited	Derby [7]	Ordinary Ordinary A	100 100
Rolls-Royce Overseas Investments Limited [4]	Derby [7]	Ordinary	100
Rolls-Royce Placements Limited	London [3]	Ordinary	100
Rolls-Royce plc	London [3]	Ordinary	100
Rolls-Royce Power Engineering plc	Derby [7]	Ordinary	100
Rolls-Royce Power Systems AG	Maybachplatz 1, 88045, Friedrichshafen, Germany	Ordinary	100
Rolls-Royce Retirement Savings Trust Limited [2, 6]	Derby [7]	Ordinary	100
Rolls-Royce Saudi Arabia Limited	3010 – Al Arid, Unit No 1, Riyadh 13332 – 7663, Saudi Arabia	Cash shares	100
Rolls-Royce Singapore Pte. Ltd.	6 Shenton Way, #33-00 OUE, Downtown Singapore 068809, Singapore	Ordinary	100
Rolls-Royce SMR Limited	Derby [7]	Ordinary	82.8
Rolls-Royce Solutions (Suzhou) Co. Ltd	9 Long Yun Road, Suzhou Industrial Park, Suzhou 215024, Jiang Su, China	Ordinary	100
Rolls-Royce Solutions Africa (Pty) Limited	36 Marconi Street, Montague Gardens, Cape Town, 7441, South Africa	Capital Stock	100
Rolls-Royce Solutions America Inc.	Wilmington [8]	Ordinary	100
Rolls-Royce Solutions Asia Pte. Limited	10 Tukang Innovation Drive, Singapore 618302	Ordinary	100
Rolls-Royce Solutions Augsburg GmbH	Dasinger Strasse 11, 86165, Augsburg, Germany	Capital Stock	100
Rolls-Royce Solutions Benelux B.V.	Merwedestraat 86, 3313 CS, Dordrecht, Netherlands	Ordinary	100
Rolls-Royce Solutions Berlin GmbH	Villa Rathenau, Wilhelminenhofstrasse 75, 12459 Berlin, Germany	Common Seed Preferred Series A Preferred	100 100 100
Rolls-Royce Solutions Brasil Limitada	Via Anhanguera, KM 29203, 05276-000 Sao Paulo – SP, Brazil	Ordinary	100
Rolls-Royce Solutions Enerji Deniz Ve Savunma Anonim Şirketi	Hatira Sokak, No. 5, Ömerli Mahellesi, 34555 Arnavutköy, Istanbul, Turkey	Ordinary	100
Rolls-Royce Solutions France S.A.S.	Immeuble Colorado, 8/10 rue de Rosa Luxembourg-Parc des Bellevues 95610, Erangy-sur-Oise, France	Ordinary	100
Rolls-Royce Solutions GmbH	Maybachplatz 1, 88045, Friedrichshafen, Germany	Capital Stock	100
Rolls-Royce Solutions Hong Kong Limited	No.8 Hart Avenue, Unit D, 8th Floor, Tsim Sha Tsui, Kowloon, Hong Kong	Ordinary	100
Rolls-Royce Solutions Ibérica s.l.u.	Calle Copérnico 26–28, 28823 Coslada, Madrid, Spain	Ordinary	100
Rolls-Royce Solutions Israel Limited	4 Ha'Alon Street, South Building, Third Floor, 4059300 Kfar Neter, Israel	Ordinary	100
Rolls-Royce Solutions Italia S.r.l.	Via Aurelia Nord, 328, 19021 Arcola (SP), Italy	Capital Stock	100
Rolls-Royce Solutions Japan Co. Limited	Resorttrust Building 4-14-3, Nishitenma Kita-ku, Osaka 530-0047, Japan	Ordinary	100
Rolls-Royce Solutions Korea Limited	22nd Floor, Olive Tower, 41 Sejongdaero 9 gil, Junggu, 100-737 Seoul, Republic of Korea	Ordinary	100
Rolls-Royce Solutions Liège Holding S.A.	Rue de l'Avenir 61, 4460, Grace-Hollogne, Belgium	Ordinary	100
Rolls-Royce Solutions Liège S.A.	Rue de l'Avenir 61, 4460, Grace-Hollogne, Belgium	Ordinary	100
Rolls-Royce Solutions Magdeburg GmbH	Friedrich-List-Strasse 8, 39122 Magdeburg, Germany	Capital Stock	100
Rolls-Royce Solutions Mexico City S.A. de C.V.	Xochicalco 620, Colonia Letran Valle, Delegacion Benito Juarez, Mexico City 03650, Mexico	Common Shares	100

