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Case No: BL-2018-001464

IN THE HIGH COURT OF JUSTICE
BUSINESS & PROPERTY COURTS OF ENGLAND AND WALES
BUSINESS LIST (ChD)

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Fetter lane, London
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Date: 29/10/2021

Before :

MR JUSTICE ADAM JOHNSON

Between :

- (1) BASF CORPORATION
- (2) BASF CATALYSTS GERMANY GmbH
- (3) BASF POLSKA SP.z.o.o
- (4) BASF SOUTH AFRICA (PTY) LTD

Claimants

- and -

CARPMAELS AND RANSFORD (A FIRM)

Defendant

Roger Stewart QC, Pippa Manby and Miles Copeland (instructed by **Reed Smith LLP**) for the **Claimants**

John Wardell QC, Henry Ward and Nick Zweck (instructed by **Clyde & Co LLP**) for the **Defendant**

Hearing dates: 14, 15, 16, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30 April and 10, 13, 14 May 2020

Approved Judgment
(Without Confidential Annex)

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

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Mr Justice Adam Johnson

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I Introduction

1. This is a professional negligence claim. The Claimants are all companies in the BASF Group. The BASF Group (where convenient I will refer to it as “*BASF*”) specialises in the research, development, manufacture and supply of chemical products.
2. The Defendant, Carpmaels and Ransford (“*Carpmaels*”), is a partnership and a well-known firm of patent attorneys.
3. Carpmaels were instructed to prosecute a patent. This was European patent EP 1 663 458, referred to in these proceedings as “*Patent 458*” or the “*458 Patent*.” Patent 458 concerned an emissions treatment system and method for use in the automotive industry. In summary it related to the idea of combining a catalyst and filter together, by putting a coat of catalyst material onto a filter unit. This gives rise to an acronym which has achieved much prominence in these proceedings, namely “*SCRoF*”, referring to “*Selective Catalytic Reduction on Filter*.”
4. In July 2012, in proceedings in the European Patent Office (“*EPO*”), Carpmaels negligently failed to lodge an appeal to the Technical Board of Appeal (“*TBA*”) from an earlier decision of the EPO’s Opposition Division (“*OD*”) of March 2012, revoking Patent 458 for lack of inventive step.
5. Because liability is admitted, this case is about what losses arise as a result of Carpmaels’ breach. Broadly, two questions arise. The first is, to whom did Carpmaels owe either contractual or common law duties of care? In particular, was it only to the First Claimant, or was it also the Second to Fourth Claimants? Carpmaels accept that they were retained by the First Claimant (“*BASF Corp*”), but deny that they were retained by, or owed any duties to, any of the Second Claimant (“*BASF Germany*”), the Third Claimant (“*BASF Polska*”), or the Fourth Claimant (“*BASF South Africa*”).
6. The second broad issue is about what losses in fact flow from Carpmaels’ admitted breach. That involves looking at what would have happened had the appeal to the TBA been filed on time, and how that counterfactual scenario would have differed from what in fact happened. The parties are agreed that, if the appeal to the TBA had been lodged, then in law the revocation of Patent 458 would have been suspended, at least until early 2015, which the parties are agreed is when the appeal would have been heard and resolved. Suspension of revocation is an automatic effect of an appeal being lodged on time: see Article 106 of the European Patent Convention. In such cases, the relevant patent remains valid in the form in which it is granted, pending final determination of the appeal.
7. Beyond that, however, there is a substantial measure of disagreement as to what the effect would have been of Patent 458 remaining unrevoked in the counterfactual scenario during the period 2012-2015.
8. The Claimants’ case, in short, is that the period between July 2012 and early 2015 was a critical time for the commercial exploitation of the technology reflected in the 458 Patent, and they say that the revocation of the Patent thus deprived them of something of real value. They say the 458 Patent had potential for huge practical application, because it covered a form of technology which motor vehicle manufacturers (referred

to as “*Original Equipment Manufacturers*” or “*OEMs*”) needed at the time in order to comply with new diesel emissions standards.

9. Three important OEMs were Daimler, VW and Ford. What in fact happened was that the BASF Group was awarded *some* limited business by VW during the relevant period, but lost out on other valuable business with these and other OEMs, who instead favoured SCRoF technology from a rival company, Johnson Matthey International (“*JMI*”). The Claimants say that, with the benefit of an unrevoked patent, they would have had a better chance to obtain (1) a larger share of business from the OEMs, and (2) licence income from JMI, since JMI would have needed a licence of BASF’s technology in order to compete at all.
10. Carpmaels, on the other hand, say that in reality the Claimants were deprived of nothing of value, because (1) in practice in the relevant marketplace patent monopolies were rarely if ever exploited; (2) the BASF SCRoF technology was inferior in terms of performance to the corresponding JMI technology which the OEMs preferred; and (3) in any event Patent 458, which had already been the subject of an adverse decision by the OD, would have been regarded even in the counterfactual as nothing more than a “*zombie patent*”, and therefore of no real value in negotiating or other terms.
11. The above points all depend on an analysis of what is likely to have happened in the counterfactual scenario (i.e. assuming no negligence by Carpmaels) in the period 2012 to early 2015. That analysis does not involve having to assess the lost chance of success on the appeal before the TBA, because it is concerned only with activity in the period *pending* the hearing of the appeal, while the revocation of Patent 458 was suspended. If necessary, however, the Claimants also invite an assessment of the chances of the appeal in fact succeeding, and the possible impact of that on awards of business and/or licence discussions in periods after the date of the appeal hearing – i.e., after early 2015.
12. As to quantum, both sides relied on evidence from expert accountants. The Claimants’ expert was Ms Elizabeth Gutteridge, who is a chartered accountant and a partner in Deloitte Forensic. She provided a report dealing both with lost profits and lost royalties. The figures for potential lost profits were very large indeed. Ms Gutteridge’s approach took as its starting point Appendix 1 to the Claimants’ Voluntary Particulars of Claim. Business in this area is awarded by the OEMs by reference to motor vehicle *platforms*. A platform is usually related to a specific engine design intended to meet certain emissions standards, which will typically be used in several models of vehicle. Component suppliers such as BASF and JMI compete to supply products for use in conjunction with such platforms.
13. Appendix 1 is a list of the platforms the Claimants say they would have had a better chance of winning had Patent 458 been in place. Ms Gutteridge conducted an exercise of calculating the lost profits on all the Appendix 1 platforms – i.e., on the basis that the Claimants would have won each of them.
14. This exercise produced an overall lost profits figure of US\$1,050,000,000, including interest and discounting. Ms Gutteridge’s calculation of lost licence fee income was more modest – up to US\$136,000,000.
15. The case was opened by the Claimants by reference to these figures. As to the lost profits element, although they accepted that their case was really about loss of

opportunity or loss of a chance, the Claimants did not at that stage seek to evaluate the chances of them actually winning any individual platform. Nor did they seek to identify which platforms would have been bid for by which Claimant – i.e., no attempt was made to allocate the claimed losses between the individual Claimants. Information on the first of these points was later provided during the trial, but only in the Claimants' Written Closing. I will explain the nature of the Claimants' case as it was eventually put in paragraphs [221]-[226] below.

II The Witnesses

16. I will comment briefly on the various witnesses who gave evidence at trial. As will be apparent from what I say below, I am satisfied that all the witnesses gave their evidence honestly. That said, as is so often the case, it also seemed to me that one can only obtain a complete picture of the relevant background from a review of the documentary record. In some instances, as will also be apparent from what follows, a review of the overall chronology has led me to the conclusion that the Claimants' evidence as a whole rather overstated the true position in relation to two matters, namely (i) the state of BASF's SCRoF technology at certain points in time (see my general findings at [248]-[261] below), and (ii) the potency of BASF's IP rights as a tool for securing sales of products and market share (see my findings starting at [348] below).

The Factual Witnesses

The Claimants' Factual Witnesses

17. *Mr John Cameron:* Mr Cameron is presently employed by BASF France S.A.S, as the Head of Account Management in BASF's Catalyst Division, but prior to June 2020 he was employed by the same company as Head of Sales for BASF's Catalyst Division. In that role he had supervisory responsibility for the account managers for two important customers, Renault-Nissan and PSA (the manufacturer of Peugeot, Citroen and other brands). Mr Cameron gave evidence about dealings with Renault-Nissan and PSA at the times material to these proceedings, in relation to SCRoF and related technologies. Mr Cameron was a somewhat voluble witness, in the sense that on occasion he had difficulty answering directly the question put to him. In some cases, in particular in dealing with the problems encountered by BASF's SCRoF technology, he was somewhat argumentative and accused Mr Wardell QC of "*cherry picking*". In these respects Mr Cameron was not an entirely helpful witness, but I did not detect in his approach any intention to mislead but only, perhaps, a lack of understanding of his role. I conclude that he gave his evidence honestly but that I must treat it with some degree of caution, in the sense that it contained a certain amount of advocacy and so must be tested against the available documents.
18. *Ms Melanie Brown:* Ms Brown is a lawyer and registered patent attorney in the United States. Prior to her departure in May 2015, she was employed by the First Claimant as Assistant General Counsel. In that role, she was the principal point of contact for Mr Fisher of Carpmaels, and she gave evidence about her interactions with Mr Fisher. Ms Brown was an honest and straightforward witness who did her best to assist the Court, although as I will mention below, her evidence revealed some uncertainty about the relationship between the Claimants and Carpmaels, and that uncertainty gives rise to some legal issues which I will need to resolve. Ms Brown was also involved in the OD

hearing in relation to the 458 Patent, and in the later efforts to appeal that decision, and she gave evidence about these matters which I will come back to below.

19. *Mr Cathal Prendergast*: Mr Prendergast started working at BASF Metals Limited in 2016, but before that he was employed by JMI. More specifically, he was in JMI's Light Duty Diesel ("LDD") oxidation catalysts team from 2011 to 2014, and then worked in a business development role from 2014 to 2015. His evidence was principally a challenge to the evidence given by Dr O'Sullivan for Carpmaels, based on the proposition that as a commercial person whose role was in the area of Heavy Duty Diesel ("HDD") vehicles, Dr O'Sullivan was not competent to provide evidence about JMI's approach to SCRoF technology in relation to LDD business. During his short cross-examination, however, and having been shown later evidence from the Claimants including from Dr O'Sullivan himself, Mr Prendergast candidly accepted that he had been mistaken in his prior evaluation of Dr O'Sullivan's role, and he effectively withdrew his evidence. I need say nothing further about it.
20. *Mr Richard Gay*: Mr Gay originally worked at Engelhard Corporation, the initial owner of the 458 Patent, which he joined in August 1988. He stayed with the business after its acquisition by BASF AG and remained there until 2014. Mr Gay gave evidence about the negotiations which eventually led to JMI being granted a licence of the CuCHA patent family in February 2013 (the relevance of the copper chabazite (CuCHA) patents is introduced below at [48]-[50]). Mr Gay gave his evidence straightforwardly and honestly.
21. *Mr Sanath Kumar*: Mr Kumar was formerly employed by the First Claimant as Head of Marketing within the Catalyst Division until his departure in July 2015. He gave evidence about BASF's strategy for leveraging its intellectual property in a manner which would support its marketing efforts. This included evidence about discussions with VW/Audi in early 2015, shortly before he left BASF. Mr Kumar was an honest witness who gave his evidence straightforwardly, although in my judgment, for reasons which will appear below, he rather overstated the potential impact of BASF's patent rights on OEMs' procurement decisions.
22. *Ms Olivia Schmidt*: Ms Smith is Vice-President for Strategic Projects, employed by BASF Corp. From mid-2015 onwards, she was involved in efforts directed at exploiting the value of BASF's patent portfolio for SCRoF technology through licensing efforts. She gave evidence on that topic. She was an honest and straightforward witness.
23. *Dr Joseph Patchett*: Dr Patchett was one of the original inventors of the 458 Patent. He gave evidence about the background to the claimed invention, about some of the technical characteristics of the Patent, and about his involvement in the proceedings before the OD in relation to the Patent in March 2012. Dr Patchett was an honest and straightforward witness who gave his evidence carefully and precisely, and did his best to assist the Court.
24. *Mr Nils Steinbock*: At the relevant times, Mr Steinbock was BASF's Head of Sales for VW/Audi, Daimler and BMW. He gave evidence about the relationship with these large OEMs at the times material to these proceedings. Mr Steinbock was an honest witness, but I did not derive much direct assistance from his evidence. His cross-examination by Mr Wardell QC largely consisted of documents being put to him which

showed BASF's SCRoF technology suffering performance issues, and his re-examination by Mr Stewart QC largely consisted of other documents being put to him which presented a more positive position of the SCRoF technology. The difficulty was that neither in his written evidence nor in his oral evidence did Mr Steinbock make any real attempt to convey the overall narrative, which might enable one to make sense of the individual document references he was taken to. This was a similar problem to that presented by Mr Cameron's evidence. That creates some difficulties of analysis, which I will deal with below. In my judgment, a clear enough overall picture does emerge, but I did not derive much assistance from Mr Steinbock (or indeed from Mr Cameron) in identifying it.

25. *Mr Anthony Birri*: Mr Birri is presently employed by BASF PLC as an account manager, with responsibility for Ford Europe. But between 2008 and 2017, he was employed by Ford. Among other matters, he gave evidence about Ford's tendering processes and awards of business during the periods relevant to this action. I was satisfied that Mr Birri was an honest witness.
26. *Dr Thorsten Berg*: Dr Berg is employed by BASF as Senior Intellectual Property Counsel within the Global IP Department of BASF. He served a short Witness Statement dealing with the hearing before the EPO's Board of Appeal in December 2020, concerning the Divisional Patent (which I will mention below – see at [54]). He was not cross-examined.

The Defendants' Factual Witnesses

27. *Mr Adrian Fisher*: Mr Fisher is a former patent attorney and was, up until his retirement on 30 June 2011, a partner in the Defendant firm, Carpmaels. After that, he remained as a consultant in the firm and in that capacity was involved in the proceedings before the OD which resulted in the revocation of the 458 Patent. He gave evidence about these matters and about the circumstances in which the deadline for filing the appeal in relation to the OD Decision came to be missed. I found Mr Fisher to be an honest and straightforward witness.
28. *Dr Paul Howard*: Dr Howard was also a partner at Carpmaels until June 2016, when he retired. Dr Howard effectively took over the BASF client relationship from Mr Fisher and thus became the principal point of contact for Ms Brown. He was not directly involved in the OD proceedings in relation to Patent 458, but played a significant role in the events which unfolded from July 2012, after it became clear that the deadline for filing the appeal in the 458 proceedings had been missed. Thus, Dr Howard was involved in the application to reinstate the late-filed appeal (together with Mr Fisher). Later, he was responsible for prosecution of the related Divisional Patent (in which Mr Fisher was not involved). Dr Howard was sometimes defensive in his evidence, as I will mention further below, but I found him to be an honest witness who sought to assist the court in what were obviously challenging and stressful circumstances for him personally.
29. *Dr Richard O'Sullivan*: Prior to his retirement in 2016, Dr O'Sullivan was employed by JMI for 27 years, including as Commercial Director Europe for the Emission Control Technologies Divisions between 2007 and 2014. In that role, he dealt with JMI's relationships with Volvo (between 2010 and 2014), with Saab (for a brief period before it was sold by General Motors in 2010), and with Ford and Jaguar Land Rover (for

about a year between 2010 and 2011). Dr O’Sullivan was a measured witness who gave his evidence in a calm and careful manner. I am satisfied he was an honest witness and did his best to assist the Court.

30. *Mr Antoine Bordet*: Like Dr O’Sullivan, Mr Bordet was previously (until 2017) employed by JMI. He worked principally in the Emissions Control Technologies (“ECT”) Division, and became Sales and Marketing Director for all European OEMs in 2000. He eventually moved away from the ECT Division to a different market sector from early 2010. In his Witness Statement for trial, Mr Bordet dealt largely with the role of Dr O’Sullivan within JMI, as a response to the evidence put in on that same topic by Dr Prendergast. But by the time Mr Bordet came to give his evidence orally, Dr Prendergast had already (in effect) withdrawn his evidence (see [19] above), and consequently Mr Bordet’s cross-examination was short. He gave his evidence straightforwardly and honestly and none of it was materially challenged.

The Expert Witnesses

The Claimants’ Experts

31. *Professor Mark Crocker*: Professor Crocker is a Full Professor in the Department of Chemistry at the University of Kentucky. He gave expert evidence on NOx emission reduction technology. This included the background to, and content of, the 458 Patent. As was to be expected, Professor Crocker was an impressive witness who gave his evidence in a careful and measured way, which included recognising the limits of his own expertise, and recognising when certain matters, when properly characterised, were legal questions for the Court to resolve.
32. *Mr Simon Thorley QC*: Mr Thorley is a distinguished Queen’s Counsel in the field of patent law. He gave expert evidence on patent law and procedure before the EPO, which included evidence as to the likely chances of success of the proposed appeal to the TBA. He also gave evidence about the proper approach to the construction of Patent 458, and more particularly as to the scope of the claims covered by the Patent. As was to be expected, Mr Thorley gave his evidence carefully and honestly. He recognised the limitations of his expertise, and in particular accepted that identifying the teachings to be derived from the relevant prior art is in substance a matter of technical expert evidence, and not legal expert evidence. On such matters, he conceded that he must defer to the evidence given by Professor Crocker and Professor Burch.
33. *Mr Burt Jordan*: Mr Jordan had a long and distinguished career at the Ford Motor Company. In July 2010, he was appointed Executive Director of Global Vehicle and Power Train Purchasing, and in August 2013 he was elected as a Corporate Officer, and became Vice President of Global Vehicle and Power Train Purchasing and Supplier Diversity. In October 2017, he became Vice President of Global Vehicle & Indirect Purchasing and Supply Chain Sustainability. He retired in July 2020. Mr Jordan gave evidence on market practice among OEMs in relation to procurement and supply issues, including as regards the relevance of third party patents in procurement and supply decisions.
34. *Ms Elizabeth Gutteridge*: Ms Gutteridge is a chartered accountant and a partner in Deloitte Forensic. She gave expert evidence on accounting issues relevant to the Claimants’ claims for lost profits and lost royalties. I am satisfied that Ms Gutteridge

gave her evidence honestly, but as I will explain below, in my judgment it was subject to some important limitations and so I do not feel able to accept it in certain key respects.

The Defendants' Experts

35. *Mr Wolfgang Christian von Meibom*: Mr von Meibom gave evidence on German law and procedure in relation to patents and the enforcement of patents. Mr von Meibom is a senior and very experienced practitioner in Germany. He gave his evidence straightforwardly and in a manner designed to assist the Court. His evidence was not challenged in any material respect.
36. *Mr Gregoire Marie Desrousseaux*: Mr Desrousseaux gave evidence on French law and procedure in relation to patents and the enforcement of patents. He is also a senior and experienced practitioner. I am again satisfied that he gave his evidence straightforwardly and in a manner designed to assist the Court. Like Mr von Meibom, he was cross-examined briefly and his evidence was not challenged in any material respect.
37. *Professor Robert Burch*: Professor Burch is presently a Visiting Research Professor of Chemistry at Queen's University Belfast. Like Professor Crocker, he has an impressive academic history as a chemist, including as Head of the School of Chemistry and Chemical Engineering at Queen's University Belfast between 2003 and 2009, and between 1999 and 2015 as Director of Queen's University Belfast's Catalysis Centre (CenTACat), managing a team of experts primarily researching automotive emission control catalysts and systems. He gave evidence about the state of the art at the priority date of the 458 Patent, and about certain features of the Patent and the science underlying it. As was to be expected, he gave his evidence in a careful and measured way and was an impressive witness.
38. *Ms Lucy Samuels*: Ms Samuels is a patent attorney. She joined Gill Jennings & Every in 1992 and has been at the firm for her entire professional career. She qualified as a Chartered Patent Attorney in 1996 and as a European Patent Attorney in 1997. She was a partner from 2000 until the end of 2019 and since then has been employed by Gill Jennings & Every as a Director (Patents). She specialises in the handling of EPO oppositions and appeals, mainly in the fields of chemistry, materials and chemical engineering. Ms Samuels gave evidence on patent law and procedure in the EPO. She gave her evidence in a thoroughly professional way and was an impressive and measured witness.
39. *Dr Michael John Davies*: Dr Davies joined the Rover group (later, Jaguar Land Rover) in 1996 and remained there until 2019. His position during that time was as a manager and technical specialist for aftertreatment technology, covering both petrol and diesel vehicles. He worked closely with the Jaguar Land Rover purchasing department. He gave evidence about the practice within OEMs as regards research and innovation in the field of aftertreatment, through to the stage of nominating suppliers and then entering full production.
40. *Mr Mark Bezant*: Mr Bezant is presently a Senior Managing Director at FTI Consulting LLP. He is a fellow of the Institute of Chartered Accountants. Like Ms Gutteridge for the Claimants, he too gave evidence on accounting and commercial issues relevant to

the assessment of the Claimants' claims for lost profits and lost licence income. At points, Mr Bezant came under sustained attack by Mr Stewart QC for having failed to assist the Court. I will deal with the substance of the claims for lost profits and lost licence income below, but I should say now that I reject that criticism. The nub of the point was that Mr Bezant had failed to produce calculations showing possible permutations of the Claimants' damages case. It is true he did not, but that does not seem to me to be a valid point of criticism because neither did the Claimants. It was only in their Written Closing that the Claimants sought to spell out precisely the findings in terms of loss which they invited the Court to make. That was too late for Mr Bezant to say anything about them, and I do not think he can fairly be criticised for failing to anticipate at an earlier point what the Claimants might say. I find that Mr Bezant was a careful and precise witness who gave his evidence straightforwardly to the Court.

III Some Preliminary Points

41. It is useful to deal with a number of preliminary points in order to set the scene.

Selective Catalytic Reduction

42. It was recognised from around the late 1990s that means for controlling NO_x emissions from diesel vehicles would need to be developed to meet future emissions standards. (NO_x is a generic term for the nitrogen oxides that are most relevant for air pollution, namely nitric oxide (NO) and nitrogen dioxide (NO₂)).
43. Selective Catalytic Reduction ("SCR") is a technology designed to control NO_x emissions. It works by using a reductant (typically urea – which converts to ammonia). A catalyst facilitates a reaction between NO_x and the reductant to convert NO_x to nitrogen and H₂O. Over time, various forms of catalyst have been used. These have included platinum and vanadium/titanium based catalysts and copper and iron zeolites.

The Euro 6 Legislation

44. SCR began to be used on trucks (i.e. *HDD*) vehicles in about 2007, but the Euro 6 legislation announced in 2007, led to a focus also coming to be placed on *LDD* vehicles, meaning vans and certain types of car. Euro 6 was a step change in regulation in the area, since it dramatically reduced the acceptable level of NO_x emissions compared to Euro 5 (from 180 to 80 mg/km). Euro 6 was to be implemented in September 2014 for type approvals (i.e. new models of vehicle/engine), and in September 2015 for all first registrations (i.e. for vehicles already in production). This led to SCR and a related technology, lean NO_x traps ("*LNT*") starting to be put on LDD vehicles in Europe from around 2014 onwards at least for some platforms, including in particular VW which for marketing reasons wished to be seen as an early adopter of NO_x control systems.

The Catalyst Suppliers and the OEMs

45. At the time, the major catalyst suppliers were JMI and BASF. Another, smaller rival was seeking to grow its business – this was Umicore, sometimes referred to as "*UMC*."
46. For some time before Euro 6 came into effect, the catalyst companies and OEMs were in dialogue with each other. The catalyst companies would present technical data to

the OEMs from laboratory tests, bench tests with engines and by testing on vehicles so that performance of their products could be measured.

47. Typically, an OEM would have a number of processes in train at the same time with different catalyst manufacturers. Feedback was often included in anonymised test results on competitors' products. These parallel projects typically resulted in benchmarking tests to compare the different products and to give "*technical release*" to the product or products which performed best. This was followed by a competitive tendering process, initiated by the issue of "*Requests for Quotations*" or "*RFQs*" to the suppliers who had been given a technical release. Dr O'Sullivan described the RFQ process as being something of a poker game between the OEM and the catalyst companies, for example if a supplier considered it had the best technology it might submit a relatively high price, but if it considered winning the tender to be strategically important it might submit a lower one (relatively speaking). There was no real pricing transparency between the suppliers and OEMs. This was because catalyst companies regarded their coating processes as confidential and also kept matters such as the cost of materials, reject rates and overhead costs confidential, so as to avoid becoming "*costs plus*" suppliers.

Copper Chabazite

48. At some point, it came to be realised that another catalyst, namely copper chabazite (CuCHA), had particular advantages for SCR for LDD applications. According to an internal BASF document prepared by Mr Mike LoCascio in April 2014, CuCHA is a "*... small pore 8 member ring Aluminosilicate zeolite having copper ions exchanged onto charged Al framework atoms that exhibits excellent low temperature activity and stability.*" Its particular value was its ability to "*operate at a lower (and larger) temperature window.*" That was desirable in the context of the more stringent Euro 6 Regulations and the constant pressure for more efficient engines.
49. Happily for BASF, it held patent rights relating to CuCHA.
50. Again, according to Mr LoCascio's report of April 2014, BASF obtained a worldwide licence from Chevron in 2007 for a period of 20 years in relation to Chevron's US patent 6,709,664 and related IP claiming CuCHA with a specific crystal size, silica to alumina ratio and other composition of matter with an exclusive period ending in 2015.

Selective Catalytic Reduction on Filter

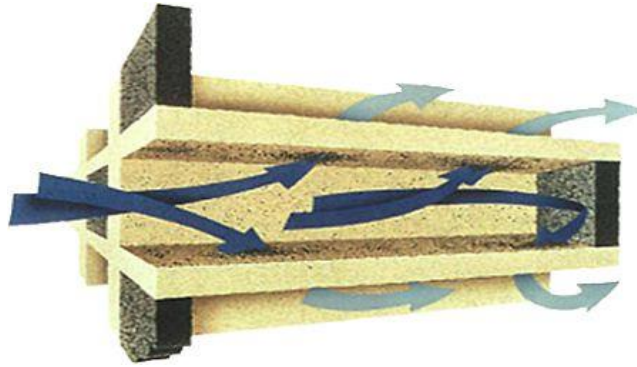
51. The concept underpinning SCRoF technology in particular was the idea of applying the SCR catalyst material *onto* a soot filter – hence, *Selective Catalytic Reduction on Filter*. Soot filters were used to limit particulate emissions. The concept was to combine the technology for reducing NO_x emissions together with the technology for limiting particulate emissions, thus reducing the emission system's physical volume, number of parts, system complexity, and cost.
52. I will say something more about BASF Corp's 458 Patent in the next section of this judgment. It is useful though to record the perceived benefits of SCRoF. These were summarised in an internal BASF document, prepared for presentation to the BASF Board in October 2015, as follows:

“Technology Description and Benefits

Selective Catalytic Reduction on Filter (SCRoF) technology for Light Duty Diesel (LDD) applications was first developed and patented by BASF Corporation (Engelhard) in 2003. The SCRoF component is used in a mobile emission system to simultaneously remove NOx and particulates from lean burn Diesel internal combustion engines. The SCRoF component is comprised of a selective catalytic catalyst that includes but is not limited to iron and/or copper chabazite (Fe-CHA and Cu-CHA) zeolite material disposed within the pores of a wall flow filter. A reductant (usually urea or ammonia) is injected into the exhaust upstream from the SCRoF. The zeolite catalyst facilitates the reaction between NOx and the reductant to convert NOx to N₂ and H₂O. In addition, the filter functionality of SCRoF component helps remove particulates from the exhaust stream. It should be noted that BASF has pioneered the development and use of Cu-CHA zeolite for SCR and SCRoF. The use of Cu-CHA zeolite technology has become the leading technology in the industry owing to its superior combination of hydrothermal stability and NOx reduction performance. The Catalyst Division continues to invest heavily in Cu-CHA related R&D, intellectual property and production assets.”

IV The 458 Patent

53. The 458 Patent has a priority date of 5 August 2003. The proprietor is identified as Engelhard Corporation, the predecessor to BASF Corp. Three inventors are identified, including Dr Patchett, who gave evidence at the trial before me.
54. Patent 458 was one of a family of patents, including related US patents and later (as I will explain) a related European Divisional patent (“*Patent 227*”, or “*the Divisional Patent*”).
55. The 458 Patent was granted in 2009.
56. The background is set out in paras [09]-[11] of Patent 458. Some relevant detail is extracted below. In broad terms, however, the idea described was that of combining an SCR catalyst with a soot filter.
57. A soot filter is typically a substrate: i.e., a honeycomb-like monolith. Since a substrate is porous, the idea described was actually to coat the soot filter with a suitable catalyst composition.
58. One particular type of filter is a “*wall-flow*” filter or monolith. A wall-flow monolith is as follows:



59. The claimed invention depended on a number of inter-related factors. One was selection of an appropriate catalyst, capable of operating within a sufficiently wide range of temperatures. Another was the combination of the catalyst with the right sort of substrate: the issue here was that the higher the load of catalyst material to be applied to the substrate to achieve the appropriate level of NO_x conversion, the greater the risk of the substrate becoming blocked and thus losing its efficiency as a soot filter: this phenomenon was referred to as the creation of “*high back pressure*.” One means of trying to address this was the selection of a substrate with appropriate porosity – i.e., sufficiently large pore size. Another means, however, was a particular method of coating the substrate with catalyst material, which Patent 458 described. This has been referred to as the “*double-dip*” method.
60. Paragraphs [009]-[011] of Patent 458 are as follows:

“[0009] While separate substrates each containing catalysts to address discrete components of the exhaust can be provided in an exhaust system, use of fewer substrates is desirable to reduce the overall size of the system, to ease the assembly of the system, and to reduce the overall costs of the system. One approach to achieve this goal is to coat the soot filter with a catalyst composition effective for the conversion of NO_x to innocuous components. With this approach, the catalyzed soot filter assumes two catalyst functions: removal of the particulate component of the exhaust stream and conversion of the NO_x component of the exhaust stream to N₂.

[0010] Coated soot filter that can achieve NO_x reduction goals require a sufficient loading of SCR catalyst composition on the soot filter. The gradual loss of the catalytic effectiveness of the compositions that occurs over time through exposure to certain deleterious components of the exhaust system augments the need for higher catalyst loadings of the SCR catalyst composition. However, preparation of coated soot filters with higher catalyst loadings can lead to unacceptably high back pressure within the exhaust system. Coating techniques that allow higher catalyst loadings on the wall flow filter, yet still allow the filter to maintain flow characteristics that achieve acceptable back pressures are therefore desirable.

[0011] An additional aspect for consideration in coating the wall flow filter is the selection of the appropriate SCR catalyst composition. First, the catalyst composition must be durable so that it maintains its SCR catalytic activity even after prolonged exposure to higher temperatures that are characteristic of filter regeneration. For example, combustion of the soot fraction of the particulate matter often leads to temperatures above 700 °C. Such temperatures render many commonly used SCR catalyst compositions such as mixed oxides of vanadium and titanium less catalytically effective. Second, the SCR catalyst compositions preferably have a wide enough operating temperature range so that they can accommodate the variable temperature ranges over which the vehicle operates. Temperatures below 300 °C are typically encountered, for example, at conditions of low load, or at start up. The SCR catalyst compositions are preferably capable of catalyzing the reduction of the NO_x component of the exhaust to achieve NO_x reduction goals, even at lower exhaust temperatures.”

61. In the section headed, “*Summary of the Invention*”, three aspects are described:
- i) In one aspect, the invention is said to relate to an emission treatment system for treatment of an exhaust stream that contains NO_x and particulate matter ([0018]-[0022]).
 - ii) In another aspect, the invention is said to relate to a method for treating emissions produced in an exhaust stream that contains NO_x and particulate matter ([0023]-[0024]).
 - iii) In a third aspect, the invention is said to relate to a method for disposing an SCR catalyst composition on a wall flow monolith ([0025]-[0027]). This is the “*double-dip*” method.
62. Paragraph [0047] provides that the claimed invention covers different methods of disposition of the catalytic material on a wall flow filter, as follows (emphasis added):
- “[0047] The porous wall flow filter used in the invention is catalyzed in that the wall of said elements has thereon or contained therein one or more catalytic materials. Catalytic materials may be present on the inlet side of the element wall alone; the outlet side alone; both the inlet and outlet sides; or the wall itself may consist all, or in part, of the catalytic material. This invention includes the use of one or more layers of catalytic materials and combinations of one or more layers of catalytic materials on the inlet and/or outlet walls of the element.”*
63. As to the double-dip method of applying the catalytic material to the substrate, this is most readily appreciated by considering the diagram of a wall-flow monolith set out under [58] above.

64. In this diagram, the exhaust stream is entering the monolith from the left hand side. The channels through which the exhaust stream enters the monolith are referred to as the inlet walls. After permeating the substrate the exhaust gasses exit on the right hand side, through what are referred to as the outlet walls (i.e., the open-ended channels on the right hand side).
65. The coating method referred to at [0025] to [0027] (described also at [0060]-[0062]) operates as follows (as described in [0048]):
- i) Imagine the monolith in the diagram being rotated through 90 degrees so it is standing vertically, with one open set of channels pointing downwards and the other open set of channels pointing upwards.
 - ii) From this position, the substrate is immersed in a slurry mixture (or “washcoat”) containing the catalyst, sufficient to coat the substrate along its length from bottom to top, but without spilling over the top (so that the slurry mixture does not enter the open channels at the top of the structure).
 - iii) Air is then blown in from the dry (top) side of the substrate, to remove any excess coating.
 - iv) The substrate is also vacuumed from the coated (bottom) side.
 - v) The substrate is then left to dry.
 - vi) The substrate is then turned upside down and the process repeated.
66. The Patent indicates that tests were conducted using 4 samples. All 4 used a substrate manufactured by NGK Insulators Ltd, namely NGK’s 611 substrate which had 60% porosity (higher than the then standard) and a larger pore size (25 microns): this was to allow a higher effective catalyst loading. In other respects, however, there were some important differences between them.
67. On the first two samples, catalyst comprising a copper beta zeolite with added copper sulphate and a zirconia binder was disposed on the substrate using the method above (i.e. the *double-dip* method). These are referred to as Catalyst A1 and Catalyst A2.
68. On a third, however, Catalyst B1, the double-dip method was not used. Instead, it was prepared by coating a single side of the substrate only – i.e., the method above was followed, but only down to step (iv). Steps (v) and (vi) were left out. To reach the same catalyst loading as Catalyst A1, the slurry solids content was increased to 38% (from 27%).
69. Catalyst D1, a reference sample, was prepared as a flow through type monolith (i.e., not a *wall flow* monolith).
70. In tests, Catalyst B1 demonstrated unacceptably high levels of back pressure: [0067] states “*The pressure drop exhibited by Catalyst B1 was so high that engine testing of this filter proved impossible.*”
71. As to the Claims of the Patent, it is sufficient for now to set out claim 1 and to note claim 33.

72. Claim 1 is as follows:

“A catalyst article comprising a wall flow monolith having a plurality of longitudinally extending passages formed by longitudinally extending walls bounding and defining said passages, wherein the passages comprise inlet passages having an open inlet end and a closed outlet end, and outlet passages having a closed inlet end and an open outlet end, wherein the wall flow monolith comprises an SCR catalyst composition that permeates the walls at a concentration of 72.96g/l (1.3 g/in³); wherein the wall flow monolith has a wall porosity of at least 50% with an average pore size of at least 5 microns.”

73. Claim 33 is a claim for “[a] method of disposing an SCR catalyst composition on a wall flow monolith” – i.e., the double-dip method described above.

V Chronological Background

74. It is convenient to set out some key events in chronological sequence. There is in fact little if any dispute between the parties about what did happen. The relevant disputes between them are largely about what *would have happened* in the postulated counterfactual. That inquiry is likely to be assisted, however, by considering the key events which in fact unfolded.

The Claimants and their Relationship with Carpmaels

75. As already noted BASF Corp, the First Claimant, was the holder of the 458 Patent. The patent had in fact originally been sought by Engelhard Corporation, a specialist manufacturer of catalysts who had been Carpmaels’ original client. Engelhard Corporation were later taken over by the BASF Group and became its Catalyst Division. Ownership of the 458 Patent transferred to BASF Corp.

76. The BASF Group is a large international conglomerate with subsidiaries all around the world. This is common knowledge and would of course have been known to Carpmaels.

77. The remaining Claimants, i.e. BASF Germany, BASF Polska and BASF South Africa, are all members of the BASF Catalyst Division. They are manufacturing companies. The Catalyst Division is sometimes referred to by the abbreviation, “CCE”.

78. The ultimate parent company of the Claimants is now BASF SE.

79. It is common ground that there was no written retainer letter between Carpmaels and BASF Corp at the time of the admitted breach. It seems that the historic relationship with Engelhard Corporation was simply carried on, and never formalised by way of an engagement letter, as it should have been.

The CuCHA Patents and Daimler

80. At some point in early to mid-2010, steps were taken at some level within BASF to leverage the CuCHA patents, in order to try and secure a competitive advantage with Daimler. In any event, there was an interruption in JMI’s ability to supply Daimler

with CuCHA related materials in the United States. When this was reported more broadly within BASF it was expressed as a matter of concern. In an internal email dated 12 August 2010 Jacqueline Rech of BASF reported: *“In general, Daimler is very upset about this situation and feels we are ‘cornering’ the market with Cu-CHA.”*

81. At the time, although BASF had patent protection for CuCHA in the US, it had only a pending patent for CuCHA in Europe – the European patent was not in fact granted until April 2015.
82. In May 2011, Mr Goerck of BASF proposed a high level meeting with Daimler, in order *“to present to them the BASF patent position and let them decide how they would proceed.”* The reaction was negative. An Account Strategy Report from June 2011 recorded: *“Daimler has stated that BASF is using the SCR(Cu) patent position in an arrogant manner for LDD.”*

VW/Audi A Main Target

83. By, at latest mid-2011, it was clear that a major target – and perhaps the major target - for SCRoF business was VW/Audi.
84. JMI however had been selected as the development partner for Audi/VW on SCRoFs. An internal BASF document from the time recorded as follows: *“Audi, SCRoF, Euro 6: Tex-0705 lagging. Pressure drop was the discriminating factor. JMI has been selected as the development partner. BASF is allowed to submit further samples”.*
85. The issue is reflected in a BASF internal Powerpoint presentation on VW/Audi, prepared for a conference in Shanghai in June 2011. A slide containing a SWOT analysis set out the following summary:

“SCRoF is the main opportunity

The biggest threat is JMI’s development partner status for SCRoF and quality issues.”

86. A further powerpoint slide deck, entitled *“CCE Market Overview”* prepared for a meeting in Edesheim, Germany on 29-30 November 2011 stated as follows at p. 6:

“SCRoF will be introduced in 2012 in both Europe and the US

...

SCR systems will be the main pathway after Euro 6, with SCRoF becoming a major part of the solution.”

87. Against this general background, the challenge was to gain market share for BASF’s SCRoF products.

Awareness of the 458 Patent

88. Dr O’Sullivan’s evidence was that JMI were aware of Patent 458 at the time. He gave evidence that JMI, and indeed other suppliers, monitored their competitors’ IP. The

458 Patent appears to have been a matter of particular concern for JMI. Dr O’Sullivan said that it was one of the “*prominent patents that we monitored.*”

89. It seems reasonable to assume that, by one means or another, the 458 Patent would have been known to the OEMs. Dr O’Sullivan in his evidence described presentations made by JMI on SCRoFs to Jaguar Land Rover and Ford in 2010. He also explained that part of his role involved briefing OEMs on “*potential problem patents and our opinion on whether they would remain a problem.*” More specifically, he gave evidence that for a period of time one of his clients at JMI, Volvo, was given regular updates on the 458 Patent, as were Jaguar Land Rover.
90. It was also common ground on the evidence that OEMs routinely sought confirmation from suppliers that they had *freedom to operate* – or “*FTO*”. Mr Birri gave evidence that Ford and other OEMs asked the question of suppliers whether they had FTO and expected suppliers to give that information. Mr Jordan confirmed this in the case of Ford, and said that Ford would rely on the assurances given by the suppliers. Dr O’Sullivan said that JMI had signed up to Ford’s terms and conditions certifying that they had FTO from 2010 until at least when his involvement ceased in 2014.
91. Specific evidence was also available in connection with VW. Tilo Horstmann of BASF summarised the position in an email dated 3 July 2015:

“VW tries to stay out of IP and patent related topics. Therefore they ask for a freedom to operate statement from their suppliers.”

92. In the course of his cross-examination Dr Davies explained why, as an OEM, Jaguar Land Rover were concerned to know about FTO and the risk of patent infringement:

“Q. It’s right, isn’t it, that you would expect a supplier to you to tell you if a product that they were supplying fell within the claims of a granted patent, do you agree?”

A. Yes, I would have expected suppliers to notify us of any patent limitations.

Q. Why would that be, please?

A. Just in case it had some bearing on the ability to supply components into production.

Q. You would be furious, wouldn’t you, if you discovered, for example, that Johnson Matthey had been supplying you with a system where they knew that it infringed a granted patent but didn’t tell you that it did so?

A. My Lord, I would have been quite disappointed, yes.

Q. Of course it may very well be that, having told you about it, they would say, ‘Well, we are going to get a licence, or we are going to manage it in some other way’, but you would expect them to notify you of any patentability problems, wouldn’t you?

A. *My Lord, I would expect them to, yes.*”

Use of the SCRoF Patent Estate

93. As to BASF’s SCRoF patent portfolio, on 22 August 2011 Suzanne Rech sent an internal BASF email headed “*SCR on Filter Patent estate 19 Aug 2011.ppt*”. Along with others, she had conducted a review of patents which were potentially relevant to the commercialisation of SCRoF technology, including patents held by competitors. Mr Droege, BASF’s Global Marketing Manager, Mobile Emissions Catalysts, forwarded the email internally on 2 September 2011 to Mr Goerck, and said:

“Attached is a summary of our SCR on Filter patent position. Conclusion: We have a relative strong patent position in Europe with a granted patent and patent applications. Our competitors have only limited patent activity in this area. Nils Steinbock is asked to develop an approach how to use our strong patent position in the VW competition.”

94. Although I heard evidence at trial from Mr Steinbock, this did not address whether and if so how he in fact sought “*to develop an approach*” to gain an advantage in the VW competition. In the circumstances, it seems to me a reasonable inference that nothing of substance can have happened.
95. Consistent with that, Dr O’Sullivan’s evidence was that he did not recall the 458 Patent, prior to its revocation in March 2012, making any difference to the way in which JMI developed or started to commercialise its SCRoFs. He said as follows at para. 55 of his Witness Statement:

“I do not recall the existence of the 458 Patent (until its revocation in March 2012) making any difference to the way in which JM [i.e. Johnson Matthey] developed or started to commercialise its SCRoFs. As I said in paragraph 46, JM was well aware of the 458 Patent but regarded it as weak and likely to be revoked as a result of the opposition we had brought against it. We therefore continued to market and develop SCRoFs. This included entering product development projects with OEMs in order to obtain technical release, providing samples for the OEMs’ own tests and giving presentations to OEMs on our SCRoFs ... However, we also briefed OEMs on the status of potential problem patents and our opinion on whether they would remain a problem. I did so regularly, including on the 458 Patent. The OEMs were therefore aware of it during our product development work with them, and when we submitted samples for benchmark tests, such as those reported in Exhibits RDO-2 to RDO-4. I do not recall any OEM not wanting to work with JM as a result of the 458 Patent.”

Meeting with JMI: Cross-Licensing proposal – October 2011

96. Against this background, on 6 October 2011 there was a high level meeting at JMI’s offices in Wayne Pennsylvania to discuss possible cross-licensing initiatives with JMI.

The attendees included John Walker, a very senior figure (in fact, Division Director, Emission Control Technologies) within JMI, who would later go on to be an executive member of the JMI Board.

97. At that meeting JMI made a proposal for the cross-licensing of patents between JMI and BASF “*on a case by case basis since customers always want at least two suppliers.*”
98. The meeting did not result in a general agreement for cross-licensing. BASF were more cautious. They did, however, agree in principle to a more limited licence to JMI for CuCHA technology only.

Agreement with JMI for CuCHA Licence

99. The discussions were handled by Mr Gay from BASF, and by Mr Chris Bennett from JMI.
100. Mr Gay gave evidence as to the commercial reasons behind the decision to licence the CuCHA Patents to JMI, which included what he described in a January 2013 document seeking approval for the Licence as “*Industry Pressure.*” He accepted that this meant pressure from Daimler (see [80]-[82] above), who wished to use JMI products in their vehicles.
101. Mr Kumar also accepted that the stance taken by Daimler was one of the factors which led to the decision to licence the CuCHA Patents to JMI: as an OEM, it was not in Daimler’s interests to have one supplier holding a monopoly position on the supply of key technology. But it was also in BASF’s interests to encourage widespread acceptance of the CuCHA technology in the marketplace, and that would only be achieved if there was more than one supplier.
102. Although BASF were content with one other market participant having a licence, they did not want two in play, and so no licence was offered to Umicore.

JMI Request Licence of the SCRoF Patents

103. In the course of the negotiations with JMI over the CuCHA patent family, on 14 November 2011, Mr Bennett indicated that JMI would also be interested in a licence of the SCRoF patent family, including Patent 458. Mr Gay however replied on the same day to say that BASF was not interested in licensing the SCRoF patents, and the matter was not taken any further. Mr Gay’s evidence on the reasons why the decision was taken not to licence SCRoF at that stage is in his Witness Statement for trial. His basic point was that it was too early. He said that (a) SCRoF had not yet penetrated the market and the technology was still being developed; (b) OEMs were not yet applying any pressure on BASF to grant a licence; and (c) BASF wanted to wait and see how the market developed and see whether it could leverage its patents to gain market share and secure early advantages.
104. In his evidence, Dr O’Sullivan explained that he had not been aware of this exchange at the time in performing his role at JMI. He described it as not a formal approach by JMI but instead an informal response by Mr Bennett based on a possible misunderstanding of an earlier suggestion by Mr Gay. Whatever the background, Dr O’Sullivan said:

“In any event, this email exchange had no effect as far as I was aware on JM’s strategy to work on product development projects with OEMs, including sending sample SCRoFs to them in order to win production business.”

The Opposition Division Hearing in relation to the 458 Patent

105. The OD hearing in relation to the 458 Patent had originally been scheduled for November 2011, but this coincided with the Thanksgiving period and so the scheduling was inconvenient for Ms Brown, amongst others. The hearing was therefore rescheduled for 13 March 2012.
106. Shortly before the hearing, both JMI and Umicore filed sets of objections. The objections relied on the assertion that the claims of Patent 458 did not have an upper limit to the catalyst loading integer and also covered Catalyst B1, and in consequence were not limited to embodiments that did not have unduly high back pressure. That in turn gave rise to the argument that Patent 458 did not solve the technical problem it purported to solve across the full scope of the claims.
107. There was a conference call on 5 March, following which Mr Fisher sent an email circulating a series of draft Auxiliary Requests. Auxiliary Requests 4 and 5 were designed to deal with the Catalyst B1 issue, and sought to address the problem by means of what has been referred to as the “*Both Sides Limitation*” – i.e., a limitation that the catalyst “*permeates the [wall-flow monolith’s] walls on both the inlet and outlet sides.*” This limitation was intended to exclude Catalyst B1 from the scope of the claims, the catalyst slurry in that example having been applied to one side only of the filter.
108. Dr Patchett, however, was reluctant to accept such a process-based limitation, and expressed a preference for leaving it out of the Auxiliary Requests altogether.
109. There was a further email exchange between Mr Fisher and Mr Scott Servilla on 8 March 2012. Mr Servilla is a US attorney and specialist on patent issues who was regularly consulted by BASF Corp and Ms Brown. Mr Servilla in his email passed on certain comments from Ms Brown, who was away travelling at the time. The comments included the following:

“Continuing with the problem solved by the invention, this is further discussed at paragraphs 0030 and 0031 wherein practical levels of SCR catalyst loading are achieved without causing excessive backpressure. Prior to the present invention, a singly catalytic article did not exist that could:

(1) filter soot;

(2) provide NOx conversion across a wide temperature range and over an extended duration without loss of catalytic activity without increasing backpressure; and

(3) lower the soot burning temperature so the filter could be regenerated by burning the soot, not by backflushing.”

110. Paragraphs [0030] and [0031] of Patent 458 describe a problem solved by a combination of factors, which include the method claim 33 – i.e., the “*double-dip*” method. Mr Fisher recognised claim 33 as a potential antidote to the point made by JMI and Umicore, but thought it should be considered only as an “*ultimate fall-back position.*” The problem was, as Dr Patchett also recognised, that such a process-based claim would be easy for competitors to work around.
111. On 9 March 2012, Carpmaels sent a letter to the EPO. This included Auxiliary Requests 1 to 5. Auxiliary Requests 4 and 5 were as above. Auxiliary Requests 2 and 3 were designed to impose a limitation that the maximum loading of SCR catalyst composition should be 2.4 g/in³. This was in response to the argument that the claims of the Patent were unlimited as regards the amount of catalyst composition.
112. In the event, the Auxiliary Requests were disallowed by the Opposition Division, on the basis that they were filed late and JMI and Umicore had not had the chance to consider them properly.
113. The OD determined that Patent 458 was invalid for lack of inventive step and determined that it should be revoked. Its decision was communicated on the day of the hearing, but written reasons followed only later. The decision was by a 2-1 majority. Ms Brown’s evidence, which again I understood Mr Fisher to agree with on this point, was that there was no specific consideration of Catalyst B1 at the hearing, beyond the point arising in the context of the admissibility of the Auxiliary Requests.
114. Instead, attention came to be focused on a particular piece of prior art, referred to as E6. E6 is a WIPO patent application made by JMI, with a filing date of 20 December 2002 and priority dates of 20 December 2001 and 25 March 2002. It describes a retrofit application used in HDD applications, but importantly, as the technical experts before me were agreed, it discloses the general idea of putting SCR on a DPF. The OD described E6 as the “*closest prior art document.*”
115. A further piece of prior art, referred to as D16, is a technical paper by Hashimoto and others produced for the SAE 2002 World Congress in Detroit, which describes efforts to develop and produce high porosity filters. It refers expressly to the NGK C611 substrate used in the tests in relation to the 458 Patent.
116. The OD’s reasoning (as later explained in writing) was that since E6 was dealing mainly with the configuration of a system in terms of the elements comprised in the system and how they are arranged, “*the problem to be solved by the present claim is to provide the parts to construct the system and to choose the adequate DPF to be coated with the catalyst.*” That being so, the OD considered that the choice of the type of high porosity filter described by D16 was obvious and involved no inventive step.
117. After the hearing, Dr Patchett was asked by Ms Brown to run some further experiments, as specified in her email dated 14 March 2012. These were for possible use in the intended appeal against the OD decision, and also “*in the EP divisional if desirable.*”
118. It is clear that Dr Patchett did run further tests, because they are referred to in later documents including a set of results referenced in an email to Dr Patchett dated 5 September 2012. The test results themselves have not been disclosed. Ms Brown accepted they were not provided to Carpmaels, and were not relied on in connection

with the appeal or the prosecution of the Divisional Patent. I was not shown the test results during the course of the trial.

The Breach and Its Immediate Aftermath

119. The OD's written reasons were given several weeks later, on 2 May 2012. In an email to Dr Howard dated 18 May 2012, Mr Fisher described the OD's decision as "*a bit thin*" on inventive step.
120. It is accepted that Carpmaels were instructed to appeal the OD decision. The date for doing so was 12 July 2012. The deadline was missed, however, and no appeal was filed.
121. The failure came to light on 16 July 2012. Carpmaels' insurers were notified straight away.
122. Dr Howard spoke to Ms Brown on 17 July 2012. An email sent to her reporting on the situation referred to it having been occasioned by clerical error. It also indicated that Carpmaels were optimistic the situation could be recovered by means of an application for reinstatement, and said in any event that it might be possible to use the then pending Divisional Patent application as a back-up.
123. Internally, however, Patricia Harris of Carpmaels was commissioned to undertake some research, and her email report dated 18 July 2012 was rather more cautious about the prospects of success. Dr Howard accepted that, in light of this advice, his own views on success had become less optimistic. In cross-examination, Mr Fisher said he had his own views and remained reasonably optimistic.
124. In a later email exchange on 30 July 2012 with Dr Howard, however, Mr Fisher described the situation on reinstatement as a "*bit iffy*" but said they "*might get lucky*". This change of tone, reflecting a more negative outlook, was not communicated at this stage to Ms Brown.
125. During cross-examination, Dr Howard said that none of this changed his mind about the overall nature of the advice to be given and the correct strategy to adopt – which was to focus first on the possibility of reinstating the appeal and only then focus on the prosecution of the Divisional. Mr Fisher shared the same views. He thought the position could if necessary be salvaged by reliance on the Divisional Patent. But he reasoned that, if one were to accelerate prosecution of the Divisional Patent first, it might lead to the claims in the Divisional having to be amended or narrowed unnecessarily. So it made sense to him to seek reinstatement of the appeal first.
126. Although technically still seeking reinstatement of the appeal, Carpmaels proceeded to file Appeal Grounds on 10 September 2012. The Grounds contained the following description of "*The problem solved*":

"The problem solved by the present invention is the provision of a filter which combined high efficiency in reducing NOx, high efficiency in trapping soot, and also a significant reduction in soot burn-off temperature, all without unacceptably high back pressure."

127. They also contained the following submission:

“In summary, there was absolutely no reason for the skilled person to make the combination of choices from E6 and D16 in the expectation of achieving efficient reduction of NO_x as well as the efficient trapping and burning off of soot. The Opposition Division was therefore wrong to hold that a combination of documents E6 and D16 would have led to the present invention in an obvious way.”

128. The Appeal Grounds sought to rely on 3 Auxiliary Requests. Auxiliary Request 1 and Auxiliary Request 3 included the Both Sides Limitation which had been included in Auxiliary Requests 4 and 5 before the OD – i.e. the limitation that the SCR catalyst loading was to be on both the inlet and outlet sides of the monolith.

JMI’s Reaction to Carpmiels’ breach

129. Dr O’Sullivan was cross-examined about the reaction within JMI to news of BASF’s failure to appeal in time:

“Q. What happened, we can tell from an internal BASF report, is that at the hearing itself Johnson Matthey and Umicore succeeded in their opposition by a majority, by 2:1, did you hear that at the time or not?”

A. Again, I -- it was a patent that I was interested in, and I think that I would have been kept up-to-date or would have found out what was happening with that patent, particularly something as important as this.

Q. Yes. Then of course, and you tell us in your witness statement, you heard that BASF didn't file their appeal in time. There must have been laughing and dancing in the streets in Royston, I should imagine?”

A. There was -- I did hear about this pretty soon after it happened, or didn't happen. It was obviously expected that they would file an appeal and it was quite surprising that they didn't. But, yes, we thought that it had potentially solved this particular issue for us.

Q. You in your patent briefings would have told the OEMs they hadn't even appealed it, wouldn't you?”

A. Yes, in due course, yes.

Q. Do you yourself remember telling Volvo that for whom you were still responsible?”

A. I can't honestly say that I remember the specific instance -

Q. But you are sure you would have done?”

A. *I'm pretty sure I would have done, yes.*

Q. *And perfectly legitimately you, as a competitor of BASF, would be making the point they hadn't got any patent protection. They did have it, it was granted, we opposed it, and they didn't appeal?*

A. *Yes. Yes, that is correct."*

CuCHA Licence with JMI Endorsed by the BASF IP Committee

130. A meeting of BASF's IP Committee took place in September 2012 and the decision to licence the CuCHA patent family to JMI was endorsed. As I will mention below, the licence terms were finally documented a few months later, in February 2013.

The Opposition Division's Preliminary Opinion and Decision on Reinstatement

131. Some negative news came in October 2012. On 5 October the OD released its Preliminary Opinion, indicating that its view was against allowing reinstatement of the late-filed appeal. BASF and Carpmaels were summoned to a hearing in Munich.

132. On 17 October 2012 Dr Howard had a discussion with Ms Brown. He accepted in cross-examination that his advice to her at that stage could have been fuller, but would not go as far as accepting that he was at fault, and said he had certainly not intended to mislead. In any event, it must have been obvious from this point on, in light of the OD's Preliminary Opinion, that there was a material risk that the application for reinstatement would ultimately fail.