Company name	Address	Class of shares	% of class held
Rolls-Royce Solutions Middle East FZE	S3B5SR06, Jebel Ali Free Zone, South P.O. Box 61141, Dubai, United Arab Emirates	Ordinary	100
Rolls-Royce Solutions Ruhstorf GmbH	Rotthofer Strasse 8, 94099 Ruhstorf a.d. Rott, Germany	Capital Stock	100
Rolls-Royce Solutions South Africa (Pty) Limited	36 Marconi Street, Montague Gardens, Cape Town, 7441, South Africa	Ordinary	100
Rolls-Royce Solutions UK Limited	Derby [7]	Ordinary	100
Rolls-Royce Solutions Willich GmbH	Konrad-Zuse-Str. 3, 47877, Willich, Germany	Ordinary	100
Rolls-Royce Sp z.o.o.	Opolska 100 31-323, Krakow, Poland	Ordinary	100
Rolls-Royce Submarines Limited	Atlantic House, Raynesway, Derby, Derbyshire, United Kingdom, DE21 7BE	Ordinary	100
Rolls-Royce Technical Support Sarl	Centreda I, Avenue Didier Daurat, 31700 Blagnac, Toulouse, France	Ordinary	100
Rolls-Royce Total Care Services Limited [4]	Derby [7]	Ordinary	100
Rolls Royce Turkey Güç Çözümleri San. ve Tic. Ltd.Şti.	Acıbadem Mah. Çeçen Sk. Akasya A Kule Kent Etabı Blok No: 25, İç Kapı No:13, Üsküdar, Istanbul, Turkey	Cash shares	100
Rolls-Royce UK Pension Fund Trustees Limited [2]	Derby [7]	Ordinary	100
Rolls-Royce Zweite Beteiligungs GmbH	Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany	Capital Stock	100
Ross Ceramics Limited	Derby [7]	Ordinary	100
Servowatch Systems Limited	Endeavour House, Benbridge Industrial Estate, Holloway Road, Heybridge, Maldon, Essex, CM9 4ER, United Kingdom	Ordinary	100
Sharing in Growth UK Limited [11]	Derby [7]	Limited by guarantee	100
Spare IPG 20 Limited [4]	London [3]	Ordinary	100
Spare IPG 21 Limited [2]	London [3]	Ordinary	100
Spare IPG 24 Limited [4]	London [3]	Ordinary	100
Spare IPG 32 Limited [4]	London [3]	Ordinary	100
Spare IPG 4 Limited [2]	London [3]	Ordinary	100
The Bushing Company Limited [4]	London [3]	Ordinary	100
Timec 1487 Limited [2]	London [3]	Ordinary	100
Turbine Surface Technologies Limited [1]	Derby [7]	Ordinary A Ordinary B	Nil 100
Vessel Lifter, Inc. [2]	Corporation Service Company, 1201 Hays Street, Tallahassee, Florida 32301, United States	Common Stock	100
Vinters Defence Systems Limited [2]	London [3]	Ordinary	100
Vinters Engineering Limited	Derby [7]	Ordinary	100
Vinters International Limited [4]	Derby [7]	Ordinary	100
Vinters Limited [4]	Derby [7]	Ordinary	100
Vinters-Armstrongs (Engineers) Limited [2]	London [3]	Ordinary	100
Vinters-Armstrongs Limited [2]	London [3]	Ordinary B	100
Yocova Private Ltd [2]	London [3]	Ordinary	100
Yocova PTE. Ltd.	6 Shenton Way, #33-00 OUE, Downtown Singapore 068809, Singapore	Ordinary	100

1 Although the interest held is 50%, the Company controls the entity (see note 1 to the Consolidated Financial Statements) and, as a result, consolidates the entity and records a non-controlling interest.
2 Dormant entity.
3 Kings Place, 90 York Way, London, United Kingdom, N1 9FX.
4 Entity to take advantage of s479A Companies Act 2006 (s479A) audit exemption for the year ended 31 December 2022. Rolls-Royce plc will issue a guarantee pursuant to s479A in relation to the liabilities of the entity.