133. As to the Divisional Patent, this was kept on the back-burner. Carpmaels sought an extension of time for responding on the Divisional, and time was accordingly extended to 13 December 2012. In the event, Ms Brown then agreed, on Carpmaels' advice, not to file a response but instead to allow the Divisional to enter a period of "*further processing*."

134. Following a hearing in December 2012, the OD rendered its final determination on the reinstatement application on 31 January 2013. The application was refused and the appeal treated as having not been filed. Any prospect of appealing was now dead. Attention then reverted to the Divisional application.

The JMI CuCHA Licence is Documented

135. A Licence with JMI for the CuCHA patent family was concluded shortly afterwards, in February 2013. The BASF contracting party was BASF Corp, the First Claimant.

The SCRoF Market: the First RFQs

136. It was also in early 2013 that the first RFQs for aftertreatment systems incorporating SCRoFs were issued for the LDD market.

137. Daimler issued an RFQ for aftertreatment systems incorporating SCRoFs for its OM654 and OM656 platforms in March 2013.

138. At about the same time, or at any rate at some point in early 2013, VW issued its RFQ for aftertreatment systems incorporating SCRoFs for 11 platforms.
139. In his cross-examination Dr O’Sullivan was asked whether JMI would likely have sought to explain to these OEMs that BASF had failed to lodge its prospective appeal in time:

“Q. The overwhelming likelihood is, isn't it, that in seeking, perfectly legitimately, to get those two pieces of business, Johnson Matthey would have told Daimler and Volkswagen that BASF had not filed the patent appeal and therefore they had no existing patent? Yes?”

A. I can only speculate --

Q. You are within the business at Johnson Matthey. It's in Johnson Matthey's interests to do it. You would have done it. It would have been madness not to do it, yes?”

A. I think it is likely, yes”.

The Divisional Application

140. BASF Corp made a request for “*further processing*” of the Divisional along with amended claims on 2 April 2013.
141. In response, on 22 April 2013, Umicore filed an objection to the Divisional Patent application, raising for the first time a *res judicata* argument. This argument relied on the fact that the 458 Patent had been revoked. Ms Brown asked for advice on the strength of the argument, and in an email dated 3 May 2013 Mr Servilla said “*This is a very important case for BASF.*” On 5 June 2013 JMI filed their own Third Party Observations in connection with the Divisional Patent application, and these included an allegation of “*double patenting*”, which again relied on the fact that the 458 Patent had been revoked.

Daimler Award

142. The first of the RFQ processes to progress to completion was that relating to Daimler.
143. A “*Key Account Dashboard*” document from around July 2013 reads as follows:

“Diesel RFQ: BASF did not get the business award for OM 654/656 due 1 Million Euro difference over lifetime and a negative supplier ranking due to quality problems and a missing Resident engineer. We think business got awarded to JMI. Meetings with Daimler purchase, R&D and quality will be set up to review the quote and the supplier ranking.”

144. A formal feedback document reads as follows:

“Feedback on Quotation

Technical feedback

BASF keeps pace with the market – Technical release for the award on the basis of a competitive tender.

Commercial feedback:

- *Quotation for package just above competition level*
- *Ranking 2 for BASF in the supplier evaluation*
- *Deduction in the evaluation of tenders based on savings potentials only from 2016.”*

145. Accompanying graphs show a price comparison between BASF and the successful competition. The difference is approximately Euro 1m on total sales until 2019.

PSA and Umicore

146. Another potentially important customer for BASF was PSA, the owners of Peugeot, Citroen and other brands. Umicore also had a good relationship with them, and that presented a potential threat. Umicore did not, however, have a licence in respect of either the CuCHA Patents or the SCRoF Patents. In about June 2013, it approached BASF with a view to securing licences for both.
147. Mr Kumar discussed the matter internally with his colleagues, including Mr Gay and a senior Vice-President of BASF’s Catalyst Division, Mr Rui Goerck, but they agreed they did not want to licence SCRoFs to Umicore at that stage, because the SCRoF technology had not yet been commercialised and they thought that a licence at that stage might be detrimental to winning new business.
148. Discussions did commence, however, in relation to a possible licence for CuCHA.
149. Against that background, PSA’s RFQ for its DV Neo, DV5R, DW10 and DW12 platforms was issued in about August 2013.

VW Award

150. The results of the VW RFQ process were announced in September 2013, and again JMI won the majority of the spoils. Although BASF were awarded 7 of the 11 platforms covered by the RFQ, these were the lower values platforms. The exact percentage of value as between JMI and BASF is not entirely clear, but it appears that JMI won about 53% of the business in terms of value.
151. Mr Steinbock in his witness statement indicated that, unlike Daimler, VW do not provide formal feedback to suppliers. However, he summarised the informal feedback received. This included feedback gathered by Michael Thiele, the account manager for VW, to the effect that BASF’s technical performance was regarded as competitive, and that BASF had a good relationship with VW. Mr Steinbock said his overall impression was that BASF were regarded as being strong technically and competitive on pricing.

152. Pausing there, JMI won a significant portion of the business from these early RFQs. This was at a time when the 458 Patent had been revoked with no prospect of an appeal. The Divisional application was being pursued but had not yet been granted. That would not in fact happen until June 2015.

BASF Patent Strategy

153. At roughly the same time, from about July 2013 onwards, it seems that efforts came to be undertaken within BASF to assess whether a more focused patent strategy could be adopted. A number of documents from the time reflect the efforts being undertaken. Although he did not give evidence before me, it is clear that an important figure in this initiative was Mr Mike LoCascio. In September 2013 he produced a document entitled “*CC Intellectual property Strategy – Update.*” The document produced by BASF is a draft, but contains some important features. To some extent the document is in the form of a primer, designed to set out the rudiments of an effective IP strategy. It proceeds on the footing that BASF’s efforts to date had been inadequate. One early slide in the deck, for example, is headed: “*However, BASF hasn’t properly co-ordinated its IP activity: many issues that are being addressed.*” Among such matters, at no. 7 in the list, was: “*We do not coordinate IP between business, R&D, and counsel effectively.*” Other recommendations were made for overall process improvements.
154. One set of slides was expressly focused on “*Strategies to resolve Johnson Matthey Issues*”. These were concerned with the fact that there appeared to be “*strong evidence for JMI infringement on BASF ‘zoned catalyst’ IP ...*”. Among the goals identified were to make efforts to “*Ensure our ability to freely make and sell CU-CHA SCR emissions catalysts*”, and to “*Use IP to increase BASF market share by curtailing JMI/Umicore ability to make/sell.*” But among the effects to be avoided were “*Alienating or aggravating customer/potential customers (i.e. car companies) – They have concerns over monopoly in the supply chain and will tend to force x-licensing.*”
155. A further set of slides is headed “*JMI recommendation*”, and deals with the issue of JMI’s perceived infringements of the “*zoned catalyst*” IP, together with other related matters. Among the slides was a “*JMI Strategy roadmap.*” The “*preferred*” action was to “*Diplomatically Engage JMI*”, which was to involve the following steps:

- “- ‘*Soft*’ notification letter to JMI
- ‘*Soft*’ notification letter to JMI customers
- *Direct calls to JMI*
- *Negotiate licence.*”

Further Negotiations with Umicore

156. Meanwhile, discussions with Umicore were still progressing. At a meeting in New Jersey at the end of October 2013, Umicore again raised the question of SCRoFs, and said that it needed freedom to operate both in relation to CuCHA and SCRoFs. Although by that stage BASF had put forward proposed terms in relation to a CuCHA licence, the parties were not able to reach agreement on the key terms, in particular as to the proposed royalty rate.

157. In early November 2013, Mr Susterac of BASF, who was concerned with the PSA account, intervened to say he objected to the idea of licensing the CuCHA patents to Umicore. He was concerned that Umicore had a good relationship with PSA, and thought that with a licence they would be able to bid for the upcoming PSA awards of business. If there were no licence, however, BASF's chances of securing business from PSA would remain high.
158. In light of this, Mr Kumar prepared a slide deck for discussion dealing with the status of discussions with Umicore and the potential options. Among his slides was one headed as follows: "*BASF and JMI stand to gain significant revenues if Umicore does not have a license.*" This postulated a much greater market share for BASF in a market shared only with JMI, than in a market shared both with JMI and Umicore. The upshot was that BASF determined not to move from its original proposed CuCHA royalty rate, which Umicore had already expressed its unwillingness to accept following the meeting in October. Nonetheless, Mr Kumar was concerned about the implications of communicating a firm refusal, and so he agreed to continue the negotiations with Umicore in order to maintain the working commercial relationship that had been established.
159. Further discussions with Umicore thus continued in December 2013. Mr Kumar explained that BASF's position in relation to CuCHA had not changed, but he also made a proposal for a SCRoF licence. However, this was at what he accepted was an "*intentionally high*" royalty rate. Again, this was thought preferable to an outright rejection, and was thought to be a better strategy for maintaining an ongoing relationship with Umicore.
160. At the end of January 2014, Umicore responded with a counter-proposal for a CuCHA licence, and to say that the high royalty sought for SCRoF was not acceptable. Mr Kumar replied and rejected the counter-offer in relation to CuCHA.

Dr Howard's Advice on Res Judicata and Double-Patenting

161. While the Umicore negotiations were progressing, and after a delay of several months, Dr Howard provided his advice on the *res judicata* and double patenting issues to Ms Brown on 8 November 2013. The advice contained a warning that these were issues of substance.
162. Dr Howard then had a call with Ms Brown on 14 November 2013. He was cross-examined about this discussion on the basis of his own handwritten notes. These refer to him acknowledging a possible conflict of interest. They also show that during the call he asked Ms Brown for information about the commercial background to, and context of, the Divisional Patent. The notes included the points, "*What is happening with (a) commercial position, (b) re-examination of US cases*". In cross-examination, Dr Howard expanded on these entries:

"I'm not sure -- well, I was not fully aware of what the commercial position was, which is why I raised it and I noted it down for discussion in my aide memoire for the conduct of the hearing. What I wanted to achieve from this telephone conversation was a discussion of the patentability issues. In particular, in relation to inventive step, I wanted to explore

possible amendments and arguments that would give us a different angle, a new angle with which to argue that, and part of exploring whether there were amendments that we could make was understanding and getting to -- getting an understanding of the commercial position. At that stage I had -- I didn't know what the commercial objective of the patent was. In broad terms, of course, a patent -- you want to get a patent which is as broad as possible, but when your back is to the wall, when you are facing serious objections of lack of inventive step, then it is necessary to start looking at whether there are possible amendments. In order to do that, then you need to have an idea of what the commercial objective of the patent is. Is it to protect the client's own product? Is it to try and encompass a competitor's product? That is critical information if I was to contribute to how to overcome and argue the objections, serious objections, of lack of inventive step, but at that stage I didn't have that information."

163. The cross-examination continued:

Q. And you appreciate, I suggest, that this relates to one of the leading current technologies for, if not the largest, a very large catalyst manufacturer, and you are being told that the first awards of business are going out now. That is what you are being told by Melanie Brown. The first commercial product.

A. The commercial information that Melanie Brown provided, in the first instance it was provided at my request. This was not information that was volunteered by her. I wanted to know what the commercial position was to assist me in identifying whether there were any potential claim amendments, arguments that we could make, and understanding the client's commercial position. What Melanie provided in response to my direct question for information was these comments and these comments alone, and those comments represent a very broad overview of what the position was. What I was seeking was information that would actually help me in prosecuting the application. In this case there was no information about whether the patent -- there was no information about the products themselves. No technical information. I didn't know what the products were. There was no information about whether those products fell within the scope of the patent. There was no information about, if they did fall within the scope of the patent, which claims they fell within the scope of. So this information was contributed at my request at a very broad overview and it gave me only that very broad overview ...".

164. Mr Servilla provided possible amendments to the Divisional application on 4 December 2013. Dr Howard began work on a draft submission and amended claims.

165. Shortly after this, in December 2013, Ford issued an RFQ for its “*Panther Phase I*” platform. This fell into two parts: “*LDT 3*” and “*Passcar*.” Both JMI and BASF were bidders, along with Umicore.

PSA Award to Umicore

166. At about the same time, and while its licence discussions with BASF Corp were ongoing, Umicore succeeded in its bids to supply the SCRoF component to certain PSA platforms.
167. This was a matter of concern within BASF. The upshot was that Mr Cameron, who had responsibility for the PSA account, organised a meeting with PSA which took place on 25 February 2014.
168. Mr Cameron’s evidence is that at that meeting he informed PSA that Umicore did not have the ability to offer a SCRoF product containing copper chabazite without infringing BASF’s CuCHA patent. After a period of further negotiations, the result was that PSA removed Umicore from the business and reopened the award to further bids from BASF and JMI, and ultimately JMI – which had been granted its CuCHA Licence in February 2013 – won the business.
169. Mr Cameron relied on this episode as justifying the conclusion that “*Renault-Nissan and PSA will not award business to a supplier which does not have freedom to operate and cannot offer their products without infringing a third party’s intellectual property rights.*”
170. Mr Cameron explained in cross-examination that at the time:

“The main patent we were concerned with was the copper chabazite patent, and that was really the only one where I had any implication, and we discussed the PSA where we discussed that. But the SCR on filter patent, the one concerning – that concerns this litigation, I really was only aware of that specifically when this litigation process started, and I was asked to make statements and so on.”

171. He also said:

“Actually, as salespeople we don’t talk very often about patents, because we are making deals for new business, and we are – so the only time that I have ever talked to a customer about a patent was what we have up there on PSA. That was the only time in my over twenty years in this business that we ever went to a customer to talk about this, because we felt that Umicore was violating our IP.”

Mr LoCascio’s Strategy Document

172. It appears that in the Spring of 2014, Mr LoCascio was commissioned to propose a new IP strategy. I was referred to a draft paper dated April 2014 headed “*IP Strategy: CuCHA Selective Catalytic Reduction & Selective Catalytic Reduction on Filter.*”

173. This document noted that JMI already had a licence for CuCHA, and that Umicore had no licence. As regards JMI, however, it went on to note that JMI were infringing what was described as “*architecture IP*”. The document proposed as one possibility taking enforcement action in the US based on infringements related to BASF’s “‘zoned’ SCR + AMOX” technology. As to this, the draft indicated that the likely outcome would be a settlement out of court based on a royalty agreement. As regards Umicore, the document recommended against granting any licence or licences to Umicore. This was because it appeared better strategically to limit the market to two main competitors and not open it up to a third.
174. The document also contained a number of more general comments and proposals about the organisation of BASF’s IP processes internally. Among the points made was the suggestion that competitors’ IP should be reviewed more systematically and if appropriate challenged. The document concluded with the following comments:

“BASF is an ethical company that does not purposefully make/sell products that read on VALID ISSUED claims. However, it should be noted that claims in applications are often rejected or abridged during prosecution. Moreover, the unfortunate reality is that oftentimes patents with invalid claims to (sic.) indeed issue. A thorough invalidity search will be conducted should BASF become aware of newly published competitive IP that inhibits freedom of action. The company should not refrain from commercializing product that reads on claims that are deemed invalid pursuant to the opinion of external counsel. Appealing the USPTO or other patent offices for reexamine should be made on a case by case basis.”

Negotiations with Umicore Conclude

175. On 2 June 2014, Umicore made a further attempt to progress negotiating a licence for the CuCHA patent family, but in an email dated 9 July 2014 Mr Kumar refused that request, and said that BASF did not see value in pursuing their discussion further. A final meeting with Umicore took place on 18 July 2014, at which Mr Kumar made it clear that BASF were no longer prepared to licence CuCHA to Umicore at all.

Ford Awards

176. As to the Ford Panther platform, in the event both parts of the award (LDT3 and Passcar) went to JMI in about June 2014. Like Daimler, Ford provided a formal feedback document. This showed that:
- i) BASF performed better than the competitors (it appears JMI and Umicore) in technical tests for the Passcar or passenger vehicle part of the award (25% of the platform). However –
 - ii) BASF performed less well than the competitors on the more important LDT3 aspect, which accounted for 75% of the platform (“*BASF had noticeably worse HC and CO oxidation performance*”).
177. The overall conclusions are expressed as follows:

“There was no clear winner technology-wise

- *A crucially ahead with the DOC/LDT3 systems*
- *It was decided not to split the business*
- *The way the benchmark was structured meant all systems were equal cost*
- *BASF were the worst performing in terms of sample delivery etc. Suppliers A & B were on time.*
- *Past performance on QC/PPAP were considered*
 - *Supplier health chart*
 - *Benchmark to production variation.”*

178. According to Mr Birri’s evidence, there was an award at about the same time in relation to a further Ford platform, the DV Neo platform. This platform was also awarded to JMI. Mr Birri’s evidence on this was as follows:

“It is my understanding from my colleagues at BASF and from my conversations with Ford as the Ford account manager, that the DV Neo was also awarded to JMI on the basis that JMI’s SCRoF performance was marginally better than the performance of BASF’s SCRoF ... [However] ... it is my understanding ... that the difference between the performance of JMI’s SCRoF product and BASF’s SCRoF product was not significant and that the performance of the technologies was broadly equivalent.”

Progress on the Divisional

179. In the meantime, progress in relation to the Divisional application was slow. Ms Brown sent chasers on 7 January 2014, 22 April 2014 and 27 May 2014. The tone of these is notable:

- i) 7 January: *“Dear Paul, Happy New Year! What is the status of the draft submission and amended claims?”*
- ii) 22 April: *“Dear Paul, Please send your draft on this to us for review.”*
- iii) 27 May: *“Dear Paul, Please advise on the status of this matter.”*

180. Dr Howard eventually provided a draft set of submissions on 4 June 2014.

181. There was a discussion by telephone the following day, after which Ms Brown emailed (amongst others) Mr Kumar and Mr LoCascio and said:

“Scott and I just had a call with our EP patent counsel Paul Howard on this case. In April 2013, Umicore filed observations

and in June 2013, JMI filed observations against our application. We agreed a response path with several action items ... While the European Examiner has not picked up the case so there is no set response time, my recommendation is that after these action items are completed and we are in agreement on our draft response with slightly amended claims, that we file it with the European Patent Office. Our target filing date is end of July 2014. This will send a clear message to JMI and Umicore that BASF is confident in its position and we can brief the European sales folks accordingly. Ideally we would have filed our response already. Do you support this approach? If we do not proactively file now and instead wait for a European Office Action, JMI or Umicore may tell customers that this is a sign of weakness in BASF's case."

182. Comments were then provided and further drafting undertaken, and the submissions were eventually filed on 6 August 2014.

Other RFQs

183. I should mention at this point that I have included in the above narrative specific reference to the RFQ processes conducted by Daimler, VW and Ford in 2013, since they are the competitions which have particular prominence in the case advanced by the Claimants. But of course they were not the only competitions for SCRoF products going on during this period. Demand for SCRoF products was growing quickly, in particular in the European LDD market. Figures produced by the Claimants show the market growing substantially in the period 2014 to 2020. At the same time, however, the figures show BASF's market share falling. I will say more about the Claimants' formulation of their case on quantum below. Their basic complaint however is that Carpmaels' negligence deprived them of the opportunity of competing for a larger market share with the benefit of a valid patent.

US Litigation: JMI Requests a SCRoF Licence

184. In about August 2014, BASF Corp initiated a patent infringement lawsuit in the US against JMI related to SCR+AMOX technology, together with a patent interference against JMI related to emission systems using both SCR and LNT (lean NOx traps).
185. In the course of the interference proceedings, Chris Bennett of JMI indicated that JMI would be prepared to settle the interference action if BASF granted a licence of its SCRoF patents to JMI.
186. In August 2014 Mr Kumar refused that request. He explains the decision in his Witness Statement for trial. He says he had discussions with Mike LoCascio, Ms Brown, and either Marc Ehrhardt or Rui Goerck, and that (emphasis added):

"[f]ollowing these discussions, we agreed that firstly, it would not be beneficial for BASF to combine the settlement discussions with licence negotiations and secondly, that BASF's position in relation to licensing SCRoF had not changed since JMI's first request for a licence of SCRoF in 2012. I therefore informed

Chris Bennett that BASF was not interested in licensing SCRoF to JMI.”

Mr Kumar Engages with Audi

187. Shortly after this, a delicate situation arose with Audi. According to an email from Mr Kumar dated 13 October 2014, Audi had by that date selected a Umicore SCRoF for the US market, and had then realised that Umicore did not have freedom to operate. Again according to the email, Audi were pushing for BASF to grant a licence. Mr Kumar was despatched to meet Audi and to “*be the bad guy from BASF.*” In his later email of 16 October 2014 reporting on the meeting, Mr Kumar said it had been a “[*t]ense situation.*” Audi had asked for a licence, “*or they end up with stopping production and launch of their vehicle.*” In his email Mr Kumar described his response to Audi:

“We will not sue Audi nor so (sic) we intend to stop their production.

However, we will not give a licence in such a critical IP when the technology is not commercialized yet.

If Audi goes into production with UMC product, there are two potential outcomes 1) We will turn a blind eye and let UMC carry on 2) We sue UMC for violating our patent.

Option 1) is highly unlikely. If we sue UMC, they will spend a lot of money and we spend a lot of money – and we will take UMC to the cleaners.

Audi understands our position, we understand theirs. Tension diffused – they took us to lunch.”

188. Mr Kumar was accompanied to the meeting by Mr Torsten Mueller-Stach of BASF. His notes recorded the same basic points, but also referred to an indication from Audi that they would possibly refer some alternative business to BASF:

“Audi will try to release BASF for the complete exhaust system for next possible SOP (Q3 2016) for EA 898 V6 gen3 applications (22.6 mio Euro MFC/yr) if BASF can demonstrate to have a competitive product.”

189. When he came to receive the reports of the meeting, Mr Marc Erhardt of BASF Corp was very upset. He felt that Mr Kumar and Mr Mueller Stach had gone too far in offering their assurance that Audi would not be sued. He thought that the highly qualified indication of more business from Audi was a missed opportunity. He described it in his own email of 16 October 2014 as “*simply unacceptable.*” He went on, “*To be clear, I have no interest in suing a customer but we have left a great leverage opportunity on the table.*”

190. According to his email of 3 November 2014 to Mr Steinbock and others, Mr Kumar was thus asked to look into what it would take for BASF to secure SCRoF business at

Audi, given the US patent situation. In his email of 11 November, Dr Moenkeberg thought that the answer had to include improved technology. He said:

“In order to set through BASF’s IP our action must be smart. Audi understood that they respectively Umicore has no FTO. This card has been played thus Audi will support any effort from us to improve and help BASF to be qualified for a release.

To remind Audi on that could be needed during the next month, however to put more pressure on VW/Audi at this point of time is not helping. If we continue to support them with our strong IP position in the back and a competitive technology in hand – hopefully soon – we will gain back market share fast.”

191. A further email of 12 November spelled out Mr Ehrhardt’s objective more specifically: *“His specific request was to develop a “proposal on how to secure a contractually binding commitment from Audi to shift to our product by MY 2016 ...”.*
192. Following further discussions on an “Action Plan”, a further meeting with Audi was organised, in advance of which a set of speaking notes was prepared by Mr Kumar. These were in the form of a Q&A. These “Talking points” are revealing. They reflect the central difficulty in seeking to leverage IP rights in order to gain market share, namely that Audi, like other OEMs, did not wish to be pressurised in making their sourcing decisions. One line of questions and responses, for example, involved seeking to shift responsibility for any adverse consequences to Umicore:

“BASF: ... it was and is illegal for Umicore to offer Cu-CHA and SCRoF technologies for sale to Audi, without a freedom to operate. Therefore, they are putting Audi at risk. Our intention is not to stop Audi’s production, but this may be the outcome if the status quo continues and Umicore goes in to production with this technology. What are Audi’s thoughts?

Audi: Will BASF give Umicore a temporary licence to prevent Audi from shutting down?

BASF: We will consider giving a limited license, if Audi can guarantee that you will shift sourcing to BASF from 2016 or earlier.

Audi: If you bring us technology that meets our requirement, we will consider shifting production to BASF for the future. We cannot guarantee that we will change sourcing to you”

193. The other concern was that Audi would respond by simply moving production to JMI. The “Talking points” here made the observation that JMI had a licence for CuCHA but not SCRoF, and said that although there had been a discussion with JMI about a licence for SCRoF the negotiations had broken down. Thus, the best on offer was the possibility of a limited licence to Umicore. The notes continued:

“Audi: You are putting us in a difficult position.

BASF: Sorry, but it is your other supplier that has put you in a difficult position – we are trying to help you find a solution – both legally and technically.

Audi: We cannot guarantee that we will shift production to BASF, if you cannot guarantee that you will meet our technical requirements.”

194. The further meeting with Audi took place on 13 January 2015. The proposal of a limited licence met with a cold response. In his email to Mr Moenkeberg setting out a summary of the meeting, Mr Kumar included some “key takeaways”, also reflected as a series of exchanges with Audi:

“BASF: Our competitor is knowingly violating the law by selling Audi a product that they do not have freedom to operate.

Audi: We understand your position, what will you do?

BASF: We will have to sue Umicore and bring an injunction against them – which means they will have to stop production.

Audi: If your product performance still does not meet our requirement and if BASF forces our production to stop then we will have to look at other solutions.

BASF: What do that mean?

Audi: 1) technical solution that uses some other product or 2) Strategic solution – we give you the SCRF business, but take away everything else DOC, CSF, TWC, LNT etc., and no further cooperation with BASF. And no further technical knowledge sharing with BASF.

BASF: We understand, but this will have to be discussed at a higher level on both sides after escalation.”

JMI Further SCRoF Licence Request

195. It appears there was a further approach for a SCRoF licence by JMI in early 2015, again in the context of the pending interference action, because it is referred to in the IP Committee Minutes of 13 January 2015 (“*JMI will not settle unless an SCRF licence is included*”), but again, there is nothing to suggest that BASF positively engaged with that approach.

The Divisional Patent: JMI Again Request a Licence for SCRoF

196. The Divisional Patent was granted on 2 June 2015. Very shortly afterwards, on 4 June 2015, BASF received a letter from JMI inviting agreement on a licence for BASF’s patents in relation to SCRoF technology.

197. That letter came from Mr John Walker, who had earlier attended the meeting on cross-licensing with BASF in November 2011. The letter made the following points, among others:

“Johnson Matthey respects the validly granted intellectual property rights of others. In the case of the Patent Family [which included the Divisional Patent], it is our genuinely held belief that the granted patents are invalid. However, in an effort to avoid a legal dispute, Johnson Matthey would be willing to take a licence under the Patent Family on appropriate terms as has already been indicated to BASF on several occasions.

We believe that the technology protected by the Patent Family is an obstacle to ensure compliance with the new Euro 6c standard for emissions on light duty diesel engines (‘LDD’) that will be implemented in 2017. Furthermore, we also believe that the scope of the Patent Family is such that for all practical purposes it is impossible to offer an alternative competing system without falling within the Patent Family.”

198. The letter then made the point that the intended grant of the Divisional Patent was likely to result in BASF being in a dominant position in the worldwide market for systems which meet the standards set by Euro 6c, and that consequently, refusal to grant a licence was likely to be regarded as an abuse of that dominant position. The letter included draft Heads of Terms including a proposed license royalty rate.

The two-step licence strategy for SCRoFs

199. Receipt of the letter prompted a flurry of internal activity within BASF. The letter raised a difficult issue, however. BASF’s interest was not in obtaining licensing income. Instead it was to use its patents to try and gain market share. The difficulty was how to do so while at the same time respecting the interests of their customers (the OEMs) in having access to more than one supplier.
200. An idea developed. This was the possibility of granting a licence not to JMI but instead to VW, but with royalties payable on a sliding scale, and reducing if the volume of orders placed with the BASF Group increased.
201. On about 3 July 2015, Mr Horstman of BASF and a colleague attended a meeting with VW. They explained the concept of a licence agreement incorporating a supply-share dependent royalty fee level. Mr Hortsman reported in an email to his BASF colleagues. His summary of VW’s “*First reaction*” included the following points:

“VW tries to stay out of IP and patent related topics. Therefore they ask for a freedom to operate statement from their suppliers.

...

They will not accept any restrictions in their final procurement decisions.

...”

202. The email continued:

“Besides the facts you can imagine that VW is not amused about this discussion at all. The beginning of the discussion was rather difficult and the non-verbal communication of Mr Grauman was clear.

...

They stressed the point that we have to convince on a technical and commercial side and we still have to improve.”

203. A “war game” meeting was arranged. A Strategy Update document from 23 July 2015 sets the scene, and explains the commercial factors in play. It describes a proposed “SCRoF Licensing Strategic Approach”, which is in two parts: “(1) Use near-term IP leverage to incentivize VW to award higher share of open business to CC, (2) Licence technology to JMI to enable alternate source of supply.”

204. In about September 2015, a pack of documents was put together for the Board of BASF. One overview document included the following summary of the “Commercialization Strategy”:

“G-CCE seeks to extend a license using a two-step approach whereby G-CCE will first engage VW directly (other OEMs will be considered depending on their overall SCRoF sourcing strategy) followed by a second engagement with JMI.

The proposed strategy was developed accounting for a number of considerations:

- 1) Winning new business is more attractive than simply exacting a royalty.*
- 2) It maintains a good working relationship with VW. While a single sourcing scenario is not in their interests, VW is seeking to secure its own FTO in the use of SCRoF technology. OEMs will not rely on a single supplier of key technology. As such, at least 2 catalyst suppliers are required for any given technology to be adopted broadly.*
- 3) BASF has made VW purchasing and legal aware that the awards given to JMI are now out of compliance given the recent patents granted in the EU.”*

205. A further document in the same pack explained as follows:

“Although BASF has a superior IP position in SCRoF technology, performance of our offering is only second best after JMI, resulting in mediocre market positioning. Licensing of our

IP provides ability to utilize our technology in the best possible manner.

206. A further document emphasised the problem of BASF's dwindling market share:

“Over the past several years, CCE's competitor Johnson Matthey (JMI) has secured business by infringing on BASF's patented SCRoF technology. Currently, JMI has approximately 84% of the SCRoF market in Europe and the remaining 16% market share resides with BASF.”

207. The documents were realistic enough to recognise that the options were limited. Under the heading “*Alternative Options*”, three were identified. The first was “*Take no action*” (which was not recommended), the third was “*Engage in licensing with all interested counterparties*” (which was recommended), and the second was as follows:

*“2) **File injunction or otherwise attempt to minimize competition in SCRoF market:** Relations with VW (and OEMs) would be severely damaged likely resulting in loss of business outside of SCRoF. Although SCRoF sales may improve in the short term, the SCRoF market may not expand to its potential because of limited suppliers and instead migrate to an alternate technology. In addition OEMs and competitors may retaliate by instituting anti-trust/anti-competition litigation. Furthermore, JMI's IPR actions against the SCRoF EH4919 portfolio would continue. Should those actions prevail, the SCRoF patent position could be weakened and that, coupled with poor customer relations, would have adverse consequences to future sales.”*

208. Under the heading “*Other risks*” the following was mentioned at point 1):

*“1) **Negotiation Repercussions:** Perception of overleveraging BASF's IP position to gain share at OEMs could adversely affect the customer relationship and put future business development at risk.”*

209. The target rates proposed for negotiating purposes with VW were as follows:

<u>BASF Catalyst Supply Share (%)</u>	<u>Royalty rate (% of Full SCRoF System Cost)</u>
< 30%	8
>30% and <50%	4
> 50% and < 70%	0.5
> 70%	0

Negotiations with VW fail to progress: discussions open up with Umicore and JMI

210. In the event, by early 2016, VW had rejected BASF's suggestion that it enter into a licence.

211. VW preferred to leave the question of licences to be dealt with as between the suppliers. Details are sparse but a slide headed "*Update Licence Negotiation*" states as follows:

"VW is informed that BASF tries to find a solution within the supplier base (JMI, Umicore)

Negotiations with VW are put on hold as long as the negotiations with Umicore and JMI are ongoing (expected to end by Summer 16)

VW appreciates this path forward as this was their request from the very beginning ('... you have to solve this within the industry, don't bother us')."

212. The focus shifted to negotiations with JMI. Negotiations also opened up with Umicore, which in the meantime had initiated challenges to both the SCRoF and CuCHA patents in the United States by means of Inter-Partes Reviews ("*IPRs*"). BASF's internal assessment was that the chances of successfully defending the CuCHA IPRs were "*medium*", but the chances of successfully defending the SCRoF IPRs were "*low*".

JMI is Awarded SCRoF Business After the Grant of the Divisional Patent

213. An interesting feature of this period is that, despite it not having a licence for the SCRoF technology, JMI was awarded business by a number of OEMs after the grant of the Divisional Patent but before any licence was eventually agreed with BASF Corp. For example:

- i) Daimler awarded one platform to JMI (OM651 VS20) in October 2015.
- ii) Ford awarded three platforms to JMI in August and November 2015 (DV Neo LP EGR, DV Neo HP EGR and Panther Passenger Car HP EGR); and then a further two platforms (Panther CV Transit Euro 6d Temp and Panther T6 (Ranger + Everest) EU 6c) in May 2016.
- iii) VW awarded one platform to JMI in September 2016 (EA 288 1.6L-2.0L MQB-A1).

BASF Continuing Concerns over Market Share

214. Internal BASF documents from this period show increasing concern over its stagnant market share. The documents reveal serious concerns over performance of the BASF products. The following examples suffice:

- i) Mr Wiles' email to Mr Horstmann and others of 2 June 2016, reporting on the recent Ford competition, in which he said:

“Ford is moving forward with JMI on the Panther based on our technical performance in the benchmark. We fought long and hard on many levels from EU to NA to challenge the recommendation but in today’s climate they are unwilling to risk recommending what they consider an inferior system.”

- ii) Mr Arendoski’s email of 16 June 2016 to the “CCE LT members” to update them that “John Deere has requested BASF to stop working on SCRoF for them as we have been deemed as too far behind JMI”, which prompted a reply from Mr Horstmann on the same day as follows:

“First response: This is in line with what is happening with SCRoF technology for LDD in Europe.

We have lost most of the SCRoF competitions in Europe and I start believing that we have a substantial issue with the Zeolithe material we are using.

It is very critical and for Europe we already have a severe business downturn ahead of us.”

- iii) Mr Neubauer’s slide deck of August 2016 in which he recommended establishment of a “Task Force: SCRoF LDD”. His “Case for Action” included the following points:

“SCRoF catalyst technology is not meeting performance targets of customers

SCRoF catalyst technology is seen as competitive at best, lagging especially for NOx conversion under high temperature conditions and higher space velocities.”

- iv) Mr Cameron’s email to Olivia Schmidt dated 3 October 2016, setting out “some key items that came to my mind quickly” for possible discussion at the November 2016 CCE Global Key Account Conference. These included:

“Pressures on profitability for European diesel products – JMI with a better, cheaper SCRoF.”

SCRoF Licence with Umicore

215. Meanwhile, on 31 July 2016, agreement was reached with Umicore for a licence of the SCRoF patent family. The contracting party within the BASF Group was BASF Corp. According to Ms Schmidt the timing was driven by desire to avoid Umicore’s challenge to the SCRoF patents in the US by means of its IPRs. As part of the overall settlement, Umicore agreed to withdraw its IPRs and objections to the Divisional Patent.

SCRoF Licence with JMI

216. Agreement in principle for a SCRoF licence was reached with JMI in August 2016. Again, the BASF contracting party was BASF Corp. The royalty rate settled on was that originally proposed by JMI in Mr Walker’s June 2015 letter. JMI were to be entitled

to continue with its existing challenges to the SCRoF Patents, including the then pending challenge in Europe to the Divisional Patent, but it agreed not to initiate any new challenges. Mr Gay could not recall that ever happening before. JMI made a lump sum payment as compensation for past sales from 2015 to the effective date of the licence.

217. It took a little while for the JMI SCRoF licence agreement to be formally documented, but this happened eventually on 1 October 2016. Again, the contracting party for the BASF Group was BASF Corp.

BASF continues to face challenges with its SCRoF products

218. Performance of its SCRoF products continued to be a challenge to BASF. Again, the following examples suffice:

- i) The internal email from Mr Peter Walther of BASF to Mr Torsten Neubauer dated 4 March 2017, in which he said:

“Hi Torsten,

Indeed nobody will argue that SCRoF will remain our key challenge and focus. Do you have any feedback-based feeling or estimation based on improvement vs. our own reference catalysts how much we have been able to close the gap to competition? Is this still ‘worlds apart’ (which would be strange given technical release at VW – certainly based on strong LNT performance but still the SCR part has to deliver something ...) or are we trailing JMI more closely now?”

- ii) A slide deck from as late as January 2018, headed “*CCE RSC LDD Meeting – Spotlighting SCRoF EMEA*”, which at slide 13 gave an overview of the “*SCRoF situation since end of 2014*”. This conceded that JMI had been able to develop “*based on Cu-CHA based (licence from BASF) better performing SCRoF technology*”, and that “*BASF had not been able to close the gap.*” The summary given is:

“JMI has been leading with SCRoF performance, even Umicore closed the gap.”

JMI’s Challenge to the Divisional Patent

219. The Divisional Patent was successfully challenged by JMI in the OD. The written reasons of the OD are dated 22 December 2017. Before the OD, BASF Corp advanced the case that the problem to be solved was reducing the size of the exhaust system. The OD considered that, even assuming that was the correct characterisation of the problem to be solved, there was no inventive step (see p. 15) because (1) the idea of disposing an SCR catalyst composition on a wall flow filter in a manner that would save space was disclosed by the prior art (referred to as document D3 – the same JMI patent referred to as document E6 in the 458 Patent proceedings), and (2) as to selection of an appropriate filter, document D2 (D16 in the 458 Patent proceedings) provided the skilled person “*with the clear technical teaching that high amounts of catalyst can be*

loaded in wall flow filters that have a porosity of >50% and an average pore size of >5 microns”, and “the skilled person would therefore obviously apply the teaching of D2 to further reduce the size of the exhaust system.”

220. BASF Corp appealed to the TBA. The TBA rendered two Preliminary Opinions before BASF Corp’s appeal was withdrawn by consent, at a hearing in December 2020:
- i) The first Preliminary Opinion is dated 29 October 2019. BASF Corp advanced a different formulation of the problem to be solved. This was to “*minimise the size of the system without loss in efficiency.*” The TBA said: “*At present the board is not convinced that the problem is solved over the whole range claimed.*” Here, Catalyst B1 presented a problem, because it “*is apparently encompassed in claim 1*”, and “[*t*]here appears to be no feature of claim 1 that would allow to exclude Catalyst B1 from the scope of the claim.” At the same time, Catalyst B1 plainly did not “*solve the posed problem.*”
 - ii) The second Preliminary Opinion is dated 26 March 2020. This dealt with certain arguments advanced by BASF Corp to the effect that Catalyst B1 did not in fact fall within the scope of claim 1 of the Patent. The TBA was not persuaded by those arguments because (amongst other things): “*... claim 1 does not provide any process features and pressure drop parameters ... The patent does not contain any indication that catalyst B1 is supposed to be comparative and not according to claim 1 ... Paragraph [0063] does not indicate that catalysts A1 and A2 are the only embodiments according to the invention.*”

VI The Claimants’ case at trial

221. The Claimants’ case as eventually advanced in their written and oral closing arguments was in summary as follows.
222. To start with, their primary position was that Carpmaels owed a duty of care to the First Claimant, BASF Corp, that BASF Corp was entitled to recover the assessed value of the lost 458 Patent as the owner of the patent, without regard to which company, precisely, would or might have received the ultimate benefit from the patent. As the Claimants put it, that is because a proper assessment of the value of the patent requires an assessment of the economic value to BASF Corp as the patent holder within the BASF Group of companies.
223. Carpmaels of course did not dispute that it owed a duty of care to the patent holder, BASF Corp. Carpmaels did dispute however that any duty was owed to the Second to Fourth Claimants. The Claimants argued, in the alternative to their primary case, that Carpmaels did owe a duty of care to the Second to Fourth Claimants, arising either in contract or tort.
224. The Claimants’ case on loss is best understood by comparing what did happen following revocation of the 458 Patent with what they say would have happened had an appeal been lodged and had the 458 Patent not been definitively revoked in July 2012.
225. As to what did in fact happen, the Claimants broadly say the following:

- i) BASF Corp was the holder of the 458 Patent until the date of breach in July 2012. It was a thing of value. The effect of Carpmaels' breach was that it was irretrievably lost.
- ii) This happened at a critical time. The market for SCRoFs in Europe was not yet commercialised. It was still at a relatively early stage and OEMs had not yet awarded business or commenced the commercial production of relevant vehicles. The consequence of this was that BASF Corp still had available to it the opportunity to exploit the 458 Patent.
- iii) Once awards of business were made and in particular as the OEMs reached the stage of commercial production, the options for the commercial exploitation of the Patent would become more limited. That is because, in practice, OEMs would not tolerate interruption to their commercial production of vehicles. Thus, there was a point in time which was optimal in terms of the potential to exploit the 458 Patent, and that point in time was in the period following its revocation but before the eventual grant of the Divisional Patent in June 2015.
- iv) The significance of the 458 Patent during this period can be gauged in a number of ways. These include the facts that:
 - a) JMI had asked for a licence for the SCRoF portfolio in 2011, in the context of discussions over the CuCHA portfolio.
 - b) JMI were monitoring the progress of the 458 Patent and had challenged it.
 - c) JMI were surprised and pleased when the appeal deadline was missed in relation to the OD's decision, and likely told their OEM customers about it.
- v) Thus, what the Claimants lost was the opportunity to exploit a valid and effective 458 Patent during the critical period between early 2013 and mid-2015. More specifically, they lost the opportunity to exploit it in the early awards of business by the OEMs.
- vi) Critically, those early awards included the following, referred to collectively as the "*Three Platforms*":
 - a) The award by Daimler in the Summer of 2013, following its RFQ of March 2013, which went entirely to JMI.
 - b) The award by VW in September 2013, following its RFQ of early 2013, which was allocated 53% to JMI and 47% to the BASF Group.
 - c) The award made by Ford in June 2014, which was allocated entirely to JMI (as I understand the Claimants' case, the award in relation to the DV Neo platform – see [178] above – was not technically one of the Three Platforms, but nonetheless formed part of the lost profits claim: see [226(iv)(e)] below).

- vii) The prosecution of the Divisional Patent was slow and this was again Carpmaels' responsibility because they prioritised the attempt to recover the 458 Patent in a manner designed to cover their own embarrassment, and then even when the 458 Patent was finally lost in January 2013, Carpmaels dawdled over advancing the Divisional Patent, including most particularly by means of Dr Howard failing to give advice on Umicore's and JMI's *res judicata* and double-patenting arguments for about six months, between April and November 2013.
- viii) Licences of the SCRoF patent family only emerged much later, once the Divisional had been granted in June 2015. By then, the commercial environment had moved on. Many awards of business had been made to competitors, vehicles were in production or close to it, and so the ability to drive a hard bargain in terms of the agreed royalty rate was diminished. Accordingly, although a licence was eventually agreed with JMI in 2016, it was on much less favourable terms than might have been agreed at an earlier stage had the 458 Patent remained in force. BASF Corp was deprived of the opportunity of negotiating a licence with JMI at an earlier stage with the benefit of the 458 Patent behind it.

226. As to what *would* have happened, the Claimants said broadly the following:

- i) Had an appeal against the OD decision been lodged, that would automatically have had the effect of extending the life of the 458 Patent pending the hearing of the appeal.
- ii) Thus, in the counterfactual, the BASF Group would have been able to compete in the early RFQs by Daimler, VW and Ford with the benefit of a subsisting 458 Patent. Had there been a subsisting patent, they would have had a chance of doing better in the Daimler, VW and Ford RFQs. The result of Carpmaels' negligence was that they lost that chance.
- iii) The lost opportunity was a real one. That is because of the respect other suppliers and the OEMs had for IP rights. Both JMI and the OEMs would have been aware of Patent 458. This would have been significant. OEMs would not have wanted to act in breach of established IP rights, and would have been concerned about the potential for disruption, and JMI would have been concerned about the risk of enforcement action and would not have been able to claim freedom to operate – *FTO*.
- iv) This combination of factors would have led to a different commercial landscape, and with it the chance of different and more successful outcomes for the BASF Group. More particularly, looking at the initial awards of business by the OEMs, the Claimants asserted:
 - a) They would have had a 75% chance of winning the entire Daimler award, in place of JMI. The Daimler award was close anyway; they had a good relationship with Daimler; and the difference between BASF and JMI as described in the feedback was mainly a relatively small difference in price. Had the 458 Patent remained in existence, it would very likely have swung the entirety of the award in the BASF Group's favour, either because JMI would have needed to pay a licence fee to BASF which

would have driven up its pricing, or because in a marginal case Daimler would likely have wished to award the business to the inventor and holder of the patent. The initial award of business was worth some US\$50m, plus a “*facelift*” award in 2019 of US\$58m. Total: US\$81,000,000 (0.75 x US\$108,000,000).

- b) BASF Group would have had a 50% chance of winning more of the VW business (it won only 47%, with the remaining 53% going to JMI). The Claimants submitted they could have won an additional 28% of such business, which was worth upwards of US\$62,339,662. They claim loss of a 50% chance of winning an additional US\$62,339,662. Total: US\$31,169,811 (0.5 x US\$62,339,622).
- c) Because, in this scenario, VW would have split its award (as it actually did in any event – see above), the VW award would have led to the commencement of negotiations for a licence for the SCRoF patent family. However, given the respective negotiating positions of the parties at the time, when the commercial dynamics would have been quite different to those in 2015/2016, it is very likely that different and more favourable royalty rates (to BASF) would have been agreed.
- d) Further, the BASF Group would have had a better chance of winning at least some of the Ford business from its RFQs for the Panther and DV Neo platforms, not only in light of Ford’s general respect for IP rights and innovation, but also because BASF’s technology was comparable to JMI’s and because the requirement to pay a licence fee would have made JMI less competitive on price. The Claimants put the lost opportunity at 50%. The Panther and DV Neo platforms were worth in the region of US\$36,000,000. Total: US\$18,000,000 (0.5 US\$36,000,000).
- e) These wins would in turn have placed BASF in a better position to win later business awards from Daimler, VW, Ford and other OEMs which also went to JMI. In terms of their claims for those lost opportunities, however, the Claimants’ case in their Written Closing was that they were content, given the complexities otherwise, for such opportunities to be subsumed into improved licence calculations (see (c) above).
- v) The analysis to this point involves looking at events in the counterfactual in the period up to early 2015, i.e. during the period when, had an appeal been progressing, the revocation of Patent 458 would have been suspended. As already noted above, the Claimants also submitted that to the extent necessary, the Court should also go on and consider the actual prospects of the lost appeal in fact succeeding, and the potential impact of that on awards of business and possible licence negotiations in periods after the hearing of the appeal.

VII Patent Validity

227. It is appropriate at this stage to comment on the main arguments relevant to the validity of the 458 Patent. These points are relevant in two senses in the analysis which follows. First, as the Claimants accept, the perception of the strength of the 458 Patent among market participants, and within JMI in particular, is a factor in the assessment of how

such parties are likely to have behaved in the counterfactual, in the period between July 2012 and early 2015, when the appeal in the 458 proceedings is likely to have been heard.

228. Second, arguments as to validity are relevant to an assessment of the likelihood of any appeal actually succeeding, and thus relevant to the question whether anything of real value was lost as a result of BASF Corp being deprived of the opportunity of having its appeal heard.
229. I received extensive written submissions from the parties on the question of the validity of the 458 Patent. In closing, the Claimants assessed the chances of BASF Corp succeeding on its appeal as at least 50/50. It is common ground, therefore, that the position was not clear cut. The Defendant meanwhile mounted a vigorous attack on the validity of the Patent, and submitted (in effect) that the appeal was hopeless.
230. I will deal more specifically below (see at [460] and following) with the question of the chances of the appeal succeeding. For the present, it is sufficient for me to say that in my judgment, there were material problems with the validity of the 458 Patent. At the heart of it is the following issue, highlighted by Carpmaels, and which I agree with.
231. As the parties were agreed, the EPO approaches the issue of obviousness/inventive step by applying a “*problem-solution*” approach. This involves (a) identifying the closest prior art; (b) establishing the “*objective technical problem*” (by assessing the distinguishing factors between the claimed invention and the closest prior art, identifying the technical effect resulting from these factors and formulating the technical problem which the claimed invention overcomes); and (c) considering whether the claimed invention, starting from the closest prior art and the objective technical problem, would have been obvious to the skilled person.
232. Here, as the EPO proceedings in relation both to the 458 Patent and the Divisional Patent demonstrate, there was a serious difficulty in characterising the technical problem to be solved in a manner which would render the desired claims valid.
233. The problem arose because of the learning disclosed by document E6 (the JMI Patent concerning an HDD retrofit application, also referred to in the Divisional proceedings as document D3). Document E6 emerged late in the day in the 458 OD proceedings as the closest prior art. As the experts are now agreed, E6 discloses the general idea of putting an SCR catalyst on a DPF. That is what led the OD in the 458 proceedings to characterise the problem to be solved as essentially a mundane one, i.e. “... *the problem to be solved by the present claim is to provide the parts to construct the system and to choose an adequate DPF to be coated with the catalyst.*”
234. Once the problem is characterised in that way – essentially as an exercise in assembling the necessary parts – it is very difficult to assert that solving it involved any inventive step, in light of what was common general knowledge at the time.
235. Specifically as regards the choice of a DPF, the evidence before me was that it was common general knowledge at the priority date that high load catalysts would require a very high porosity filter. One might even say that is a matter of common sense: a heavy catalyst load would tend to block smaller pores in a filter and reduce the flow of gases through the filter; a higher porosity filter would tend to allow a higher load

catalyst slurry to be applied whilst still permitting the flow of gases through the filter. The position is in any event reinforced by document D16 (D2 in the Divisional proceedings), namely the NGK paper on high-porosity filters which pre-dates the priority date of Patent 458 and which the experts were agreed would have been known to skilled teams operating in the area.

236. Likewise, as regards the selection of an appropriate catalyst compound for use in LDD applications, the evidence before me as to common general knowledge at the priority date was that the possible candidates were limited, and effectively were (i) vanadium/titanium oxides, and (ii) copper and other metal exchanged zeolites. It is difficult to maintain that the choice of a copper zeolite – as used in the 458 Patent – involved any inventive step. Dr Patchett, one of the inventors of the Patent, said in cross-examination that vanadium/titanium catalysts were “*complete non-starters*” for LDD SCRofFs, and Professor Crocker’s evidence was that all three options were obvious things to explore for SCR in LDD at the time.
237. Thus forced into a corner by the late emergence of document E6 as the closest prior art, BASF Corp had to identify an alternative approach, or more particularly, an alternative characterisation of the problem to be solved. The approach adopted – which one sees both from the late-filed appeal in the 458 Patent proceedings, and from the appeals in the Divisional proceedings – was to seek to focus on certain alleged functional or practical benefits of the claimed invention.
238. As noted above, the formulation adopted in the 458 appeal reflected the approach suggested by Ms Brown, in the message communicated by Mr Servilla (see [109] above), and was as follows:
- “The problem solved by the present invention is the provision of a filter which combined high efficiency in reducing NOx, high efficiency in trapping soot, and also a significant reduction in soot burn-off temperature, all without unacceptably high back pressure.”*
239. The issue then, however, was a different one, but no less challenging. It was to demonstrate that the claimed functional benefits were exhibited across the full scope of the claims of the Patent. This was a problem because the full scope of the claims was very broad. Leaving aside any limitation based on claim 33 – the double-dip method, which BASF Corp did not wish to rely on because it was so easily worked around – the Patent on its face appeared to include embodiments which simply did not provide the functional advantages relied on.
240. The most striking example was Catalyst B1. This did not provide the functional advantages relied on because one of them was avoiding “*unacceptably high back pressure*”, and Catalyst B1 exhibited unacceptably high back pressure. If it fell within the claims of the Patent then plainly it would not be possible to formulate the problem to be solved in the manner proposed, because formulated in that way the problem would not be solved by one obvious embodiment which was in fact described on the face of the Patent itself.
241. Thus, an issue developed and was explored by the TBA in the context of the Divisional appeal, as to whether Catalyst B1 fell within the scope of Patent 458 or not. The

preliminary opinion of the TBA (see [220] above) was that it did. In my judgment, there is a formidable argument that it did, and could only be said to fall outside the claims of the Patent if they were limited by reference to claim 33 – i.e. the double-dip method – which BASF Corp did not wish to rely on.

242. Moreover, as Carpmals explained in their submissions, and as I accept, the problem presented by the scope of claim issue was broader than the particular difficulty demonstrated by Catalyst B1. That represented one striking instance of an embodiment which apparently fell within the scope of the claims but which did not provide the alleged functional benefit of acceptable back-pressure. But it is possible to think of other examples, e.g. arising because the claims specify no upper limits on filter porosity or pore size. Thus, very many highly porous DPFs will fall within the claims, but will not filter exhaust particles efficiently and so will not provide that further alleged functional advantage of the claimed invention.
243. I accept of course that there were counter-arguments available to BASF Corp on its appeal, as explained by Mr Thorley QC in his evidence and by the Claimants in their submissions. I will comment on these below (see at [461]). None of them was straightforward, however. As I explain below, my assessment is that the chances of any appeal in fact succeeding were not high.
244. In the analysis below starting at [389], what is relevant is JMI’s assessment of the likely strength of the 458 Patent, and relatedly the likelihood of JMI being deterred from bidding for business from OEMs during the counterfactual period. In my judgment, for the reasons given above, JMI would have regarded the 458 Patent as weak and likely vulnerable to successful challenge (as, in due course, the Divisional effectively was). I am fortified in that conclusion because it is consistent with the following:
- i) The evidence of Dr O’Sullivan, who said that within JMI the 458 Patent was regarded as weak.
 - ii) The evidence of Ms Schmidt, who accepted in cross-examination that the internal view within BASF was that there was only a “low” chance of prevailing against the SCRoF IPRs brought in the United States by Umicore, and who felt under pressure to agree a SCRoF licence with Umicore in order to avoid an adverse finding.
 - iii) The contemporaneous reaction of Mr Fisher, who in an email to Dr Howard on 30 July 2012 referred to the Divisional Patent having “*massive patentability problems.*” As matters turned out in the Divisional proceedings, that turned out to be an entirely accurate assessment.
245. Before leaving the topic of patent validity, I should deal briefly with one further point. This concerns the question whether it was open to Carpmals to rely on Catalyst B1 as part of their case on validity in this action. At the PTR, the Claimants took the position that it was not open to Carpmals to do so, and issued an application seeking to strike out certain parts of the evidence of Ms Samuels and Professor Burch dealing with Catalyst B1. It was argued that the point was not sufficiently pleaded. At the PTR, I directed that the matter be adjourned over to trial. By the time of the trial, further evidence had been served by the Claimants on the Catalyst B1 issue, and at trial, the issue was fully canvassed.

246. For completeness, however, I should say that in my judgment, the Catalyst B1 point was always sufficiently pleaded. Aside from other matters, Carpmaels at para. 58 of their Defence pleaded that the OD decision in relation to Patent 458 “*has subsequently been vindicated by a further and different Opposition Board.*” That was a reference to the decision of the OD in connection with the Divisional Patent (above at [219]), and amongst other matters, that decision engaged with BASF Corp’s argument that “*example B1 ... does not fall within the scope of granted claim 1*” (see at para. 5.4.3.2). It seems to me clear that the reference to the OD decision in the Divisional Patent proceedings was sufficient to bring into play the various arguments as to validity as they had emerged by that stage.
247. More generally, it would have been quite artificial it seems to me, and indeed unfair, to have allowed the Claimants to rely on Auxiliary Requests 1 and 3 as filed in connection with the late-filed Appeal - which expressly dealt with the Both Sides Limitation, a suggested antidote to the Catalyst B1 problem - but without allowing Carpmaels to respond on the overall relevance of that problem to the issue of validity. The validity of Patent 458 was always very squarely in issue in the action, and in truth it is quite impossible to separate out the conventional obviousness argument based on document E6, and the overlapping and related question of whether the functional benefits the Claimants sought to rely on could be demonstrated across the full scope of the claims. The two points are overlapping and inter-related, because one is a possible response to the other, and they are both simply different ways of addressing the same validity question. In fact, it seems to me the relationship between them was clear by the time of the OD hearing in relation to Patent 458, even though the written reasons of the OD itself were relatively narrow and focused on the issues raised by document E6. But that was never going to be the full story on any appeal, given the way in which the Claimants formulated the problem to be solved in their Grounds of Appeal (see [126]) above.