5 Although the interest held is 49%, the Company controls the entity (see note 1 to the Consolidated Financial Statements) and, as a result, consolidates the entity and records a non-controlling interest.
6 Reporting year end is 31 March.
7 Moor Lane, Derby, Derbyshire, DE24 8BJ, United Kingdom.
8 Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19809, United States.
9 Entity in liquidation.
10 Entity to take advantage of s479A Companies Act 2006 (s479A) audit exemption for the year ending 31 March 2023. Rolls-Royce plc will issue a guarantee pursuant to S479A in relation to the liabilities of the entity.
11 The entity is not included in the consolidation as Rolls-Royce plc does not have a beneficial interest in the net assets of the entity.
12 The entity is accounted for as a joint operation (see note 1 to the Consolidated Financial Statements).

JOINT VENTURES AND ASSOCIATES

Company name	Address	Class of shares	% of class held	Group interest held %
Aero Gearbox International SAS [12]	18 Boulevard Louis Sequin, 92700 Colombes, France	Ordinary	50	50
Airtanker Services Limited	Airtanker Hub, RAF Brize Norton, Carterton, Oxfordshire, OX18 3LX, United Kingdom	Ordinary	23.5	23.5
Alpha Leasing (US) (No.2) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Alpha Leasing (US) (No.4) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Alpha Leasing (US) (No.5) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Alpha Leasing (US) (No.6) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Alpha Leasing (US) (No.7) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Alpha Leasing (US) (No.8) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Alpha Leasing (US) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Alpha Partners Leasing Limited	1 Brewer's Green, London, United Kingdom, SW1H 0RH	Ordinary A	100	50
Beijing Aero Engine Services Company Limited	Room 711, Building 2, No.1 Jinhang Middle Road, Shunyi District, Beijing, China	Capital	50	50
CFMS Limited	43 Queen Square, Bristol, England, BS1 4QP	Limited by guarantee	–	50
Clarke Chapman Portia Port Services Limited	Maritime Centre, Port of Liverpool, Liverpool, L21 1LA, United Kingdom	Ordinary A	100	50
Egypt Aero Management Services [9]	EgyptAir Engine Workshop, Cairo International Airport, Cairo, Egypt	Ordinary	50	50
EPI Europrop International GmbH	Pelkovenstr. 147, 80992 München, Germany	Capital Stock	28	28
Eurojet Turbo GmbH	Lilienthalstrasse 2b, 85399 Halbergmoos, Germany	Ordinary	33	33
Force MTU Power Systems Private Limited	Mumbai Pune Road, Akurdi, Pune, Maharashtra 411035, India	Capital Stock	49	49
Genistics Holdings Limited	Derby [7]	Ordinary A	100	50
Global Aerospace Centre for Icing and Environmental Research Inc. [12]	1000 Marie-Victorin Boulevard, Longueuil Québec J4G 1A1, Canada	Ordinary	50	50
Hoeller Electrolyzer GmbH	Alter Holzhafen, 23966 Wismar, Germany	Ordinary	54.2	54.2
Hong Kong Aero Engine Services Limited	33rd Floor, One Pacific Place, 88 Queensway, Hong Kong	Ordinary	50	50
International Aerospace Manufacturing Private Limited [6, 12]	Survey No. 3 Kempapura Village, Varthur Hobli, Bangalore, KA 560037, India	Ordinary	50	50
ITP Next Generation Turbines SLU	Parque Tecnologico Edificio 300, 48170, Zamudio, Vizcaya, Spain	Ordinary-B	25	25
Light Helicopter Turbine Engine Company (unincorporated partnership)	Suite 119, 9238 Madison Boulevard, Madison, Alabama 35758, United States	Partnership (no equity held)	–	50
Manse Opus Management Company Limited [6]	Third Floor Queensberry House, 3 Old Burlington Street, London, United Kingdom, W1S 3AE	Limited by guarantee	33	33