VIII BASF’s Technology

248. It is also useful to comment on this as a discrete topic before moving on.
249. A large part of Mr Wardell QC’s examination of the Claimants’ witnesses dealt with the question of the state of the BASF Group’s SCRoF technology, and his basic point was that the technology was for almost all relevant periods (from about 2011 onwards) lagging behind that of JMI. In seeking to make good this point, both with BASF’s witnesses and in submissions, he drew attention to comments in many documents, recording negative feedback of one type or another as to the quality of BASF’s SCRoF products.
250. The upshot of all this were the submissions made by Mr Wardell QC in his oral closing, when I asked him to describe for me the broad sweep of the story, which I think I can fairly summarise as follows:
- i) In 2010 and 2011, BASF Group were badly behind JMI. VW chose JMI as their development partner for SCRoF.
 - ii) During 2012-2013, there was definitely some improvement, so that “... *if you’re just focusing in 2013, I cannot say they were miles behind during that period. I do say that they were second best, but, when you get to Daimler, probably by*

not very much. They were certainly second best on the Daimler front in terms of which supplier was preferred.”

- iii) But from 2014 onwards, things went badly downhill again. Mr Wardell QC submitted that all the witnesses accepted that by the time one gets to 2018, looking back on the period from about 2014, the BASF Group products were lagging.
251. Mr Stewart QC’s response, and indeed that of the Claimants’ witnesses, was effectively that one could not get a reliable sense of the state of BASF’s offering at any given time simply by looking at the individual quotations from the documents Mr Wardell QC had relied on. Mr Stewart QC said that the relevant documents should be looked at in their entirety and in their proper context, and thus Mr Wardell QC was unfairly cherry picking.
252. I propose to proceed on the following basis.
253. It seems to me that in fact, on close scrutiny, there is not that much of a difference between the parties’ positions on this point. I have set out Carpmaels’ description of the broad sweep of the story above. The Claimants’ view of it at paragraph 257 of their Written Closing was not that different. They said:
- “It is, accordingly, apparent from consideration of the documentary evidence that for the period 2012 to 2014 BASF’s product was roughly equivalent to JMI’s SCRoF offering. Thereafter, BASF accepts that there was a period of a couple of years where JMI’s product generally performed better than BASF’s product. However, BASF has won platforms throughout the period and increasingly more recently.”*
254. There are certainly some differences between this and the Carpmaels’ formulation, but the broad thrust of it is similar: there was a period which includes 2013 (the time of the Daimler, VW and Ford RFQs) when BASF’s products were at least competitive, and then a dip in performance after that – which the Claimants say was for “*a period of a couple of years*”, and Carpmaels say was for longer.
255. In my judgment, this largely agreed position is sufficient for present purposes. I say that largely because I find the debate as to whether BASF’s technology was competitive with that of JMI somewhat sterile, in the context of the legal issues before me. The question is not about who had the better product in the technical sense, but about whose technology was *preferred* by the OEMs. The answer to that question is clear. It was JMI’s technology. The Claimants point to the fact that they won a number of platforms between 2012 and 2019 (in their Written Closing they identify 24), and so submit that they won “*a decent amount of SCRoF business.*” That is true, but the fact remains that JMI won a great deal more. As noted above, a document from October 2015 shows that by that stage, JMI had some 84% of the overall SCRoF market. Looked at across the market as a whole, there is no doubt that their products were preferred.
256. Moreover, that was in constant open competition with products offered by the BASF Group. This is not a case where the Claimants can say they were prevented from competing. They did compete and lost. The picture is as plain as can be, and indeed is

the very source of the Claimants' complaint. The fact is that in constant, open competition over a number of years, starting in 2013 but running on until at least 2016 and it seems beyond, JMI's offering was consistently preferred by the OEMs. The question whether BASF Group's technology was "*lagging*" is therefore easily answered. It was, in the sense that the OEMs expressed a consistent preference for JMI, which one can see reflected clearly and definitively in JMI's growing market share.

257. Against that backdrop, the issue for the Court is not so much about whose technology was preferred. It was JMI's. The question is rather, as it seems to me, whether despite that fact – i.e. despite the fact that, in open competition on a level playing field, JMI was the consistent winner in terms of its offering – BASF Group would have had a better chance of securing business with the benefit of Patent 458 behind it. The nub of the issue, as I see it, is about the real potency (or otherwise) in terms of OEMs' procurement decisions of a valid (i.e. revoked but appealed) patent remaining in place while such decisions were being taken. That is not answered by trying to analyse who had the better technology. It is answered by addressing the question: given that we know JMI consistently won and generated a very significant market share, would there have been a real chance of the 458 Patent making a difference?
258. I will therefore proceed on this broad basis:
- i) JMI was selected as development partner for SCRoFs for the important client, VW, in 2011. That obviously reflected a preference on VW's part for JMI's overall offering at that stage, as development partner.
 - ii) By the time of the Daimler, VW and Ford RFQs in 2013 and 2014, BASF were at least competitive, in the sense that their products were in the mix for consideration in those competitions, although we know that ultimately (because they were selected for the majority of the business) JMI were overall the preferred supplier.
 - iii) Thereafter, there were unquestionably problems with the BASF Group SCRoF products, and those problems contributed to the Group losing market share.
259. As to [258(iii)] above, and the deteriorating position post 2013/2014, it is sufficient I think to mention the following:
- i) Mr Kumar's note of speaking points, prepared for his meeting with Audi in January 2015 (above at [192]), which correctly anticipated that Audi would say (as apparently they did): "*BASF technology does not meet Audi's performance requirement.*"
 - ii) The "*Corporate Comment Overview*" produced for the BASF Board, in connection with the VW licensing proposal in September 2015 (above at [205]), which recognised that performance of BASF's offering was only second best after JMI, resulting in mediocre market positioning.
 - iii) The documents from 2016 referred to at [214] above, including Mr Neubauer's slide deck proposing establishment of a SCRoF task force.

- iv) The documents from 2017 and 2018 at [218] above, which recognised that JMI had the better performing SCRoF technology.
260. As will be apparent, these are all BASF Group internal documents, in which the problems with performance of the Group's SCRoF technology are frankly recognised as having contributed materially to the Group's poor market share. Looking at the broad sweep of the story, it seems to me that position is undeniable.
261. I will return below to the matter of the relevance of patent rights to OEMs' procurement decisions.

IX To Whom Were Duties Owed by Carpmaels?

The Background and the Issues

262. To whom did Carpmaels owe duties of care, and which Claimants are entitled in principle to claim damages for their losses?
263. This is an important topic because of the way in which the Claimants advance their damages claims.

Improved Licence Fee

264. No issue in principle arises as regards the claim for the lost chance to negotiate an improved licence fee with JMI. The patent holder of the 458 Patent was BASF Corp, the First Claimant. It is common ground that Carpmaels were retained by BASF Corp. If there is a claim of real value relating to the lost chance to secure improved licence terms, then BASF Corp can assert it.

Lost Profits on Sales

265. The position is different, however, as regards damages for the lost chance of improved awards from Daimler, VW and Ford, and indeed from other OEMs to the extent that the value of such awards forms part of the Claimants' case on loss.
266. The figures put forward in relation to these aspects of the case are calculations of the lost profit on sales of SCRoF products. Yet BASF Corp, the holder of the patent, is not the company in the BASF Group which would have made sales of SCRoF products.
267. As I understand the Claimants' case, it is that the products would have been sold by the Second to Fourth Claimants. If, therefore, no duties of care were in fact owed to the Second and Fourth Claimants, they will have no damages claim in respect of the profits they claim to have lost, and on the face of it, neither will the First Claimant.
268. I think it fair to say that the Claimants' case on these issues has developed over time. In their Written Opening, they submitted (at para. 41): "*Accordingly, it is apparent that the parties intended and operated on the basis that Carpmaels acted under a retainer for the entire BASF Group.*"
269. The point was not supported by Ms Brown in her evidence, however. In Ms Brown's First Witness Statement, she said that when she personally instructed Mr Fisher, she did so "*for and on behalf of the BASF Catalyst Division as a whole.*"

270. In the course of her oral evidence, Ms Brown said differently. For example at one point, when asked about the position described in her Statement, she had the following exchange with Mr Wardell QC:

“Q. It sounds to me as though you are not maintaining that position, do you agree?”

A. Well, catalyst as in environmental catalyst.

Q. But not every company included in the BASF Catalyst Division as per the website you attached?”

A. It is related to environmental catalysts, that is correct.”

271. At another point, she had the following exchange:

“Q. As I understand it, you claim that in fact his retainer was on behalf of the entire Catalyst Division?”

A. Yes, as it related to Europe.”

272. At another point, she had the following exchange:

“Q. But that is the wrong question, isn't it? Surely the right question is who was the retainer with?”

A. BASF Corp and BASF Catalysts Germany.”

273. Thus, a number of different formulations were put forward: (1) a retainer with the BASF Group; (2) a retainer with the Catalyst Division; (3) a retainer with those members of the Catalyst Division producing environmental catalysts; (4) a retainer with the Catalyst Division as it related to Europe; and (5) a retainer with BASF Corp and BASF Germany.

274. The Claimants' position ultimately in their Written Closing was summarised as follows:

“The BASF Group was organised on the basis that it would operate as one company with its constituent companies focussed on common aims and objectives. It is not being asserted (and nor has it ever been asserted) that Carpmaels owed a duty to or was retained by the entire BASF Group. Rather, the position for the purposes of this claim is that it owed a duty to and/or was retained by the BASF entities which might be impacted by Carpmaels' own work (or failure to perform it properly) which was the European part of the BASF Environmental Catalyst Division, which included, amongst other companies, the four Claimants to this action. Much of Carpmaels' argument in relation to the retainer and/or duty of care arguments in openings falls away once the claim is considered in this context.”

275. In light of this general submission, Mr Stewart QC ultimately put his case in two ways:

- i) His primary case was that the Court need only be concerned with BASF Corp, to whom unquestionably duties were owed by Carpmaels. BASF was the holder of Patent 458. By reasons of Carpmaels' admitted negligence, the Patent was lost. The true measure of its loss is not represented in terms of the monies it individually would have received in respect of the 458 Patent. That is the wrong way of looking at it. The correct analysis is that the Patent was a thing of value. That value derived from the rights the Patent conferred on BASF Corp as the patent holder at the time of breach in July 2012. Carpmaels' duty was to protect that value by competently prosecuting the Patent, and the value was lost when the Patent was irretrievably revoked as a result of Carpmaels' negligence. Moreover, said Mr Stewart QC, the value of the 458 Patent is best and most properly assessed by looking at the prospects of its successful exploitation during the period of its remaining life – that is, by looking at the extra profits which would have been made by other members of the BASF Group in reliance on it.
- ii) Mr Stewart's secondary case was that duties *were* owed – either under contractual retainers or pursuant to a common law duty of care – to each of the Second to Fourth Claimants. In developing this secondary case, Mr Stewart sought to draw a parallel with White v. Jones [1995] 2 AC 207 and related cases.

276. The problem faced by the Claimants is not an uncommon one. An undoubted cause of action is available to one party (here, BASF Corp), but arguably it is not the party which has suffered the most substantial losses.

Some Key Facts

277. In analysing this problem, it is helpful to begin with some key facts.
278. As already noted, Carpmaels' original relationship had been with Engelhard Corporation. BASF Corp was the successor to that historic relationship. BASF Corp was the holder of the 458 Patent. Carpmaels' instructions were to prosecute that Patent in Europe. Mr Fisher's client contact was Ms Brown, who represented BASF Corp.
279. Mr Fisher's evidence was that at the time, he knew nothing about the Third and Fourth Claimants, BASF Polska and BASF South Africa, but he did acknowledge that he knew, or perhaps ought to have known, of the possible interest of the Second Claimant, BASF Germany:

“A. I knew -- I certainly didn't know of the existence of the third and fourth claimants. I believe I didn't even appreciate the existence of the second claimant at the time, though subsequently reading through the emails which I have seen in this case I see that at least some of them include email addresses to BASF Catalysts Germany, I think. So had I gone through those email chains looking at email addresses, I would have recognised that there was a BASF Catalysts subsidiary in Germany, but I don't think I did. I genuinely did not know the structure of BASF Catalysts. I had no reason to believe that BASF Corporation was going to exploit this patent through licences in Europe.”

280. Ms Brown’s evidence was that BASF Germany’s interest would certainly have been known to Mr Fisher, since that company was involved in discussions about the 458 Patent, in particular in preparations for the OD hearings. For example, she said during cross-examination:

“A. There are many emails where he is giving advice to people outside of BASF Corp. In other words, BASF Catalysts Germany was involved, and people like Frank Moenkeberg, who was an applications engineer from the Hanover facility, were involved in those discussions, in addition to other employees from BASF Catalysts Germany.”

281. I find that Mr Fisher was aware, or at any rate should have been aware, of the Second Claimant, BASF Germany, having *some* interest in the prosecution of the 458 Patent, but I accept his evidence that it was not clear to him what the precise nature of that interest was. I find that at the time, Mr Fisher was not aware of the any specific interest in the 458 Patent on the part of BASF Polska or BASF South Africa.

282. Mr Fisher’s evidence was that he was given limited information about the potential commercial exploitation of the 458 Patent. I accept that general proposition, which is consistent with the later evidence given by Dr Howard (see [162]-[163] above), and with the idea that at the time in 2012 (as I also describe below – see e.g. at [304]) the BASF Group had a rather disjointed and undeveloped approach to the exploitation of its patent estate.

283. I also find, however, that Mr Fisher would have been aware at the time that the interest of BASF Corp was in preserving the 458 Patent for the benefit of the BASF Group as a whole, in the sense that its interest was in preserving an asset of value so that it might in future be deployed elsewhere within the Group to commercial advantage. Mr Fisher accepted as much himself, when he said:

“Q. But you also knew, didn’t you, that the consequence of your negligence was that BASF Corporation lost the opportunity to decide how it was going to deal with these matters.

A. Yes.

Q. And you knew also that it would decide how to allocate the economic benefit which came from it, if any, and it was your negligence which lost them that opportunity.

A. Yes.”

284. Against that background I turn first to consider the position of the First Claimant, BASF Corp.

BASF Corp

285. As to this, it seems to me that Mr Stewart QC is *in principle* correct to say that BASF Corp should be entitled to claim for the inherent value of the lost 458 Patent. The difficulty he has is that that was not the case the Claimants sought to advance until their

written closing submissions at trial. Up until then the case was pursued, including through the parties' opening statements, on the basis that what was lost were (i) the opportunity for increased sales and increased profits on sales, and (ii) the opportunity for enhanced royalty rates under any licence with JMI, beyond those actually agreed.

286. In his oral closing submissions, Mr Wardell QC expressed his shock at this new view of the case emerging so late in the day, and said it was unfair for him to be presented with it – it was effectively an ambush.
287. I agree with Mr Wardell QC.
288. Some of the basic premises underlying Mr Stewart's submission are unobjectionable, and taken in isolation it seems to me there would be no unfairness in allowing him to run them – for example, his propositions that a patent is a piece of personal property, or akin to one (see Section 30 of the Patents Act); that Carpmaels' role was to protect that valuable piece of property, and they failed to do so; and that in principle BASF Corp should be entitled to damages representing the lost value of that property. Such matters seem to me straightforward enough, because on the facts there is no dispute about Carpmaels' duty involving the preservation of the 458 Patent; no dispute about the fact that the duty was breached; and the damages claimed – expressed in that broad way - are plainly within the scope of the duty owed.
289. The problem, as I see it, is with Mr Stewart's further submission that the proper measure of the value lost to BASF Corp must reflect the value lost to other members of the BASF Group by way of the lost opportunity to generate additional profits. That extension of the point is a controversial one, and did not represent the Claimants' case until their written closing submissions. Mr Wardell QC was thus not given the opportunity to deal with it properly.
290. I am not, in any event, persuaded it is correct. I agree that, Patent 458 having been lost, BASF Corp was entitled in principle to claim the lost value of that Patent as a piece of property. But as a starting point, one would assume that value in that context means the value of the 458 Patent as an asset in the hands of BASF Corp.
291. That measure of value does not obviously include the value of profits lost to other Group companies, and in particular other Group companies such as the Claimants in this case, who are not subsidiaries of BASF Corp (see [78] above).
292. The market value of the 458 Patent in the hands of BASF Corp would arguably be another available measure, and at first blush, that would seem more appropriate, if the claim is for the intrinsic value of the asset lost as a result of the breach. Mr Stewart QC submitted that there would be no market for an asset such as Patent 458, and so such a measure would be artificial; but it seems to me the point is at least arguable (there are accounting techniques available for the valuation of illiquid assets), but Mr Wardell QC was not in a position to develop any contrary arguments, whether based on the market value of the 458 Patent or otherwise, because the case he had prepared to meet was a different one.
293. Thus, I am not satisfied that it was open to Mr Stewart QC to advance his intrinsic value of the Patent argument, and I reject it on that basis. In case I am wrong about that,

however, I will in any event go on at [358]-[427] below to examine the substance of claims for the lost chance of securing improved sales within the BASF Group.

The Second to Fourth Claimants

294. Having considered the position of the First Claimant, I then turn to look at the position of the Second to Fourth Claimants, and whether any duty of care was owed to them.
295. Here, Mr Stewart QC relied on there being either a contractual retainer between those parties and Carpmaels (arising either expressly or impliedly, or through BASF Corp having contracted as agent); or alternatively he relied on Carpmaels owing those parties a common law duty of care.

Express or Implied Retainer

296. The questions whether there was an express or an implied retainer can conveniently be taken together. They raise essentially the same point, i.e. whether, viewed objectively, the facts justify the conclusion that there was a contract (or contracts) between Carpmaels and the Second to Fourth Claimants.
297. On the question of implied retainer, for example, Snowden J recently said the following in NDH Properties v Lupton Fawcett LLP [2020] EWHC 3056 (Ch); [2021] PLNLR 8:

“79... the court may be prepared to find that there is an implied retainer if, viewed objectively, the parties act as if such a relationship existed. At the risk of stating the obvious, however, what must be implicit is that the parties had agreed to enter into the contractual relationship of solicitor and client....

80 ...[quoting from Mr Philip Mott QC sitting as a Deputy Judge in Searles v Cann and Hallett, as cited in the leading statement by the Court of Appeal in Dean v Allin & Watts [2001] PNLR 39] No such retainer should be implied for convenience but only where an objective consideration of the circumstances makes it so clear an implication that [the solicitor himself] ought to have appreciated it ...

81... [quoting from Hamblen J in Brown v Innovator One Plc] In my judgment no implicit contract can be inferred unless it is necessary to give business reality to the transaction, and unless conduct can be identified as referable to the contract contended for which is inconsistent with there being no such contract and it is fatal to the implication of such a contract if the parties would or might have acted exactly as they did in the absence of such a contract.”

298. Here, I find it impossible to construe the facts objectively in a manner consistent with the conclusion that there was a contractual retainer. Two matters are of particular significance.
299. The first is that, looking at Mr Fisher’s substantive engagement in connection with the prosecution of the 458 Patent, it was really only ever with Ms Brown, who was a representative of BASF Corp, the patent holder. There is no evidence of him ever

engaging with any representative of either BASF Polska or BASF South Africa, the Third and Fourth Claimants. I accept his evidence that he did not know about them.

300. As to the Second Claimant, it is true that Mr Fisher did engage with representatives of BASF Germany, but it seems to me clear, looking at the substance of the matter, that such engagement was only ever in the context of his representation of BASF Corp, and is explicable on that basis.
301. Thus, when Ms Brown was asked about Mr Fisher's contact with representatives of BASF Germany, she gave the following example:

"A. Based on the discussions we had, mainly in preparation for oral hearings at the Patent Office in oppositions. So one of the examples being for the 458 case, when Carpmaels failed to file the appeal, of course BASF Catalysts Germany was concerned, just like I was in BASF Corp, that it was uncertain as to whether the corporation would have European patent protection on the SCR on filter product.

Q. Discussions you had mainly in preparation for oral hearings at the Patent Office in oppositions, and the example of the 458 case, that is all explicable by Carpmaels being retained by BASF Corp, isn't it?

A. Certainly I was involved, but other CCE Catalyst Division entities in Europe were involved and benefited from the work that was done by Carpmaels."

302. She also had the following exchange with Mr Wardell QC, which strikes me as significant in evaluating the evidence as a whole:

"A. Their concern as a law firm was that they wanted business and that they were representing whoever asked them to do business, so it didn't matter to them whether it was BASF Corp or another BASF entity within the environmental catalysts group.

Q. But all the patents were in the name of BASF Corp, as we have agreed?

A. Correct.

Q. So that is all he needs to know, isn't it?

A. Certainly he would have known that BASF Catalysts Germany, based on their involvement and support of the work done to secure these patents, that they were relying on advice.

Q. But he didn't give any advice at any stage before he was engaged by you on the back of the US patents. So he wasn't

giving any advice to the German entity, the only advice he gave was in relation to the prosecution of the European patent and how to deal with the opposition.

A. *Do you have a question?*

Q. *Yes. Shall I repeat it? He didn't give any advice at any stage, did he, before he was engaged by you on the back of the US patents, so he wasn't giving any advice at all to the German entity?*

A. *Yes, that is correct, he did not give any advice to BASF Catalysts Germany apart from BASF Corp."*

303. Ms Brown's very fair acceptance of the fact that Carpmaels never gave any advice to BASF Germany "*apart from BASF Corp*" makes it very difficult to say, in my view, that the evidence viewed objectively supports the conclusion that Carpmaels had any contract (express or implied) with BASF Germany. On the contrary, the facts viewed objectively are consistent with the opposite conclusion, namely that Carpmaels' function was to advise and represent the patent holder, although from time to time they might be required to engage with representatives of BASF Germany in order to be able to do so effectively.
304. To my mind, this conclusion is supported by the way in which, eventually, the Claimants came to put their case to Mr Fisher. As the extract at [283] above makes clear, this was on the basis that BASF as patent holder had no clear strategy at the time for the exploitation of the 458 Patent, and that Mr Fisher's obligation was to keep the Patent alive to preserve the opportunity for BASF Corp to exploit it in the future in some as yet unspecified manner. That submission, moreover, seems to me consistent with the point made elsewhere in this judgment, namely that neither BASF Corp nor the wider BASF Group had any clear idea at the time of Carpmaels' breach how they intended to exploit the 458 Patent for commercial benefit. In late 2011, Mr Steinbock had been tasked to come up with proposals for using the 458 Patent in a forthcoming VW competition, but he came up with nothing. No concrete strategy emerged until 2014, when Mr LoCascio began to make efforts to develop one. If all that is correct, and there was no clear strategy in 2012 for exploitation of the 458 Patent, and the function of Carpmaels was therefore only to preserve the Patent for the benefit of BASF Corp so that it could keep its options open for the future, it is very difficult to see how there was a contractual retainer at the time with anyone other than BASF Corp.
305. In making out his case on contractual retainer, Mr Stewart QC referred me to a number of cases dealing with the effect of a solicitor failing to put in place a retainer letter, including Griffiths v Evans [1953] 1 WLR 1424 and more recently Minkin v Landsberg [2015] EWCA Civ 1152; [2016] 1 WLR 1489. He relied on these authorities for the proposition that if Carpmaels wished to limit its retainer only to BASF Corp, then it was their responsibility to do so expressly by means of a retainer letter; and the consequence of their having failed to do so was that they would have to accept the Claimants' position that the retainer was in fact a wider one.

306. I am not persuaded by this point. I agree that the absence of a retainer letter is a factor to be taken into account in making an objective assessment of who Carpmaels' clients were, but it is only a factor and is not determinative. Underhill J (as he then was) said as much in Manches LLP v Green [2008] EWHC 917 (QB); [2008] 6 Costs LR 881, when he observed:

"I do not read that as propounding a rule of law that the word of the client must always be preferred, but there is obvious justice in the proposition that in applying the (flexible) civil standard of proof I should take into account the fact that the primary responsibility for spelling out the terms of the retainer must be on the solicitor."

307. To similar effect, in a passage again relied on by Mr Stewart QC, the editors of Simpson: Professional Negligence and Liability Looseleaf (Informa; 2021) say as follows:

"9.4 Solicitors who do not define their retainer clearly and in writing can expose themselves to the imposition of a retainer the existence and extent of which may be implied from their own conduct. The solicitor may also find that he owes contractual duties to persons other than those directly providing his instructions."

308. In other words, as it seems to me, a lack of clarity in a retainer letter may expose the solicitor (or here, patent attorney) to an increased risk that, looked at objectively, the facts will demonstrate that his retainer was with persons other than those he thought he was retained by. But the exercise of examining the facts objectively must still be undertaken, and if, having been undertaken, it demonstrates that the retainer was only with those persons, then so be it.

309. Here, for the reasons already given above, I find it impossible to construe the facts objectively in a manner consistent with Carpmaels' retainer being with any party other than BASF Corp. The inherent uncertainty of where, beyond that, the retainer would begin and end, demonstrated by Ms Brown's own shifting evidence on the point (see [269]-[272] above) puts the point beyond any real doubt.

310. I can deal briefly with the submission that BASF Corp in some way contracted as agent for other companies in the BASF Group. Even leaving aside the uncertainty as regards which other companies in the Group would benefit, I think Mr Wardell QC was right to say that any agency argument cannot survive in light of the following:

- i) the evidence given by Ms Brown about it: *"I am not claiming that Corp was an agent for the other legal entities"*; and
- ii) the fact that there were intercompany licences in relation to the 458 Patent (as well as other patents) - if BASF Corp had been acting as agent, there would have been no need for these since it would have been holding the 458 Patent on behalf of the other Claimants.

Duty of Care

311. I must also deal with the Claimants' submission that a common law duty of care was owed to the Second to Fourth Claimants.
312. Mr Wardell QC submitted that, applying a conventional assumption of responsibility analysis, the evidence was clear that Carpmaels had not assumed responsibility to anyone other than BASF Corp. Mr Stewart QC invited me to proceed by way of analogy with White v Jones [1995] 2 AC 207, on the basis that the Second to Fourth Claimants should be entitled to recover as "*beneficiaries of the intellectual property.*"
313. On the question of assumption of responsibility, Mr Wardell QC reminded me that the test is objective: see Williams v Natural Life Health Foods Limited [1998] 1 WLR 830 per Lord Steyn at 835F-G:

"An objective test means that the primary focus must be on things said or done by the defendant or on his behalf in dealings with the plaintiff. Obviously, the impact of what a defendant says or does must be judged in light of the relevant contextual scene. Subject to this qualification the primary focus must be on exchanges (in which term I include statements and conduct) which cross the line between the defendant and the plaintiff."

314. I did not understand this description of the assumption of responsibility analysis to be disputed, and in any event it has recently been affirmed in two recent decisions of the Supreme Court: NRAM Ltd (formerly NRAM plc) v. Steel [2018] 1 WLR 1190, and Playboy Club London v. Banca Nazionale de Lavoro SpA [2018] 1 WLR 4041.
315. Mr Wardell QC also referred me to James McNaughton Paper Group Ltd v. Hicks Anderson & Co [1991] 2 QB 113 at pp. 125F to 127B, where Neill LJ set out a template for assessing whether or not there has been a voluntary assumption of responsibility. He identified the following matters as relevant, in a case concerning the giving of advice or information:

"(1) The purpose for which the statement was made

In some cases the statement will have been prepared or made by the 'adviser' for the express purpose of being communicated to the 'advisee'. to adopt the labels used by Lord Oliver. In such a case it may often be right to conclude that the advisee was within the scope of the duty of care. In many cases, however, the statement will have been prepared or made, or primarily prepared or made, for a different purpose and for the benefit of someone other than the advisee. In such cases it will be necessary to look carefully at the precise purpose for which the statement was communicated to the advisee.

(2) The purpose for which the statement was communicated

Under this heading it will be necessary to consider the purpose of, and the circumstances surrounding, the communication. Was the communication made for information only? Was it made for some action to be taken and, if so, what action and by whom?

Who requested the communication to be made? These are some of the questions which may have to be addressed.

(3) The relationship between the adviser, the advisee and any relevant third party

Where the statement was made or prepared in the first instance to or for the benefit of someone other than the advisee it will be necessary to consider the relationship between the parties. Thus it may be that the advisee is likely to look to the third party and through him to the adviser for advice or guidance. Or the advisee may be wholly independent and in a position to make any necessary judgments himself.

(4) The size of any class to which the advisee belongs

Where there is a single advisee or he is a member of only a small class it may sometimes be simple to infer that a duty of care was owed to him. Membership of a large class, however, may make such an inference more difficult, particularly where the statement was made in the first instance for someone outside the class.

(5) The state of knowledge of the adviser

The precise state of knowledge of the adviser is one of the most important matters to examine. Thus it will be necessary to consider his knowledge of the purpose for which the statement was made or required in the first place and also his knowledge of the purpose for which the statement was communicated to the advisee. In this context knowledge includes not only actual knowledge but also such knowledge as would be attributed to a reasonable person in the circumstances in which the adviser was placed. On the other hand any duty of care will be limited to transactions or types of transactions of which the adviser had knowledge and will only arise where 'the adviser knows or ought to know that [the statement or advice] will be relied upon by a particular person or class of persons in connection with that transaction': per Lord Oliver in the Caparo case [1990] 2 A.C. 605, 641. It is also necessary to consider whether the adviser knew that the advisee would rely on the statement without obtaining independent advice.

(6) Reliance by the advisee

In cases where the existence of a duty of care is in issue it is always useful to examine the matter from the point of view of the plaintiff. As I have ventured to say elsewhere the question 'Who is my neighbour?' prompts the response 'Consider first those who would consider you to be their neighbour.' One should therefore consider whether and to what extent the advisee was

entitled to rely on the statement to take the action that he did take. It is also necessary to consider whether he did in fact rely on the statement, whether he did use or should have used his own

judgment and whether he did seek or should have sought independent advice. In business transactions conducted at arms' length it may sometimes be difficult for an advisee to prove that he was entitled to act on a statement without taking any independent advice or to prove that the adviser knew, actually or inferentially, that he would act without taking such advice. ”

316. Looking then at the facts of this case, I am quite unpersuaded that Carpmaels assumed a duty of care to anyone other than BASF Corp.

- i) The actions undertaken by Mr Fisher and the information communicated by him are all explicable on the basis that their purpose was to preserve the 458 Patent in the hands of the patent holder, BASF Corp.
- ii) There is no evidence of communications with any of the other Claimants aside from BASF Germany, and any engagement with BASF Germany is readily explicable on the basis that it was ancillary to, and for the purpose of, advising and acting for BASF Corp. BASF Germany did not receive any advice “*apart from BASF Corp.*”
- iii) BASF Germany was one among many companies in the BASF Group, and at the time, as the Claimants’ primary case recognises, it was unclear precisely how the 458 Patent would best be exploited for commercial advantage. The strategy remained unclear even in later periods, largely because of the insoluble conundrum presented by the desire to leverage monopoly patent rights for SCRoF technology in a market dominated by the OEMs who would not tolerate a monopoly position. It is much more likely, in light of this, that the intention at the time was to do no more than maintain the patent in the hands of BASF Corp, in order to preserve the possibility for its exploitation at some future stage, but in a manner which had yet to be worked out. If that is right, then it is difficult to see how, looked at objectively, there can have been an assumption of responsibility to anyone other than BASF Corp. Everything else was too uncertain.
- iv) Consistent with that there is Mr Fisher’s evidence (which I accept) that he had no clear perception of how the 458 Patent would be exploited and by whom. Neither did Dr Howard, as late as November 2013. That is understandable, because at the time neither did BASF Corp.
- v) I have seen nothing which suggests that BASF Germany ever relied on anything said or done by Mr Fisher. Again, in circumstances where Ms Brown agreed that BASF Germany had never received any advice “*apart from BASF Corp*”, that is not surprising.

317. Reverting then to the overall, objective test postulated by Lord Steyn in Williams v Natural Life Health Foods, what Carpmaels did was to seek to protect and maintain Patent 458 in the hands of BASF Corp, with a view to its being deployed in the future

in a manner yet to be determined. That was the relevant “*contextual scene*.” Nothing crossed the line between Carpmaels and the other Claimants, save Mr Fisher’s limited engagement with BASF Germany, but viewed objectively such engagement was only ever part of the process of acting for BASF Corp, and is readily explicable on that basis.

318. Perhaps recognising the force of these points, Mr Stewart QC sought to develop his analogy with White v Jones [1995] 2 AC 207. As is well known, in that case a testator had given instructions for the drawing up of a will, naming his daughters as beneficiaries. There was delay in doing so, and the testator died before the will was finalised. This presented a problem. The solicitors’ retainer was with the testator, but the testator had not suffered any loss during his lifetime, and never could have done so, because a gift under a will can only take effect after the testator’s death: see per Lord Goff at p. 265E-G. The loss was only on the part of the beneficiaries, but they did not have the benefit of the retainer.
319. By a majority of 3-2, the House of Lords determined that there had been an assumption of responsibility by the solicitors to the intended beneficiaries, giving rise to a common law duty of care in tort. The speech of Lord Goff contains a detailed examination of the conceptual problems at play in cases where a loss has plainly been sustained but a conventional legal analysis leads to the loss being irrecoverable by the party which has suffered it. In such cases, the loss might be said to fall into a legal black hole; or as Lord Goff more eloquently described it, they expose lacunae in the law which need to be filled. Lord Goff referred at p. 259G to the “*impulse to do practical justice*”, and went on to describe a number of techniques which have been deployed in order to fill legal lacunae and achieve that objective: these include legislative intervention (p. 265B); and the so-called Albazer principle (after The Albazer [1977] AC 744) (p. 266F), which recognises that in certain cases party A can recover damages on behalf of party B.
320. In White v Jones itself, the solution adopted was the “*tortious solution*”, as already described. Lord Goff did not think that solution justified on the basis of ordinary principles relating to the assumption of responsibility, for example because a solicitor instructed to prepare a will undertakes to do so for the benefit of his client and not for the benefit of anyone else (see p. 262 B). Nonetheless, Lord Goff thought it justified to fill the lacuna and undo the injustice which would otherwise occur if the beneficiaries’ undoubted loss were consigned to a legal black hole. At p. 268C he said:

“... the nature of the transaction was such that, if the solicitors were negligent and their negligence did not come to light until after the death of the testator, there would be no remedy for the ensuing loss unless the intended beneficiary could claim. In my opinion, therefore, your Lordships’ House should in cases such as these extend to the intended beneficiary a remedy under the Hedley Byrne principle by holding that the assumption of responsibility by the solicitor towards his client should be held in law to extend to the intended beneficiary who (as the solicitor can reasonably foresee) may, as a result of the solicitor’s negligence, be deprived of his intended legacy in circumstances in which neither the testator nor his estate will have a remedy against the solicitor.”

321. I have considered carefully whether there is any true analogy to be drawn between this case and White v Jones, as Mr Stewart QC has submitted, but in my judgment, there is not. That is for two inter-related reasons:

- i) First, the beneficiaries in White v Jones were readily identifiable, and the nature of their interest was clear. That is not, I think, the position here. I have already made the point above that the BASF Group's strategy for exploitation of the 458 Patent in 2012 was embryonic. Indeed, the Claimants put their case on that basis. Mr Stewart used the following formulation to describe those to whom Carpmaels were said to owe a duty: "... *the Court can and should impose a duty of care in favour of the group companies who would have exploited the patent in due course*". It seems to me, however, that that is too nebulous a formulation. It is one thing, in an exceptional case such as White v Jones, to fashion a remedy to provide redress to a limited and identifiable group who otherwise would be left with no claim on ordinary assumption of responsibility principles. It is quite another, in a case like the present, to say that the law needs to fashion a remedy in favour of an altogether amorphous group who were not readily identifiable at the time.
- ii) The second point is that this is not a case where there is any black hole or lacuna. The distinguishing feature of White v Jones was that the testator had not and never could suffer any loss arising out of the matter complained of. Without the law intervening to fashion a remedy, no-one would have had a claim. In this case, BASF Corp *does* in principle have a claim, i.e. its claim for the loss of the intrinsic value of the patent (see above at [285]-[293]). The difficulty is that the litigation was not, until the Claimants' closing submissions at any rate, conducted on that basis, but instead on the basis that the claim was a claim for the lost chance to make profits. The problem is that profits would be made by other Group companies. That is not an example of there being a legal black hole or lacuna, but instead an example of the remedy which the law does provide only extending so far. There is nothing surprising or unfair about that. It reflects an entirely conventional and well established principle. As Hobhouse LJ (with whom Hutchinson LJ agreed) said in Gerber Garment Technology v Lectra Systems Limited [1997] RPC 443, at page 479, lines 40-44:

"The root principle which must be adhered to is that each company is a separate legal entity. The property of one is not the property of another. The plaintiff must prove its own financial loss in its own pocket and quantify it. Any other approach is contrary to the decided authorities and the principle in Saloman v. A. Saloman & Co. Ltd."

X The Claimants' Case on Loss – the Legal Approach

322. In case I am wrong on the findings set out above, I will proceed to consider whether the Claimants have made out any case on loss. Thus, I will assume that they *were* all owed duties by Carpmaels, and on that assumption will consider whether they have sustained their cases on loss of the opportunity to obtain higher sales, or on loss of the opportunity to negotiate a higher royalty rate with JMI than that which BASF Corp in fact managed to achieve in 2016.

323. Mr Wardell QC makes an initial and fundamental objection. This is that the Claimants have not discharged the burden of proving that Carpmaels' admitted breach has in fact *caused* them any loss.
324. In advancing that submission, Mr Wardell QC relies on the proposition that where proof of loss is dependent on the claimant establishing that, but for the defendant's breach, it would have taken some relevant "*initiating action*", then the claimant must prove that it would have done so on the balance of probabilities. So, for example, where a recipient of negligent legal advice has chosen not to litigate against a third party, he will have no recoverable loss unless he can show on the balance of probabilities that, had he received competent advice, he would in fact have sued. Unless the claimant can prove as much, he cannot show that the negligence has in fact caused him any loss. The chain of causation is incomplete.
325. As I understood it, that basic submission is common ground. In any event it is supported by high authority. In Perry v Raleys Solicitors [2019] UKSC 5; [2020] AC 352, Lord Briggs said as follows at [19]:

" ... none of this means that the common law has simply abandoned the basic requirement that a claim in negligence requires proof that loss has been caused by the breach of duty, still less erected as a self-standing principle that it is always wrong in a professional negligence claim to investigate, with all the adversarial rigour of a trial, facts relevant to the claim that the client has been caused loss by the breach, which it is fair that the client should have to prove."

326. And at [23]-[24] Lord Briggs said:

"23. Two important consequences flow from the application of this balance of probabilities test to the question what the client would have done, in receipt of competent advice. The first is that it gives rise to an all or nothing outcome, in the usual way. If he proves upon the narrowest balance that he would have brought the relevant claim within time, the client suffers no discount in the value of the claim by reason of the substantial possibility that he might not have done so: see Stuart Smith LJ in the Allied Maples case at [1995] 1 WLR 1602, 1610[G-H]. By the same token, if he fails, however narrowly, to prove that he would have taken the requisite initiating action, the client gets nothing on account of the less than 50% chance that he might have done so.

24. The second consequence flows directly from the first. Since success or failure in proving on the balance of probabilities that he would have taken the necessary initiating step is of such fundamental importance to the client's claim against his advisor, there is no reason in principle or in justice why either party to the negligence proceedings should be deprived of the full benefit of an adversarial trial of that issue. If it can be fairly tried (which this principle assumes) then it must be properly tried. And if (as in this case) the answer to the question whether the client would,

properly advised, have taken the requisite initiating step may be illuminated by reference to facts which, if disputed, would have fallen to be investigated in the underlying claim, this cannot of itself be a good reason not to subject them to the forensic rigour of a trial. As will appear, this has an important bearing on the extent of the general rule that, for the purpose of evaluating the loss of a chance, the court does not undertake a trial within a trial.”

327. Mr Wardell QC’s basic submission was that the Claimants could not show on the evidence that they would have taken any relevant “*initiating action*” or “*initiating step*”, even if an appeal against the OD decision had been lodged in July 2012. As to the candidates for possible “*initiating actions*”, Mr Wardell QC posited three: (i) taking steps to enforce the 458 Patent; (ii) taking steps to leverage the 458 Patent; and (iii) taking steps to license the 458 Patent. He submitted that BASF came nowhere near demonstrating that it would have taken any of such steps during the 2012-2015 period, even if an appeal had been filed. His basic point was that BASF had, before then, adopted an essentially passive strategy in relation to the 458 Patent, and indeed had refused JMI’s 2011 overture seeking a SCRoF licence. He submitted there was no good reason to imagine that that strategy would have changed had BASF had nothing more than the benefit of an unrevoked – but as he put it, “*zombie*” – patent pending an appeal to the TBA.
328. I did not understand Mr Stewart QC to disagree with the basic proposition of law advanced by Mr Wardell QC – i.e. that where some initiating step by the claimant forms part of the chain of causation, the claimant must show on the balance of probabilities that he would have taken that step. Instead, the point of difference between the parties was this: Mr Stewart QC said that the relevant “*initiating steps*” were not those identified by Mr Wardell QC, but were different ones. He argues that all it was necessary for the Claimants to show on the balance of probabilities was that (i) they would have wished to pursue an appeal against the OD decision, and (ii) they would have bid for business from Daimler, VW and Ford. Mr Stewart said that the Claimants could easily discharge the burden of proof in relation to such matters, because they had in fact given an instruction to appeal against revocation and they had in fact pitched for business from Daimler, VW and Ford.
329. As to the lost opportunity in respect of an enhanced licence, Mr Stewart QC said that the same logic applied: what BASF had been deprived of was the lost opportunity of a licence emerging organically from the process of bidding in the 3 relevant RFQs, and in particular the VW RFQ in respect of which the award of business by VW was (and would have been) split. Once it is accepted that BASF would have prosecuted the appeal and pitched for business, then (said Mr Stewart QC) the chain of causation is complete – they do not need to show they would have taken any other steps, on the balance of probabilities. That is because, once one gets to that point, the exercise is one of quantification only – to be assessed on a lost chance/percentage loss basis (for an example see the approach of Marcus Smith J in Britned Development Limited v. ABB AB & Anor [2018] EWHC 2616 (Ch); [2019] Bus LR 718, at [12] and [469]). In particular, Mr Stewart QC submitted that the Claimants do not need to show that they would positively have sought to negotiate a licence for the SCRoF patent family with JMI, or engaged in negotiations to do so. Instead, they can rely on the fact that JMI

would have approached them; or, to put it another way, they can legitimately say they were deprived of the opportunity or chance that JMI would do so in the circumstances where the 458 Patent remained in existence.

330. In analysing this issue, it seems to me that a good starting point is to ask: what are the Claimants seeking to be compensated for? That is a relevant question because, if what they are seeking to be compensated for is the opportunity to *do* something which, absent the breach of duty, they claim they would have done, then the authorities establish that they must prove they would have done the relevant thing on the balance of probabilities. If it is the loss of a chance of something happening which, absent the breach, might have happened because of the potential for the changed circumstances of the counterfactual to impact the behaviour of third parties, then I agree with Mr Stewart QC that the actions of such third parties do not need to be proven on the balance of probabilities: they are matters of assessment and quantification only.
331. Translating that general statement into the circumstances of this case, it seems to me to have the following consequences. If the Claimants' claim is in reality a claim for the loss of the opportunity to exploit Patent 458 in some positive way – for example, by taking enforcement action based on its continued existence – then the Claimants must prove on the balance of probabilities that they would have taken such positive action.
332. If, on the other hand, the Claimants' claim is for loss of the chance to exist and to conduct business in a world in which Patent 458 continued to subsist pending an appeal, but without taking any positive and proactive steps to exploit it, then of course by definition that does not require them to show that they would have taken such steps, whether on the balance of probabilities or otherwise. Looked at as a matter of causation, it requires them only to show that they would have carried on conducting business as usual, but with Patent 458 forming part of the wider commercial landscape in which they did so. Beyond that, the relevant questions are questions of assessment and quantification, as to which the Court will need to be satisfied that the lost chance is a real and valuable one.
333. As I understood the Claimants' case as advanced in their written and oral closing submissions, their primary position was that they put their claim on the basis of the second permutation above – i.e., they relied on an essentially passive approach as regards the 458 Patent, or, to put it another way, they argued that the 458 Patent would have been self-executing in terms of its effect. That is to say, its existence, once known to JMI and the OEMs, would have been enough to have created a *chance* either of JMI not in fact bidding for business which fell within the scope of Patent 458, and/or of OEMs not awarding business to JMI which fell within the scope of that Patent, and/or of a SCRoF licence on enhanced terms emerging from the various bids submitted by BASF.
334. It seems to me it is open to Mr Stewart QC to put his case in respect of the lost chance of increased sales in that way, but not his case in respect of the lost chance for an enhanced licence with JMI.
335. As to the former, it seems to me that BASF are entitled to say that Carpmaels' duty was to prosecute the 458 Patent and thus to maintain it in existence for the benefit of BASF. They failed in that duty. If real losses flow from the mere fact of it not being in existence, irrespective of any positive steps that BASF themselves may or may not have

taken to exploit it, then such losses are in principle recoverable – they fall within the scope of the duty owed, and would, on this hypothesis, have been caused by Carpmaels’ negligence. Such contingencies as might impact on the amount which is properly recoverable, such as the likely actions of third parties in either bidding for business themselves and/or actually awarding business, are matters of quantification and assessment and do not need to be proven on the balance of probabilities.

336. All that of course is subject to the important qualification that, in order to be recoverable, the lost chance must be a real and substantial one – as to which the parties were agreed that it must be at least a 10% chance to represent a real lost opportunity: see the summary in PCP Capital v Barclays [2021] EWHC 307 (Comm), at [554]-[561], per Waksman J.
337. I do not however see that the same analysis can sensibly be applied to the claim in respect of the lost chance to secure enhanced licence terms. A party who says he has lost the opportunity to secure an agreement on enhanced or advantageous terms must surely have to demonstrate that, absent the defendant’s breach, it would actually have wanted to try and secure such an agreement; and if that is right, it must surely have to be demonstrated on the usual balance of probabilities. That is because of the nature of the loss claimed. Looked at in substance, it is properly characterised as the lost chance to attempt to secure an agreement on different terms, not as the lost chance to live in a world in which the prospective counterparty to the agreement would have been more likely to ask for one.
338. There would be no sense at all in formulating a case in that way, because although conceptually possible, it would have no financial value: the lost chance of an approach from a counterparty emerging is entirely inchoate and valueless without the claimant being able to say that, if approached, it would have been willing to engage and negotiate. And that must be shown on the balance of probabilities.
339. That approach seems to me consistent with that taken in Perry v Raleys Solicitors, and also with that in Allied Maples v Simmons & Simmons [1995] 1 WLR 1602. In Perry, the context was negligence by a solicitor in giving advice, and so the question was what the claimant had to show evidentially in terms of what he would have done if he had been given competent advice. It was natural enough in such circumstances for Lord Briggs to talk about the Claimant needing to show he would have taken “*the requisite initiating steps*” (see at [22]), by which he meant, the Claimant had to show he would have initiated an action against the prospective defendants. But Lord Briggs was not, I think, limiting his observations about the burden of proof only to those instances where the claimant has to make the first move. The principle is much broader than that. Thus, at [20] Lord Briggs said:

“For present purposes the courts have developed a clear and common-sense dividing line between those matters which the client must prove, and those which may be better assessed on the basis of a lost chance. To the extent (if at all) that the question whether the client would have been better off depends upon what the client would have done upon receipt of competent advice, this must be proved by the claimant upon the balance of probabilities. To the extent that the supposed beneficial outcome

depends upon what others have done, this depends upon a loss of chance evaluation.”

340. At [21] he then referred to Allied Maples, and summarised it thus:

“Allied Maples had made a corporate takeover of assets and businesses within the Gillow group of companies, during which it was negligently advised by the defendant solicitors in relation to seeking protection against contingent liabilities of subsidiaries within the vendor’s group. Allied Maples would have been better off, competently advised, if, but only if: (a) it had raised the matter with Gillow and sought improved warranties and (b) Gillow had responded by providing them. The Court of Appeal held that Allied Maples must prove point (a) on a balance of probabilities, but that point (b) should be assessed upon the basis of loss of the chance that Gillow would have responded favourably ... “.

341. At [22] he then said (emphasis added):

“The Allied Maples case was about the loss, due to negligence, of the opportunity to achieve a more favourable outcome in a negotiated transaction, rather than about the loss of an opportunity to institute a legal claim. But there is no sensible basis in principle for distinguishing between the two, and none was suggested in argument. In both cases the taking of some positive step by the client, once in receipt of competent advice, is an essential (although not necessarily sufficient) element in the chain of causation”

342. And finally at [25] (again emphasis added):

“Applied to the present case, the principle that the client must prove on the balance of probabilities that he would have taken any necessary steps required of him to convert the receipt of competent advice into some financial (or financially measurable) advantage to him means that Mr Perry needed to prove that, properly advised by Raleys, he would have made a claim to a services award under the Scheme within time.”

343. In the present case, we are not of course talking about the receipt of competent advice, but instead about what would have happened on the taking of competent action (i.e., the filing of an appeal), having the effect of keeping the 458 Patent alive. But the same question arises: what would be necessary in order to convert that situation into a financially measurable advantage?

344. Where the specific loss alleged is a financially measurable advantage in the form of a licence fee under a licence agreement, an essential element in the chain of causation is the claimant showing that he would have wanted to conclude a licence agreement, and that must be shown on the balance of probabilities. It is not enough only to show that the counterparty would have wanted a licence agreement, because a counterparty

wanting a licence agreement, without more, does not and cannot give rise to a financial (or financially measurable) advantage. Engaging with an overture from such a counterparty may not be an “*initiating step*”, in the sense that it is responsive, but it is, obviously, an essential link in the chain of causation, and so in my judgment the basic logic of Lord Briggs’ analysis applies.

345. My conclusions on this initial point are therefore as follows:

- i) The Claimants in principle are able to advance a claim for the lost chance of securing improved results in the Daimler, VW and Ford RFQs, without being required on the balance of probabilities to show that they would have taken positive steps to exploit Patent 458. They may claim for the lost opportunity to exploit it passively, provided that the lost chance or opportunity was a real one (i.e., a chance of 10% or more, expressed in percentage terms).
- ii) The Claimants have no claim in respect of the lost opportunity to an enhanced licence fee unless they can show, on the balance of probabilities, that they would in fact have sought to negotiate a licence with JMI at the relevant time.

346. Against that background, I will now turn to examine the Claimants’ case. The first part of the analysis (Part XI below) will consider the position in the counterfactual in the period 2012 to 2015, on the footing that, absent Carpmaels’ negligence, the filing of an appeal against the OD’s decision would have suspended revocation of Patent 458. The second part of the analysis (Part XII below) will consider the counterfactual in subsequent periods, and so will involve consideration of the chance of the appeal to the TBA actually succeeding.

XI The Claimants’ Case on Loss - the 2012-2015 Period

Overview and General Points

347. I have noted above already the outline of Mr Stewart QC’s case on this time period. It is useful to emphasise several key themes running through it. The first is the idea that the various industry participants, including in particular the OEMs, respected IP rights, and would not have wished to act in contravention of such rights. This industry practice is said to find expression in the concept of *FTO* – freedom to operate. It is through the *FTO* concept that the Claimants say Patent 458 would have had practical effect. Had there been an appeal, and had the 458 Patent remained in force, then only the BASF Group would have had *FTO* and no-one else. Thus, it is argued, in 2013-2014, when the BASF Group’s technology was at least in the mix and competitive, it must follow that the existence of the 458 Patent would have created a valuable chance of the Claimants obtaining more business from Daimler, VW and Ford than they in fact obtained.

348. This case is not put forward on the basis that the Claimants would have taken overtly hostile action to enforce the monopoly position afforded to them by the 458 Patent, for example by way of litigation. I am sure that is an appropriate concession. On the evidence there is no basis for thinking they would have done so. Such aggressive action would have put them in very bad odour with the OEMs.

349. The Claimants however say it is not necessary for them to show they would have taken any such hostile action. They say that even without that, the fact of the *existence* of the 458 Patent would have meant a different commercial environment to the one which resulted from the definitive revocation of the Patent following the failure to appeal. In the counterfactual, JMI and the OEMs would have appreciated that JMI did not have FTO in relation to SCRoF products, in light of Patent 458. That is either because JMI at least was monitoring the position and was concerned about it, or alternatively, to the extent necessary, the Court can conclude that the Claimants would have taken steps to ensure that the OEMs became aware – in the same way that Mr Cameron did with PSA in January 2014, and Mr Kumar did with Audi in late 2014/early 2015.
350. In that changed environment, say the Claimants, JMI’s lack of FTO in relation to SCRoFs would obviously have made a difference to the OEMs’ decisions about allocating new business and would have increased the Claimants’ chances of winning such business for themselves.
351. Moreover, say the Claimants, the timing was right in about 2013 to extract maximum value from the 458 Patent, in particular in terms of licence royalties. By 2016, when the Licence with JMI eventually came to be negotiated, it was too late to press for a high royalty rate. That is because by then, JMI had already won a number of awards of business, and once that had happened, and as the OEMs who had awarded them business had either entered commercial production or were getting close to doing so, the opportunity to exploit Patent 458 for maximum gain was lost. OEMs by then would not tolerate any interference with their commercial operations. The Claimants were left with no real negotiating leverage.
352. By contrast, in 2013, the market was just beginning to develop, with the issuance of the first RFQs. There was still an opportunity in that environment to exploit the 458 Patent successfully. In fact, had it remained in force, it would have been the ideal time to do so, and negotiations at that point by the Claimants, with the 458 Patent behind them, would have led to a materially higher royalty rate than that later agreed with JMI in 2016.
353. With typical flair, Mr Stewart QC, in developing these points, relied on a Shakespearean metaphor, drawn from Julius Caesar, Act IV, scene 3, where Brutus has the following exchange with Cassius:
- “There is a tide in the affairs of men,
Which taken at the flood, leads on to fortune;
Omitted, all the voyage of their life
Is bound in shallow and in miseries.
On such a full sea are we now afloat,
And we must take the current where it serves,
Or lose our venture.”*
354. In 2013, according to Mr Stewart QC, the tide would have been in for the Claimants. Because of Carpmaels’ negligence, they missed it.
355. My conclusions on these aspects of the Claimants’ case are as follows:

- i) I am not persuaded that the existence of the 458 Patent in the 2013/2014 period *would* have generated any real chance of OEMs making different procurement decisions and awarding a larger share of their business to the Claimants. I therefore conclude that the Claimant's case in respect of the lost chance of increased profits on sales fails.
- ii) I am not persuaded on the balance of probabilities that BASF Corp would have wished to engage with a proposal for a licence of the SCRoF portfolio in 2013, even if such a proposal had emerged. I therefore conclude that the Claimants' case in respect of the lost opportunity to negotiate an increased royalty rate also fails.
- iii) Even if (ii) is wrong, I am not persuaded there is any real chance that such negotiations, even if undertaken, would have resulted in a higher royalty rate being agreed with JMI in 2013/2014 than that which was in fact agreed in 2016. I conclude that the Claimants' case in respect of the lost opportunity to negotiate an increased royalty rate fails on that ground also.

356. I set out my reasons for reaching those conclusions below. I will develop three general points, and then comment more particularly on (1) the claim for lost profits, and (2) the licence fee claim.