MEST Co., Limited	97 Bukjeonggongdan 2-gil, Yangsan-si, Gyeongsangnam-do, 50571, Republic of Korea	Normal	46.8	46.8
MTU Cooltech Power Systems Co., Limited	Building No. 2, No. 1633 Tianchen Road, Qingpu District, Shanghai, China	Equity	50	50
MTU Power Systems Sdn. Bhd.	Level 10 Menara LGB, 1 Jalan Wan Kadir Taman Tun Dr Ismail 6000 Kuala Lumpur, Malaysia	Ordinary A	100	49
MTU Turbomeca Rolls-Royce ITP GmbH	Am Söldnermoos 17, 85399 Hallbergmoos, Germany	Capital Stock	25	25
MTU Turbomeca Rolls-Royce GmbH	Am Söldnermoos 17, 85399 Hallbergmoos, Germany	Capital Stock	33.3	33.3
MTU Yuchai Power Company Limited	No 7 Danan Road, Yuzhou, Yulin, Guangxi, China, 537005, China	Capital Stock	50	50
N3 Engine Overhaul Services GmbH & Co KG	Gerhard-Höltje-Strasse 1, D-99310, Arnstadt, Germany	Capital Stock	50	50
N3 Engine Overhaul Services Verwaltungsgesellschaft Mbh	Gerhard-Höltje-Strasse 1, D-99310, Arnstadt, Germany	Capital Stock	50	50

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Company name	Address	Class of shares	% of class held	Group interest held %
Rolls Laval Heat Exchangers Limited [2]	Derby [7]	Ordinary	50	50
Rolls-Royce & Partners Finance (US) (No 2) LLC	Wilmington [8]	Partnership (no equity held)	–	50
Rolls-Royce & Partners Finance (US) LLC	Wilmington [8]	Partnership (no equity held)	–	50
SAFYRR Propulsion Limited [2]	Derby [7]	B Shares	100	50
Shanxi North MTU Diesel Co. Limited	No.97 Daqing West Road, Datong City, Shanxi Province, China	Ordinary	49	49
Singapore Aero Engine Services Private Limited	11 Calshot Road, 509932, Singapore	Ordinary	50	50
Taec Ucak Motor Sanayi AS	Levent Mahallesi Prof. Ahmet Kemal Aru Sk. No: 4/1, Beşiktaş, Turkey	Cash Shares	49	49
Techjet Aerofoils Limited [12]	Tefen Industrial Zone, PO Box 16, 24959, Israel	Ordinary A Ordinary B	50 50	50
Texas Aero Engine Services LLC [2]	The Corporation Trust Company, 1209, Orange Street, Wilmington, Delaware 19801, United States	Partnership (no equity held)	–	50
TRT Limited	Derby [7]	Ordinary B	100	50
Turbo-Union GmbH	Lilienthalstrasse 2b, 85399 Halbergmoos, Germany	Capital Stock	40.0	40.0
United Battery Management GmbH	Wilhelminenhofstr. 76/77, 12459, Berlin, Germany	Ordinary	30	30
Xian XR Aero Components Co., Limited [12]	Xujiawan, Beijiao, Po Box 13, Xian 710021, Shaanxi, China	Ordinary	49	49

1 Although the interest held is 50%, the Company controls the entity (see note 1 to the Consolidated Financial Statements) and, as a result, consolidates the entity and records a non-controlling interest.
2 Dormant entity.
3 Kings Place, 90 York Way, London, United Kingdom, N1 9FX.
4 Entity to take advantage of s479A Companies Act 2006 (s479A) audit exemption for the year ended 31 December 2022. Rolls-Royce plc will issue a guarantee pursuant to s479A in relation to the liabilities of the entity.
5 Although the interest held is 49%, the Company controls the entity (see note 1 to the Consolidated Financial Statements) and, as a result, consolidates the entity and records a non-controlling interest.
6 Reporting year end is 31 March.
7 Moor Lane, Derby, Derbyshire, DE24 8BJ, United Kingdom.
8 Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19809, United States.
9 Entity in liquidation.
10 Entity to take advantage of s479A Companies Act 2006 (s479A) audit exemption for the year ending 31 March 2023. Rolls-Royce plc will issue a guarantee pursuant to S479A in relation to the liabilities of the entity.
11 The entity is not included in the consolidation as Rolls-Royce plc does not have a beneficial interest in the net assets of the entity.
12 The entity is accounted for as a joint operation (see note 1 to the Consolidated Financial Statements).