357. The three general points are as follows:

- i) The evidence does not support the view that any FTO issue would in fact have driven procurement decisions by the OEMs in the counterfactual. BASF made significant efforts to drive sales using its IP rights and failed.
- ii) The evidence supports the view that JMI would not have been deterred in the counterfactual from bidding for business from the OEMs, despite any potential FTO question. It would have assessed the risks and assumed they were manageable, in light of (1) the likelihood of the 458 Patent being successfully challenged, and (2) the likelihood of it being granted a licence if it needed one. We know that is very likely what it would have done in the counterfactual because it is what it did do in fact – i.e. it established itself as VW's development partner for SCRoFs while the 458 Patent was in existence before July 2012; it bid for (and won) business while the Divisional Patent was being prosecuted in 2013-2015, despite the risks that that presented; and it bid for (and won) business after the Divisional was granted in June 2015 but before it had a licence for SCRoF from BASF Corp.
- iii) The Claimants' case proceeds on the footing that the mere existence of a valid patent was a business critical matter for BASF in the period 2013-2015, but this is not borne out by the evidence of prosecution of the Divisional Patent, which shows no real sense of urgency.

Freedom to operate: IP rights and market share

358. To begin with, it is a fundamental premise of the Claimant's case that the existence of the 458 Patent, via the medium of the concept of FTO, was the secret to having a real increased chance of obtaining higher product sales and (therefore) greater profits.

359. The difficulty with this argument, it seems to me, is that the insoluble conundrum BASF struggled with during much of the period I am concerned with was precisely how to exploit its IP rights in a way which would generate market share, rather than simply generate licence fees. What they wanted was to increase product sales, not generate licence income.
360. The problem was, how to do so in a market dominated by the OEMs, who valued competition, did not like monopoly supply and did not like being dictated to in terms of their procurement decisions.
361. The fact is that BASF *never* managed to find a way of deploying its IP in a manner which generated increased market share. The dynamics of the market, as I see it, were simply not set up in a way which would allow that to happen. The various attempts to do so failed outright or fell flat. In such circumstances, I am quite unpersuaded by the Claimants' case based on the FTO point. It invites me to assume that the Holy Grail of linking IP rights with market share, which eluded the BASF Group despite their best efforts over a number of years, was within reach all along, and in fact a realistic outcome even without the Claimants having to take any positive action to achieve it (beyond, perhaps, referring the market to the existence of the 458 Patent).
362. That seems to me quite unrealistic, as a brief review of the efforts in fact taken to leverage IP rights to achieve a greater market share will demonstrate.
363. For instance, the early attempt in 2011 to leverage the CuCHA patent family to generate increased market share from Daimler resulted in Daimler becoming "*very upset*" (see [80]) above) and applying the commercial pressure which, as Mr Gay and Mr Kumar both accepted, resulted in BASF's decision to licence the CuCHA portfolio to JMI.
364. In September 2011, following a review of the SCRoF patent position, Mr Steinbock was tasked to "*develop an approach how to use our strong patent position in the VW competition.*" There is no evidence suggesting that he ever did develop such an approach. It seems a reasonable inference that he was not able to. Even if he was, the approach cannot have been successful because if it had been then BASF would not be making their present complaints. The conundrum was simply too difficult to solve.
365. Possibly the high watermark of BASF's case is the intervention made by Mr Cameron with PSA in early 2014, on the basis of Umicore not having a licence for CuCHA, which resulted in PSA determining to reopen the competition in which it had made an award to Umicore. Although only limited information is available about this episode, I accept that it is an example of BASF's IP rights operating to inhibit PSA in its procurement decision. But two features are notable.
- a. First, the intervention strategy did not *in fact* result in any increased share of sales to BASF. PSA had available to it a substitute product from JMI, which had been granted a CuCHA licence by BASF, and PSA chose the JMI product not BASF's product. This episode only underscores the point that in this marketplace there would invariably be more than one supplier in the mix because the OEMs would insist on it through licensing, so that BASF would always have to compete with at least one other supplier on its own terms. The OEMs would make their choice between the competing suppliers. IP rights would never be the trump card for which BASF contends.

- b. Second, there is also the fact that the active intervention with PSA was novel. When asked about it, Mr Cameron gave the following, important piece of evidence as noted at [171] above:

“Actually, as salespeople we don’t talk very often about patents, because we are making deals for new business, and we are – so the only time that I have ever talked to a customer about a patent was what we have up there on PSA. That was the only time in my over twenty years in this business that we ever went to a customer to talk about this, because we felt that Umicore was violating our IP.”

The intervention seems to have come about as a result of the more active strategy encouraged by Mr LoCascio from about July 2013 onwards (see [153] above). It is notable, however, that Mr Cameron, a salesman whose very job it was to secure increased sales, apparently had no prior experience of IP rights being used to achieve that objective. That, it seems to me, is further and very powerful evidence that the problem of how successfully to leverage IP rights in this market in order to obtain increased market share was a very difficult and essentially insoluble one.

366. The next attempt was that made by Mr Kumar in relation to Audi in late 2014 and early 2015, after it emerged that Audi had selected a Umicore SCRoF for the US market, despite BASF at that stage having valid US patents. Mr Ehrhardt specifically wanted a proposal *“on how to secure a contractually binding commitment from Audi to shift to our product ...”* The strategy developed, and implemented at the meeting with Audi in January 2015 attended by Mr Kumar, involved trying to persuade Audi that although it was not BASF’s fault, and although BASF did not intend to take action against Audi directly, they were nonetheless stuck between a rock and a hard place because BASF were not willing to grant a licence to Umicore. But there was a possible way out: BASF would consider granting Umicore a limited licence if Audi would guarantee shifting sourcing to BASF from 2016 or earlier.
367. This was a creative attempt to solve the conundrum of how to use IP rights to get more business, but again it did not work and led only to a stand-off, with Audi saying *“We cannot guarantee that we will shift production to BASF, if you cannot guarantee that you will meet our technical requirements”*, and then making it clear that action by BASF which, directly or indirectly, sought to push them into a corner would have serious consequences for the future, i.e.:
- “1) technical solution that uses some other product or 2) Strategic solution – we give you the SCRF business, but take away everything else DOC, CSF, TWC, LNT etc., and no further cooperation with BASF. And no further technical knowledge sharing with BASF.”*
368. It seems that the matter was not pressed. Certainly, I have been shown no evidence to suggest there was any shift in Audi’s approach to procurement in light of Mr Kumar’s initiative.
369. Mr Stewart QC sought to argue that the Audi episode was a particular case, and the reason the patent position did not tilt the balance in BASF’s favour was because of the reservations Audi apparently had as to whether BASF could meet their technical

requirements. He says that in a situation where the technical offering was comparable, the patent position *would* tilt the balance; or at any rate, there was an appreciable chance that it would, and it is that chance that BASF was deprived of by Carpmaels' breach.

370. In my judgment, this is too narrow and literal a reading of the Audi response, which is unrealistic and against the grain of the rest of the evidence. Reading it fairly, it seems to me that what Audi were really saying was that they would not be pushed into making a procurement decision based on anything other than their own assessment of what was right for them. Even in a marginal case, it would be for them to decide. The question of patent rights infringing on the FTO of other suppliers was something extraneous to their procurement decision, in the sense that Audi expected any FTO problems to be sorted out between the suppliers and did not want to be bothered by it or influenced by it at all.
371. That was the settled pattern in the market and Audi expected it to apply to them. Mr Kumar's attempted passive aggressive approach – of acknowledging there was a problem but saying it was not of BASF's making – was an attempt to subvert that general pattern, but it cut no ice with Audi, and it seems in consequence BASF backed off.
372. There is then the episode involving VW, following the grant of the Divisional Patent in June 2015.
373. Again, the approach was a creative attempt to use patent rights not to secure a licence fee but instead to obtain sales – i.e., an attempt to subvert the usual order of things. What was creative was the idea of approaching VW first, not JMI or Umicore, and seeking to negotiate a licence with VW, with royalties paid on a sliding scale, and with the rate reducing in the event of increased orders placed with BASF.
374. What is significant about this is that it was an attempt to establish a direct correlation between the existence of the patent right, and procurement decisions to be made in the future by VW. In other words, it was an attempt to do the very thing the Claimants' present case is based on: i.e., to use the existence of the patent right to improve BASF's chances of being awarded business.
375. The attempt failed. VW were not interested. They did not wish their freedom to make procurement decisions to be inhibited. They did not want the Divisional Patent to be a factor at all, and they had the commercial strength and power to be able to push back and they did so. Their "*First reaction*" as reported by Mr Horstman could not have been clearer (see above at [201]):

"VW tries to stay out of IP and patent related topics. Therefore they ask for a freedom to operate statement from their suppliers.

...

They will not accept any restrictions on their final procurement decisions."

376. Their response when later told that BASF were to prioritise licences with Umicore and JMI indicates their irritation at having had to engage with BASF's novel proposal:

“VW appreciates this path forward as this was their request from the very beginning (‘ ... you have to solve this within the industry, don’t bother us’).”

377. Drawing the threads together on the FTO point, it thus seems to me that the effect of FTO is materially overstated in the Claimants’ case. Had the effect been that contended for, then Mr LoCascio and Mr Kumar would not have needed to work so hard to try develop a strategy for using IP rights to drive market share. It would have happened naturally.
378. It thus seems to me that when OEMs said they respected IP rights and required a confirmation of FTO, what they meant was that they expected any problems to be flagged and dealt with by the suppliers, including by the suppliers sorting out appropriate licence arrangements if that is what had to happen. They did not mean that they would permit their procurement decisions to be inhibited by one supplier asserting a monopoly position.

JMI would still have bid for business in the counterfactual

379. One reaches essentially the same conclusion looking at the problem from JMI’s perspective. The Claimants’ approach invites one to assume that they would have been inhibited by Patent 458 from bidding for business which fell within the claims of the Patent.
380. I am not persuaded that there is any real chance JMI would have been so inhibited.
381. Instead, it seems to me clear they would have conducted a risk analysis, informed by two key factors: (1) the likelihood of the revocation of Patent 458 being upheld on appeal, and (2) the likelihood in any event of any FTO issue, even if Patent 458 were validated, being solved by the grant of a licence.
382. In my judgment, having balanced those risks, JMI would have bid for the OEMs’ business anyway, and worked hard to ensure the OEMs gave it to them. That is plainly so in light of what was at stake. The market was potentially a large and lucrative one; JMI had invested time and energy in developing its own SCRoF products; it had put time and energy into nurturing relations with the OEMs, and VW in particular; and it had fought hard to win before the OD, precisely (one assumes) in order to put itself in the strongest possible position to bid for business. With such momentum behind the development and commercial exploitation of its SCRoF products, I find it difficult to see there would have been any real chance of JMI backing off when the time eventually came for its investments of time and energy to produce some results in commercial terms. And particularly so when it could say to OEMs that BASF had taken no proactive steps at all in relation to the 458 Patent, despite being aware of JMI’s activity in this area.
383. The Claimants expressly put their case to Dr O’Sullivan on the basis that the issue for JMI was one of risk management. Dr O’Sullivan thought that the risks would have been manageable, even with a patent in force:

“Q. One can understand at this stage just how seriously Johnson Matthey would have to take the 458 Patent. Because, if it’s a valid

patent, at that stage it's clear to them that a SCRoF is going to be applicable to, at the very least, a large part of the light duty diesel market in Europe. Do you agree?

A. I think it was a patent that Johnson Matthey took seriously, yes, my Lord.

Q. And we can see that right at the top of the company, the previous autumn, following the meeting between Mr John Walker and his equivalent at BASF, there had been a request for a licence. In the absence of agreement as to the licence, JMI would have been taking an enormous risk if the patent was found to be valid, wouldn't they?

A. I think that – and this, my Lord, would have been at the John Walker level, because this was a global issue - that the assumption would have been that if it turned out BASF had a valid patent, that a licence would be negotiated giving Johnson Matthey the right to supply.

...

Q. This would have been an enormously serious thing, wouldn't it, to try and not comply with an enforced patent without a licence?

A. As I said before, my Lord, I think that the assumption would have been that, had BASF ended up with a valid patent, that Johnson Matthey would have sought a licence and that would certainly have been the path of least resistance for both companies.”

384. And as Dr O'Sullivan further explained:

“A. There were ways of de-risking that position, my Lord. One was challenging the patent, which Johnson Matthey and Umicore were doing quite vigorously, and the belief that the patent wasn't that strong in the first place. And the other would have been the prospects of getting a licence should that patent actually be granted. So I think that there was a risk, but Johnson Matthey considered that the risk was being managed.”

385. I accept that evidence, the logic of which is overwhelming, not only as a matter of common sense but also in light of the other available materials.

386. Taking the two factors in turn, the first is the vulnerability of Patent 458 to challenge. As Mr LoCascio appeared to accept in his draft Note of April 2014 (above at [174]), the fact that a patent exists does not mean it is not susceptible to challenge, and a patent of questionable validity may well not stand in the way of a competitor pursuing its own commercial ends.

387. I have already set out above my observations on the issues affecting Patent 458. JMI thought it was a weak patent. I consider they were correct to hold that view. In any event, I have no doubt that they held it, and held it legitimately, and that is all that is

relevant for the purposes of this part of the case. The consequence is, as it seems to me, that they would have felt no inhibition about bidding for awards of products which, on the face of it, fell within the claims of the Patent. Although no doubt accepting the existence of a risk that they might be wrong, I conclude they would have considered the risk a manageable one in light of the likelihood of the OD's decision being upheld on appeal, and would have bid for the business anyway. In the counterfactual, they would no doubt have sought to persuade the OEMs of their point of view.

388. JMI would have been reinforced in their approach, in my judgment, by the second factor, i.e. by the fact that they could count on a licence being made available to them in any event, if it became necessary.
389. This reality is accepted by BASF's own witnesses. For example, Mr Steinbock said the following in his witness statement about the attitude of German OEMs to the question of freedom to operate (emphasis added):

“German OEMs require suppliers to have freedom to operate. For example, in respect of business that BASF was awarded by VW in 2013, BASF was required to enter into a ‘nomination agreement’ with VW in which BASF had to confirm, ‘the intellectual property rights of third parties are not infringed by the manufacture and delivery of the delivery items’.

However, German OEMs will not get involved in licence negotiations between suppliers and they expect suppliers to licence their key intellectual property to competitors in the market. In other words, German OEMs expect patent holders to behave in a reasonable commercial manner, and to provide licences of their key intellectual property at reasonable royalty rates. Therefore, if a German OEM wanted to award business to a supplier that did not have freedom to operate then it would expect that supplier to seek a licence of the patent from the patent holder and for the patent holder to grant a licence.”

390. Mr Birri's evidence in relation to Ford was to similar effect. He said as follows (again, emphasis added):

“Ford are not prepared to get involved in licensing discussions between suppliers and expect licensing negotiations to be sorted out in the supply chain and for suppliers to act in a reasonable and commercial manner. It is the preference of Ford for each supplier to have freedom to operate so that there is competition in the market but Ford will not actively place pressure on its suppliers to licence their intellectual property in order to ensure that there is competition. However, Ford do place pressure on their suppliers to ensure that they have freedom to operate and so the onus is on the supplier who does not have freedom to operate to obtain a licence from a patent holder.”

391. This broad approach is supported by the evidence of Dr O'Sullivan, who said the following when asked about Daimler:

“Q. Back in 2012, the position for example, and you didn't deal with Daimler, but dealing with Daimler, if BASF had gone to Daimler and said: look, we've a patent here, it's in force, that would have been something which would obviously have been of concern to Daimler, wouldn't it?”

A. Hypothetically, my Lord, I think it -- they would have seen it as a valid issue, although I suspect that they would have said: well, okay, go and agree a licence with your competitor, so that it allows freedom of supply.”

392. The fact is that, invariably in this marketplace, licences were made available if the OEMs wished them to be made available. Mr LoCascio's strategy documents from 2013 and 2014 also recognised this basic reality. His September 2013 slides on “*Strategies to resolve Johnson Matthey Issues*”, which were focused on JMI's perceived infringement of the “*zoned catalyst*” IP, were realistic enough to recognise the risk of aggravating the OEMs, who would “*tend to force x-licensing*” (see [154] above). His “*preferred*” action was to “*Diplomatically engage JMI*” and “*Negotiate licence*” (see [155] above). Mr LoCascio's document of April 2014 ([173] above), although agitating for possible enforcement action in the US related to the “*zoned SCR + AMOX*” technology, nonetheless suggested that the likely outcome would be a settlement out of court based on a royalty agreement.
393. In fact, examining it in more detail, the manner in which the Claimants put their case in these proceedings recognises that FTO would not have been a problem for JMI in the counterfactual. Their case assumes a split award of the VW business, and the prospect of a licence emerging from that process (see [226(iv)(c)] above).
394. That submission reinforces the point that in this marketplace, the general expectation was that a licence would solve any potential FTO problem, even if one arose. JMI, and the OEMs, would therefore most likely have acted on the basis that any FTO risk was a manageable one.
395. That overall conclusion is further borne out by an examination of what JMI *did in fact do*, both in relation to Patent 458 before it was revoked, and then later in relation to the Divisional Patent. Neither acted as an inhibition on JMI bidding for, and winning, business.
396. As to the first point, the existence of the 458 Patent had plainly not, prior to the OD hearing in March 2012, and despite JMI knowing about it and apparently treating it as a “*prominent patent*” that it monitored, dissuaded JMI from engaging with OEMs in relation to SCRoFs and indeed becoming VW's development partner for SCRoFs. BASF had permitted that to happen, it seems without objection, or at any rate without any active step to prevent it. If, prior to the OD decision, JMI, although knowing about the 458 Patent, did not feel inhibited from engaging with OEMs, it is very difficult to see why it would have felt inhibited *after* the successful challenge before the OD, but before the TBA hearing. It would surely have considered its position to be stronger, not weaker, having succeeded at the first level.
397. As to the question of the Divisional, it is instructive to consider the behaviour of both JMI and Umicore. Umicore filed an objection to the Divisional Patent in April 2013,

and JMI an objection in June 2013 (see [151]) above. This was during the course of the Daimler and VW RFQ processes mentioned above (see [137]-[138]). Umicore then raised the issue of a possible licence of the SCRoF patents in October 2013 ([156] above), and discussions continued (albeit with limited enthusiasm on the part of BASF) until July 2014 ([175] above). As to JMI, they renewed their request for a licence of the SCRoF patent family in August 2014 (see [184] - [185] above), and it seems there was another approach in early 2015 ([195] above). BASF refused on each occasion.

398. Several observations may be made about these events. Taken collectively, they show both JMI and Umicore responding to the pending application for the Divisional. That is inconsistent, it seems to me, with the Claimants' case that, the 458 Patent having been swept away, the coast was entirely clear for JMI in particular to bid for business from the OEMs.
399. The coast was not entirely clear. The prospective Divisional was an issue, and a risk, that had to be dealt with. I find it difficult to see why, in terms of influencing the OEMs' procurement decisions, it was any less potent as a risk or threat than the 458 Patent would have been, if an appeal had been filed against it in time. True, the Divisional, while pending, represented only a *prospective* inhibition on competitors' freedom to operate; but all the same, one would expect OEMs to have wanted to know about it, because of the risk of the prospective right turning into an actual one from the time of grant. I fail to see why that would have been any less of a matter of concern to an OEM looking to award business to a competitor than the existence of a granted patent, revoked by decision of the OD, but with the revocation suspended pending an appeal.
400. Moreover, the view JMI took of the pending Divisional is entirely consistent with my assessment of what it is likely to have done in the counterfactual, had the 458 Patent been in existence. It bid for business anyway, and assumed that any possible FTO problem could be solved either by a successful challenge to the Divisional or by a licence.
401. JMI did not back off, and neither did the OEMs, who did not shy away from awarding JMI business – hence JMI's successes with Daimler and VW in 2013, and with Ford in 2014.
402. The point is only reinforced by an examination of events subsequent to the grant of the Divisional Patent. JMI wrote immediately to seek a licence (see above at [196]). They were obviously highly confident of obtaining one, because while BASF were engaged in their efforts to extract increased market share from VW, and so before JMI had any licence in place, JMI bid for, and won, new work from Daimler, Ford and VW.

No evidence that the existence of a patent was regarded as business critical

403. There is another, general point about the prosecution of the Divisional Patent. This is critical both to the Claimants' case in relation to lost profits, and that in relation to loss of enhanced licence fees. It concerns not JMI's response to the pending Divisional, but rather, BASF's attitude in relation to it.
404. The point is this. The Claimants say that all that was needed to give them a material commercial advantage during the 2013-2015 period was a granted patent – that would

have made all the difference and resulted in huge commercial benefits, both because of the FTO effect and because of the likely impact on negotiation of licence fees.

405. Were that to be correct, however, it seems to me one would have expected to see a very different approach *from* BASF in relation to the prosecution of the Divisional. But their approach showed no real sense of urgency and is not consistent with the idea that the absence of a valid patent during the 2013-2015 period was a business critical issue.
406. In making this observation, I bear in mind the criticisms made by Mr Stewart QC of the conduct of both Mr Fisher and Dr Howard in the immediate aftermath of their identifying the breach, and then of Dr Howard as regards his delay for a period of about six months in providing the advice Ms Brown had sought on res judicata and double-patenting issues. On the first point, Ms Brown is entitled to feel aggrieved that the gist of Carpmaels' internal research was not shared with her (see [123]-[124] above), or the increasing sense of pessimism felt by Mr Fisher and Dr Howard about the potential for their reinstatement application succeeding. On the second point, I am sure she is again entitled to feel dissatisfied at Dr Howard's delay, which even if the product of a heavy workload, indicated a lack of respect for an important client which Dr Howard was plainly embarrassed about.
407. All that said, the fact is that there was no sense of real urgency coming from the BASF side either. By October 2012 it was clear that the reinstatement application was in trouble, given the OD's preliminary opinion. The position was terminal following its final decision in January 2013. Certainly there was delay by Dr Howard, and chasing by Ms Brown, but there is no evidence of urgent progress of the Divisional being a business critical action - which one would have expected were the Claimants' case theory correct, and were the existence of a patent likely to have made all the difference in the soon to emerge RFQs from Daimler, VW and Ford. There is nothing in the correspondence which suggests serious and urgent concern about the immediate business impact of the loss of the 458 Patent, and nothing which suggests that urgent action was required in relation to the Divisional, because the market was entering a critical period and valuable opportunities might otherwise be lost.
408. This point was addressed by BASF as one concerning its obligation to mitigate its loss, but that is not, it seems to me, its real significance nor indeed the way in which Carpmaels sought to characterise it. Their point was a more straightforward forensic one, which was that if the mere existence of a valid patent in truth had the commercial potency the Claimants suggest, then one would have expected to see more serious concerns expressed on the BASF side and more urgent action demanded in response. There was disappointment, it is true, but the level of reaction to the loss of the 458 Patent, including after the OD's decision in January 2013, was not consistent with it being the business critical loss the Claimants now maintain, and neither was the relatively leisurely approach taken to prosecution of the Divisional.
409. Even after Dr Howard's advice was given in November 2013, little of substance happened until June 2014 when Dr Howard provided his draft submissions, which were then filed in August 2014. Ms Brown was entitled to chase for the promised drafts, which she did, but neither her chasing emails (see [179] above), nor her report internally on her telephone call with Dr Howard in June 2014 ([181] above), show any real urgency.

410. These slightly puzzling events, it seems to me, are readily explicable on the basis of the other available evidence, and entirely consistent with it. Matters were progressed without any real sense of urgency because at the time there was no coherent strategy for the exploitation of the Divisional Patent, any more than there had been a coherent strategy for the exploitation of the 458 Patent. Mr LoCascio was trying to work one out, but one sees from his September 2013 “*CC Intellectual Property Strategy – Update*” ([153] above) that historically there had been a lack of organisation and direction in relation to IP matters (see, e.g., his frank assessment that “[w]e do not coordinate IP between business, R&D and counsel effectively.”)
411. That assessment is borne out by an examination of Dr Howard’s evidence as to what he knew of the commercial background in 2013 to the exploitation of the Divisional patent – see his exchanges with Mr Stewart set out at [162]-[163] above, which included the following:

“In this case there was no information about whether the patent -- there was no information about the product themselves. No technical information. I didn't know what the products were. There was no information about whether those products fell within the scope of the patent. There was no information about, if they did fall within the scope of the patent, which claims they fell within the scope of. So this information was contributed at my request at a very broad overview and it gave me only that very broad overview ...”

412. Of course, Mr LoCascio’s attempts successfully to leverage BASF’s IP rights continued, as did those of Mr Kumar, but as I have explained, despite their admirable creativity, no-one was ever able successfully to solve the problem of how to exploit such rights in a manner which would result in improved sales. To my mind, this explains why prosecution of the Divisional, although carried through, was not regarded as a business critical activity in the 2013-2015 period. It was not business critical because no-one could think of a way of using the Divisional, even if granted, in a way which would boost sales, or even generate a *real* chance of improved sales. If they had been able to, and certainly if the mere *grant* of the Divisional, without more, would have been likely to boost sales in a material way (which is the essence of the Claimants’ case in the counterfactual in relation to the 458 Patent), then one would have expected the nature of Ms Brown’s engagement with Dr Howard to have been very different. The prospect of earning licence fees was very much a secondary consideration, and certainly not a priority at the time.

The 2012-2015 Period - Lost Profits on Sales

413. My conclusion above on the proper legal framework for this issue was that the Claimants are in principle entitled to claim for the lost chance that the existence of the 458 Patent, in the counterfactual scenario, would have made a difference to the outcome of the procurement decisions made by the OEMs. However, in order to have any recoverable loss, they need to show that any such lost chance was a real one – i.e., in the region of 10% or more.
414. My conclusion on the facts is that there was no real chance of OEMs’ procurement decisions being different. I say that in part based on the general points above, but also rely on the more specific points made below. The effect of the general points is that

neither JMI or the OEMs would have behaved in any materially different way. JMI would have bid for business and the OEMs would have made awards without the 458 Patent exercising any real sway over their decision-making. They would have assumed that any risk was manageable, and if necessary could be resolved by the grant of a licence. That, ultimately, was the answer to any FTO issue. The 458 Patent had no real potency without active and hostile steps being undertaken to enforce the monopoly right it created. JMI and the OEMs would have proceeded on the basis that that was very unlikely to happen, and indeed it is no part of the Claimants' case to say that it would.

415. The more specific points are as follows.

Daimler: March 2013 RFQ

416. The Claimants' case in their Written Closing was that in the counterfactual "... *it is highly likely that the existence of the Patent would have driven up JMI's prices and/or have caused Daimler to decide to grant the business to BASF in any event.*" They say that in either event, there was a real chance of a better outcome for BASF because the procurement decision was made on the basis of a narrow price difference of some Euro 1m.

417. A number of points arise in connection with the Claimants' formulation. To begin with, the idea that the existence of the Patent would have driven up JMI's prices is drawn from Mr Steinbock's evidence, to the effect that payment of a licence royalty by JMI (which would have been added as a cost) would have driven up JMI's prices, and made it more expensive in the Daimler competition. This however is inconsistent with the remaining parts of the Claimants' case, which proceed on the basis that a licence would only have emerged later, during the VW competition. Indeed, the Claimants say expressly in their Written Closing: "*Having won the Daimler business, no licence would have been considered at this time.*" If that is correct, then there would have been no licence royalty payable by JMI at the time of the Daimler RFQ and thus no chance of a better outcome on that basis.

418. Even if that is incorrect, and in the counterfactual there *would* have been a licence (or the promise of one) at the time of the Daimler bid, then there would have been no FTO problem, and no chance of the mere existence of the 458 Patent making any difference to Daimler's decision. The bald assertion that the existence of the Patent would have "*caused Daimler to decide to grant the business to BASF in any event*" is entirely unpersuasive in light of the weight of evidence pointing the other way, including the evidence of Daimler responding negatively only a few months before in relation to the CuCHA patent family, which had resulted in BASF agreeing to licence the CuCHA patents to JMI (see above at [98]).

419. Even if a licence fee *had* been payable, I am not persuaded by Mr Steinbock's evidence that it would have made a difference to JMI's pricing, such as to generate an increased chance of an award of business to BASF. Here I agree with Mr Wardell QC that the best evidence on JMI's pricing strategy is that of Dr O'Sullivan, not that of Mr Steinbock. Dr O'Sullivan's evidence was that the profit margins on this business were high and so additional costs could easily be absorbed. I accept that evidence. It also seems to me very likely that at this stage, given that Daimler was one of the first RFQs, JMI would have wished to bid competitively on price in order to gain the relevant business and with it incumbency with the supplier. I find Mr Steinbock's evidence on

this point too speculative to be of value, and it does not persuade me that a real chance was lost.

VW: March 2013 RFQ

420. In my judgment, there was no real chance in the counterfactual of the Claimants being awarded any larger share of the VW business than they in fact obtained as a result of its 2013 RFQ – which is thought to be in the region of 47%.
421. The Claimants’ own case is that a licence would have emerged from this process. If that is correct, then no FTO issue would have arisen: there would have been an open competition, with the 458 Patent essentially a neutral factor.
422. Even without a request for a licence from JMI, I am not persuaded, given the analysis already set out above, that FTO would have operated as an inhibition on JMI or indeed on VW. JMI had been VW’s development partner since 2011 without objection. VW and JMI would no doubt have felt justified in attributing no real weight to the 458 Patent in consequence, and would have been reinforced in that view, in the counterfactual, given the decision of the OD revoking it.
423. The Claimants in their Written Closing again point to the likelihood of the need to pay a licence fee driving up JMI’s prices, but again I am not persuaded by this point: (1) for the reasons already given above – the evidence supporting it is speculative; and (2) because the Claimants’ case on it is incoherent – they say that negotiations over the form of the licence would have taken several months, and if so it is unclear how any licence fee would have been a factor in the ongoing RFQ process in any event.
424. In a sense, it seems to me, BASF did well to secure 47% of the business on this initial VW RFQ. It did not, I think, have any real chance of obtaining more as a result of the 458 Patent.

Ford

425. The Ford RFQ was in September 2013. By then, on the Claimants’ own case, a licence, or at least a request for a licence, is likely to have emerged from the earlier VW RFQ. If so, I do not see how FTO would have been regarded as a sufficiently serious issue to influence Ford’s procurement decisions. Even were that not the case, I am unpersuaded, for the reasons already developed above, that the 458 Patent would have been regarded as a sufficiently potent threat to have any material impact on either JMI’s or Ford’s behaviour.
426. Mr Jordan in his evidence emphasised Ford’s respect for IP rights and their desire to encourage innovation, by rewarding suppliers who develop new products and pushing business in their direction, even if a licence is granted which ensures the existence of more than one potential supplier. He gave an example:

“A. ... When a supplier comes in with a special technology we tend to sometimes create a situation where they will have to sign what we call a design transfer agreement. We may award them the -- we will award them the majority of the business, and we will have -- we will create a second supplier that becomes more

of a contract manufacturer to manufacture the technology in support of the business, because we do want to keep at least two suppliers in most cases. But we also believe we should reward a supplier that comes in with a technology, and they are rewarded with the largest portion of the business.”

427. That, however, strikes me as a somewhat different situation to that in the counterfactual, in which the validity of the 458 Patent would have been disputed and indeed the Patent revoked in the OD for lack of inventive step. One can understand the logic of wishing to reward the inventor of a new technology, but here in the counterfactual, there would have been a very substantial question whether BASF had in fact invented anything of value at all. In such a case, it seems to me the principle Mr Jordan describes has no real application; or if it does in principle, the likelihood of it actually making any difference is too intangible to have any real value.

The 2012-2015 Period - Lost Licence Income

No Sufficient Proof of Loss

428. I come to the Claimants' case (really, BASF Corp's case) based on the lost chance of improved licence income. As noted already above, this rests on the premise that had the 458 Patent been in existence in 2013 and 2014, then it would have prompted a request for a licence from JMI at that stage; and had that happened, the circumstances at the time were such that there is a good chance the negotiations would have resulted in a much higher licence rate than that in fact agreed with JMI in 2016, after the grant of the Divisional Patent in June 2015.
429. As also noted above (see at [345(ii)]), it seems to me that the analysis in respect of this issue is different to that in relation to the claim for the lost chance of improved sales of SCRoF products to OEMs. That is because of the need for the Claimants to show that they would actually have wished to try to conclude a licence with JMI if approached. Unless they can do so, my judgment is that they cannot show that the chain of causation is complete: if they cannot show on the balance of probabilities that they would have taken a necessary step to convert the situation they would have been in *absent* breach into some financial (or financially measurable) advantage, then they cannot show that the breach has caused them any loss. Here, a financially measurable advantage would accrue in the counterfactual only if the Claimants were willing to negotiate with JMI with a view to concluding a licence. No financially measurable advantage would accrue only by reason of JMI making an approach. The idea that the chances of JMI making an approach may have been higher in the counterfactual is neither here nor there, it seems to me, because an approach without a positive response is worth nothing at all.
430. On this point, I have concluded that the Claimants have not discharged the burden of proof which rests on them, in the sense that they have not shown on the evidence that they would – on the balance of probabilities – have responded positively to an overture by JMI.
431. I say that partly because of the point relied on by Mr Wardell QC, namely that none of the Claimants' witnesses have put forward any positive evidence that they would have engaged positively with a licence proposal during the counterfactual period. That is not I think a complete answer to the point, because if otherwise the evidence were

consistent with the conclusion that the Claimants would have been minded to engage, it seems to me it would have been possible to draw an inference to that effect. But I do not think it appropriate to do so. I say that because I find the Claimants' evidence quite inconsistent with the idea that they would have sought to engage with the idea of a licence with JMI before they actually did.

432. To begin with, there was the approach made to Mr Gay in November 2011 (see above at [103]). BASF said no. Mr Gay's evidence was to the effect that it was too early in the development of the market to agree a licence: His points were that (a) SCRoF had not yet penetrated the market and the technology was still being developed; (b) OEMs were not yet applying pressure on BASF to grant a licence; and (c) BASF wanted to wait and see how the market developed and see whether it could leverage its patents to gain market share and secure early advantages.
433. The next point is the response to the approach made by JMI in August 2014 (see [184]-[185] above). Mr Kumar was the person who dealt with this approach although he says that he discussed it with Mr LoCascio, Ms Brown and either Marc Ehrhardt or Rui Goerck. Critically, he said as follows in his evidence (emphasis added):

“Following these discussions, we agreed ... that BASF's position in relation to licensing SCRoF had not changed since JMI's first request for a licence of SCRoF in 2012. I therefore informed Chris Bennett that BASF was not interested in licensing SCRoF to JMI.”

434. Thus, Mr Kumar's evidence was that it was still premature even in August 2014 to be expressing an interest in licensing the SCRoF portfolio. Things were the same as in 2011.
435. There was then it seems a further approach by JMI in early 2015, referred to in the IP Committee Minutes of 13 January 2015 (see above at [195]: “*JMI will not settle unless an SCRF licence is included*”). Again, however, there is nothing to suggest that BASF positively engaged with it. Instead, they chose to engage only in 2016, after trying first to leverage the Divisional Patent with VW, in order to gain market share.
436. Further, the Claimants' pleaded case in the Annex to their Particulars of Claim, when dealing with the period for the awards under the Three Platforms (i.e., 2013-2014) was expressly that (see para. 114(v)):

“BASF would not have willingly granted a licence to JMI under the 458 Patent at that time.”

437. The Claimants' case in their Written Closing was that 2013 “... *was an appropriate time to negotiate a licence considering the factors set out by Mr Gay in his evidence as to when is the right time to licence.*” However, I find that impossible to square with the evidence above, and in particular the evidence of Mr Kumar as to the position as BASF saw it in 2014, which apparently was just the same – applying Mr Gay's checklist of factors – as it had been in 2011/2012. It is also impossible to square with the Claimants' pleaded case.

438. On the basis of these facts, I do not feel able to conclude that BASF would – on the balance of probabilities – have wished to seek to conclude a licence with JMI during the 2013-2015 counterfactual period. If, according to the evidence, it was premature to do so not only in November 2011, but also in August 2014 and, it seems, in January 2015, then there is no real basis for saying that the time would have been right in (say) 2013, at the time of the first award by VW.
439. It is true that, in the counterfactual in 2013, BASF would have had the benefit of the 458 Patent, pending appeal. I fail to see how that changes the analysis, however. After all, in August 2014, at the time of the approach to Mr Kumar, not only were BASF pursuing the Divisional, but JMI had by that stage already won awards of business from Daimler, VW and Ford (the former two in 2013 and the latter in June 2014). If that situation was not sufficiently well developed to encourage BASF to engage with JMI's approach for a licence, I do not see why the position in the counterfactual in 2013 would have been sufficiently well developed. To my mind, they appear in substance the same. The truth of it, it seems to me, is that BASF did not really want a licence. That was very much second prize. Instead, they were intent on using efforts to chase the Holy Grail of translating their IP rights into enhanced market share.
440. It follows that I conclude that the claim for enhanced licence income must fail, because the Claimants have not sufficiently made out their case on the evidence. In case I am wrong about that, however, I will go on and express some conclusions about the quantum of the claim for the lost chance of increased licence income, had negotiations in fact been pursued in 2013.

Quantum

441. Some information relevant to the analysis on this point is said to be business sensitive and confidential – i.e., the royalty rates in respect of the SCRoF patent portfolio in fact agreed with JMI in 2016. I set out that information in a confidential Annex, forming part of a separate, closed version of this Judgment. On analysis, however, it seems to me it is not critical to an understanding of my reasoning on this issue, which turns on the following point.
442. The point is this. A royalty rate *was* in fact agreed with JMI in October 2016, following the grant of the Divisional Patent. I need not say what it is. What is relevant is that that rate is obviously a good starting point for determining what royalty rate would have been achieved in a hypothetical negotiation between the same parties in 2013. I accept Mr Bezant's evidence on this issue: the royalty terms actually agreed in respect of essentially the same patent rights, between the same parties, covering the same territory and for the same time period are plainly a valuable (indeed the most valuable) comparator.
443. The Claimants' expert, Ms Gutteridge, agreed. She accepted that, all things being equal, the fact that the same parties had attributed a value to the SCRoF patent portfolio in 2016 was important as a comparator. But her main point was that all things were not equal. The negotiating environment in 2013 would have been much more favourable and would have given BASF Corp much greater leverage.
444. This was the argument then developed by the Claimants in their Written Closing, both by reference to Ms Gutteridge's evidence and that of Ms Schmidt.

445. Ms Schmidt, who was responsible for the negotiations with JMI in 2016 which led to the SCRoF Licence, said in her evidence that her negotiating position by then was very poor. That was because by 2016, JMI had been working with VW and the other OEMs for a number of years and was well embedded with them. Thus, she said:

“BASF was in a very weak negotiating position – JMI was the market leader and was well-placed with Volkswagen and other key OEMs, and I did not have many cards to play in the negotiations. We would definitely have been in a stronger negotiating position if we had been licensing a thicker patent portfolio (including the original European patent for SCR on Filter, EP 663 458) and/or if we had already been well-placed with the key European OEMs ...

By this stage, there was no more room for negotiation. Mr Bennett [from JMI] knew that BASF would ultimately need to agree to (or get close to) the terms on which JMI themselves had always wanted, and he was right ...

It was an asymmetrical negotiation and BASF’s position was only getting weaker by the day as JMI continued to work closely with the OEMs and cement its position as the market leader for SCR on Filter”

446. To similar effect, Ms Gutteridge identified a number of points of difference between the position as it was in 2016, and that which would have obtained in the counterfactual in 2013, but the main ones were (1) the timing of the negotiations in relation to the development of the SCRoF market and JMI’s position vis-à-vis key OEMs, and (2) the fact that in the counterfactual, the 458 Patent would have been in existence.
447. I am unpersuaded by these points, and do not consider that there would have been any real chance of a higher royalty rate being agreed for the SCRoF portfolio, even if discussions had been undertaken in 2013.
448. Dealing first with the matter of the timing of the negotiations:
- i) The Claimants’ case proceeds on the premise that 2013 was the ideal time for licence negotiations. To use Mr Stewart QC’s Shakespearean metaphor, the tide was in and about to flood out; or, at the risk of mixing metaphors, the stars were ideally aligned because (a) JMI was exposed to the pressure of the FTO requirement in bidding for business, but at the same time (b) it was not yet embedded with the OEMs in a manner which would prevent BASF making itself unpopular by asserting its own *exclusive* FTO and thus interrupting production.
 - ii) I see at least two very substantial objections to this line of reasoning, both of which have been mentioned already above. The first is Mr Kumar’s evidence about JMI’s approach for a licence in August 2014, and the view BASF expressed at that stage that, having regard to the factors in Mr Gay’s Witness Statement, matters had not moved on since 2011. In other words, Mr Kumar’s evidence was to the effect that 2014 was a sub-optimal time for the pursuit of licence negotiations with JMI because the market at that stage was not

sufficiently commercialised. That makes it difficult to give credit to the argument that, in the counterfactual, 2013 would have been the optimal time for licence negotiations with JMI.

- iii) The second point is that made above about BASF's own rather leisurely approach to the prosecution of the Divisional Patent. Even taking account of Carpmaels' own defaults, if it were true that the 2013-2015 period presented a narrowing window of opportunity for leveraging the SCRoF patent portfolio to maximum advantage in licence fee terms, and if, as is submitted, an EU Patent would have been a business critical component in that enterprise, one would have expected some sense of that to have been communicated to Dr Howard. However, he was given no sense that the tide was in and about to go out, or that the stars were aligned but soon to change position. He was given no sense that timing was a critical factor for the business. Indeed, looking at Dr Howard's evidence as to what he was told (see above at [162]-[163]), he was given very little information about the dynamics of the marketplace in which the Divisional Patent was expected to feature.
- iv) Even assuming I am incorrect about those points, I also find it difficult to see how JMI would have felt under any real pressure to agree favourable licence terms in 2013 in the circumstances of the counterfactual.
- v) JMI had of course requested a SCRoF licence in late 2011, and had been rebuffed. But the lack of any licence either before or after that did not stop them pursuing their plans for development of their own SCRoF products in the period up until the OD hearing in March 2012. Having been selected as VW's development partner, they were willing to take the risk, for all the reasons I have already developed above: they were confident that, one way or another, things would work out. Having not shown any signs of feeling pressure up until March 2012, even before the outcome of the OD hearing was known, I fail to see why the pressure thereafter would have *increased*, when the outcome of the OD hearing *was* known, and was negative for BASF. If anything, it seems to me that the risk profile for JMI would only have improved during this period, making it less likely that they would have renewed their request for a licence during the counterfactual or, if they had chosen to do so, making it likely that they would hold firm for a low royalty rate in a manner consistent with their overall positioning.
- vi) I thus fail to see how the 2013 counterfactual situation would have generated greater pressure than that in 2016. If anything, the pressure in 2016 was greater, because by then JMI had taken its gamble and, assuming it would be able to resolve any FTO issue, had embedded itself with the OEMs. The OEMs would certainly have been unhappy with BASF had it taken steps to interfere with ongoing production; but surely, if BASF had done so and had been able to make good its claims based on the Divisional Patent, they would also have been seriously unhappy with JMI also for taking a gamble which had backfired. Yet in the 2016 negotiations, JMI did not budge from its original negotiating position on the royalty rate, and BASF Corp eventually accepted it. That being the outcome in those circumstances, I fail to see why JMI would have shown a lesser resolve in the circumstances of the counterfactual in 2013.

449. To deal briefly with the second distinguishing factor, i.e. the relevance of Patent 458 actually being in force in the counterfactual in 2013, it is true that it would have been and that BASF would therefore have had what Ms Schmidt called a “*thicker patent portfolio*.” I do not see however that that would have generated more pressure on BASF in negotiating terms than the Divisional did in 2016. No-one has suggested that there was any meaningful difference in the scope of the claims under the two Patents, in the sense that they both cover the same technical features and characteristics of the emission system claimed. Mr Walker’s letter of June 2015 proceeded on the basis that the claims of the Divisional Patent were just as broad in practical terms as those of the 458 Patent, and thus were just as much of a threat (if a threat at all) as the 458 Patent.
450. There is no other substantive difference between them, which would support the conclusion that the 458 Patent in the circumstances of the counterfactual in 2013 would have been a more potent a threat than the later Divisional Patent. If anything, as I have already mentioned, it would have seemed weaker, having already been successfully challenged and revoked before the OD, and alive only because of the suspensive effect of the pending appeal.

XII The post-2015 Period – the Lost Appeal

451. There remains the question of the lost appeal against the OD decision revoking the 458 Patent, and whether any opportunity of real value was lost by BASF Corp being deprived of the opportunity of pursuing that appeal. More specifically, the issue is this. I have already determined above that, in the counterfactual, there was no real chance either of additional business being awarded or of licence terms being negotiated prior to the prospective appeal date in the first part of 2015. Was there a real chance of the lost appeal making a difference to those outcomes in periods *after* the prospective appeal date?
452. There are two points wrapped up in this issue. The first is whether the lost opportunity of pursuing an appeal *per se* was something of real value (i.e., whether any appeal had a real prospect of success). The second point is whether, even assuming a successful appeal outcome, the resultant (for BASF Corp) positive decision would have carried with it any real chance of generating a better financial out-turn than that which was actually achieved.
453. The Claimants’ position is that the appeal did have real prospects of success (at least 50/50), and they say that had the 458 Patent been upheld on appeal, that would have been a weighty negotiating chip in their hands.
454. In developing their submissions, principally in their Written Closing, the Claimants invited me to adopt the following legal principles derived from Mount v. Barker Austin (a firm) [1988] PNLR 493, per Simon Brown LJ at [2]-[4] on pages 510E-511C; Sharif v Garrett & Co [2001] EWCA Civ 1269; [2002] 1 WLR 3118, per Simon Brown LJ at [38]-[39]; Browning v Brachers [2005] EWCA Civ. 753; and Dixon v Clement Jones Solicitors (a firm) [2004] EWCA Civ 1005; [2005] PNLR 6. These principles, submitted the Claimants, were relevant to assessing “*the lost chance of success on appeal*”. They are:
- i) Although the legal burden of proof of course rests on the Claimants, the evidential burden rests on Carpmaels to establish that the Claimants have lost

nothing of any value and that the prospects of success on the 458 Patent appeal were negligible.

- ii) In assessing whether Carpmaels have discharged that burden the benefit of any doubts should be given to BASF.
- iii) If Carpmaels cannot discharge that burden, then the Court must evaluate what the prospects of success were.
- iv) In making that assessment the Court should not conduct a trial within a trial and should apply the principles set out in Armory v Delamirie (1772) 1 Str 505, being in short that, save to the extent the Court is persuaded otherwise by the defendant, it should assess the value of the lost property on a basis which is generous to the claimant.

455. I broadly agree with those principles, but with this important qualification. As already noted, it seems to me that in this case, I am not solely concerned with assessing the chances of a successful appeal. I am also concerned with the question whether a valid 458 Patent, even if one had emerged from the appeal, would have made a difference in terms of awards of business or in terms of increased licence income.

456. A question arises as to how these factors should be looked at, and how they inter-relate. One possibility is for them to be looked at separately; for the percentage chances of each to be assessed; and for the separate percentage chances to be multiplied together. This has been referred to as the “*mathematical approach*”, but it has been said that that approach to assessing loss of a chance is appropriate only in cases where the relevant steps are truly discrete or independent in nature, and is not appropriate where they overlap or are influenced by the same considerations: see, for example, the approach taken in Assetco v Grant Thornton [2020] EWCA Civ 1151; [2021] 3 All-ER 517, and referred to by the Court of Appeal at [127].

457. It seems to me that the steps here do overlap to an extent, although not completely. The question whether anything of real value was lost by Carpmaels’ negligence depends in part on an assessment of the potency of the 458 Patent, and the chances of success on appeal are a measure of that; but it also depends on an understanding of the relevant market dynamics, and how the Patent might (or might not) have been deployed in this particular market for financial gain.

458. In such circumstances, I am inclined against a purely mathematical approach. Rather, it seems to me that I should approach matters in the following way. Assuming (given my earlier findings) that no licence agreement had been entered into in the counterfactual before early 2015, what I should do is to ask what were the *overall chances* of the Claimants, absent Carpmaels’ negligence, successfully pitching for increased awards of business, or successfully negotiating more favourable licence terms, in periods *after* that time. A similar approach was taken by Floyd J in Tom Hoskins plc v EMW Law [2010] EWHC 479 (Ch); [2010] ECC 20, at paras [133]-[135], and by Vos J in Joyce v Bowman Law Ltd [2010] EWHC 251 (Ch); [2010] PNLR 22, at [55], both of which are referred to in Assetco at [127].

459. Of course part of this analysis rests on considering the chances of a successful appeal. I have already made some comments above about the validity issues affecting the 458

Patent. Nonetheless, I do not consider that, looked at in isolation, the chances of success on the prospective appeal were nil or only negligible. In other words, I think there was a real (i.e. greater than 10%) chance of success. In reaching that conclusion I bear in mind the following in particular:

- i) Carpmiels prosecuted both the 458 Patent and the Divisional, and of course in the 458 proceedings filed the Grounds of Appeal including Auxiliary Requests 1 and 3, which were designed to deal with the problem presented by Catalyst B1. It would not have been proper for them to have taken those steps had the positions they adopted truly been hopeless. Similar submissions were made by Dr Howard in later periods in support of the Divisional Patent, including in the written submissions made to the EPO on 2 April 2013, 6 August 2014 and 7 April 2015.
- ii) BASF Corp were not advised during the course of prosecution of the 458 Patent that the position was hopeless, and in fact in cross-examination Mr Fisher accepted that at the time he considered the arguments made in the OD hearing and in the prospective appeal, including the argument that the claims of the patent were to be construed in a technically sensible way, were good arguments.
- iii) I accept the Claimants' submissions that obviousness is a "*jury question*", and that the unpredictability of the obviousness issue is exacerbated by the inherent unpredictability of the EPO as a tribunal. Mr Fisher accepted in cross-examination that the outcome of hearings before the OD is hard to predict, and the outcome of hearings before the TBA is also difficult. The point is reinforced if one takes account of the fact that the original Examination Report for the 458 Patent stated that: "*The examples demonstrate that efficient denitration and particulate removal can be obtained by using the system and method as claimed*", which Ms Samuels in cross-examination accepted showed the Examiner having proceeded on the basis that the desired effects were demonstrated across the breadth of the claims. It is also reinforced by the consideration that the OD itself was split by a majority of 2-1 (see above at [113]).

460. Nonetheless, looking at the matter overall, my view is that the likelihood of BASF Corp's case succeeding on its appeal was less than 50/50. While accepting that there were arguments in both directions, including arguments in favour of validity which could be (and were) properly made, I am persuaded that there were fundamental difficulties with the 458 Patent – as I have already described above (see [227]]-[230]) – which overall would have made it less likely than not that any appeal would succeed.

461. Given the problem presented by document E6 and document D16, it seems to me that ultimately in the hypothetical, BASF Corp would have been pushed into trying to advance a case which relied on the alleged functional advantages provided by the claimed invention. There was a serious problem involved in trying to assert that the alleged functional advantages could be demonstrated across the full scope of the claims, because on the face of it they were not, in particular having regard to Catalyst B1. Addressing that issue had to involve excluding Catalyst B1 from the scope of the claims. Granted, there were arguments available in support of that proposition – to the effect that, as a matter of construction, the claims were to be limited to articles "*suitable for*" emissions systems, or (a variant on that) Mr Thorley QC's argument that the word

“*permeates*” in the claims should be construed as imposing the limitation that “*the catalyst is dispersed throughout the wall in the sense that ‘the pores are not occluded to the extent that undue back pressure will build up in the finished substrate.’*” But there are powerful counter-arguments that such limitations are lacking in clarity and unworkable.

462. Were it necessary for me to assess them individually, I would assess the chance of success on appeal at 25%. However, as I have explained above, I am not concerned solely with the question of the chances of success on appeal; instead, I am concerned to ask what were the *overall chances* of the Claimants, absent negligence, successfully pitching for increased awards of business, or successfully negotiating more favourable licence terms, in periods *after* early 2015 – assuming no licence agreement had been entered into before then.
463. In making this overall assessment, it seems to me that many of the observations made above about the commercial potency of a valid 458 Patent in periods *prior to* early 2015 are equally applicable. Bearing those factors in mind, in combination with the points made immediately above as regards the validity issues affecting the 458 Patent, I am not persuaded that overall the Claimants lost any *real* chance of achieving greater awards of business or negotiating more favourable licence terms than those in fact achieved with JMI. In summary:
- i) The claim for the lost chance of achieving greater awards of business depends on the assertion that the Claimants lost a real chance of influencing OEMs’ procurement decisions. I am not at all persuaded that that was the case. That is both because of the inherent weaknesses of the 458 Patent, but also because of the evidence analysed above as to how the market in fact worked. FTO was not, in my judgment, the potent force the Claimants say it was, and BASF’s essentially passive strategy for exploitation of its IP rights (even when it had them) had no real chance of bearing fruit.
 - ii) The Claimants’ Written Closing made the point that a valid 458 Patent, upheld on appeal before the TBA, would have been a weighty negotiating chip, and of greater force than the Divisional Patent (as granted in June 2015), by dint of its having been tested on appeal. Even if that is correct as a general proposition, however, in my view it is not the right question to ask. I am not assessing what chance of obtaining additional business would have been lost on the assumption that the 458 Patent *was* held to be valid. Instead, I am assessing what were the *overall chances* of the Claimants, absent negligence, successfully pitching for increased awards of business, and as Mr Wardell QC correctly submitted, that assessment must make an allowance for the chance (and in my judgment it was a substantial one) of the 458 Patent being held to be *invalid* on appeal.
 - iii) As to claim for the lost chance of negotiating more favourable licence terms, this faces the same initial problem identified above, i.e. the need for BASF Corp to show on the balance of probabilities that it would actually have wanted to enter into a licence in the first part of 2015. Again, I am not persuaded that that case is sufficiently made out on the evidence. In truth, there was no evidence going directly to the point at all, and such evidence as there was seems to me to push in the opposite direction. I have mentioned above the approach made by JMI for a licence in early 2015, and reported to BASF’s IP Committee, which

was not taken up (see [195]). It is true that JMI's response to the grant of the Divisional in June 2015 was immediately to write and to seek a licence; but BASF's response was not to say that they wanted one, but instead to seek to negotiate a licence with VW as a first step, with a view to achieving increased sales rather than licence income – which was very much second prize. I am effectively asked to draw the inference that, faced with a successful appeal in the TBA in the 458 Patent proceedings, JMI would inevitably have asked for a licence and BASF Corp would have wanted to negotiate one. In my judgment, however, the evidence is too equivocal to allow that inference safely to be drawn.

- iv) Finally, even if I am wrong about that, neither am I persuaded that overall BASF Corp lost any real chance of negotiating better licence terms by means of Carpmaels' negligence. Again, this assessment involves taking an overall view of the prospects of success on appeal together with the prospects of securing a more favourable outcome in hypothetical licence negotiations with JMI. I have dealt with the prospects of success on appeal above. As to the prospects of negotiating more favourable terms, it seems to me that these were negligible. I have described briefly above the course of the negotiations which in fact took place with JMI. As to the applicable royalty rate, JMI did not budge from their original negotiating position, and BASF Corp were forced to accept it. As noted, the Claimants submit that a valid 458 Patent, upheld on appeal before the TBA, would have been a strong negotiating chip. Again, however, it seems to me that that is not the right way of looking at things. It assumes success, but the lost chance I am concerned with must make due allowance for the possibility of failure. Moreover, by the first part of 2015, BASF Corp's negotiating position vis-à-vis JMI was a weak one – for all the reasons Ms Schmidt gave in her evidence (see above at [445]). By that stage, in the counterfactual, having allowed JMI to become even further embedded with the OEMs, it would have been very difficult for BASF Corp to have applied any real leverage in negotiations with JMI. The Claimants' own case is that by 2015 it was too late to apply any serious pressure at all – applying Mr Stewart QC's Shakespearean analogy, the tide was well and truly out by then. That timing problem in the counterfactual, as it seems to me, would not have been a function of Carpmaels' negligence, but instead a function of the Claimants' essentially passive strategy for making use of their IP rights, and a function of their reluctance to agree a licence and instead to favour their creative – but ultimately unsuccessful – attempts to try and increase product sales.

XIII Overall Conclusion

464. For all the reasons developed above, my overall assessment is that the Claimants are entitled only to nominal damages resulting from Carpmaels' admitted breach; or perhaps to be more precise, BASF Corp – as the only party to whom Carpmaels owed any duties – is entitled to nominal damages.
465. I would ask Counsel for the parties to seek to agree a form of Order reflecting this outcome, and to seek to agree any consequential matters. If they cannot be agreed than they can be resolved at a further hearing before me.