

**ANTICIPATED ACQUISITION BY CLARIANT AG
(Clariant) OF CERTAIN ASSETS OF KILFROST
GROUP PLC (Kilfrost)**

**INITIAL SUBMISSION BY KILFROST GROUP PLC TO
THE COMPETITION AND MARKETS AUTHORITY**

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INITIAL SUBMISSION

1. BACKGROUND ON KILFROST

- 1.1 The selling entities are Kilfrost Limited and Kilfrost Group Plc (**Kilfrost**). Kilfrost's Corporate Structure is set out in **Annex 1** below. Kilfrost is a U.K.-based manufacturer and distributor of anti/de-icing products to the civil aviation and transportation industries. It has been in operation since the 1930s. The current group parent company Kilfrost Group Plc was incorporated in 2009 and is based in Haltwhistle near Newcastle Upon Tyne, U.K.. Kilfrost has customers in 50 countries across the globe.
- 1.2 Kilfrost has been a supplier of de/anti-icing products to the civil aviation and transportation industries since the 1930s. Kilfrost has two major divisions: 1) Kilfrost's Winter Division. This manufactures and distributes de/anti-icing products to the aviation (aircraft de-icing fluids (**ADF**), rail (railway de-icing fluids (**RDF**)) and ground de-icing sectors; 2) Kilfrost's Speciality Fluids Division produces a wide range of inhibited glycol-based heat transfer fluids which are used in heating, cooling and industrial applications as well as general ground de-icing products. In addition, Kilfrost operates an R&D facility which ensures that both ADF and speciality fluids meet international performance, quality and environmental standards.
- 1.3 During the past 5 years Kilfrost has experienced a volatile trading period due to variations in seasonal conditions (both mild winters and very cold winters). In the U.K. this has meant the difference between [X] of revenue. During this period, there was also rapid expansion by Kilfrost in North America. In 2008, Kilfrost set up an operation in North America having identified growth opportunities there. From 2010/11 Kilfrost sold ADF direct to customers in North America.
- 1.4 Similarly Kilfrost opened a local subsidiary in Beijing in 2010 in order to benefit from market opportunities in China. Geographic diversification was not only aimed at growing the ADF business beyond Europe, but also at mitigating unpredictable weather conditions in the Northern hemisphere. Kilfrost also diversified its product range in order to mitigate against the impact of unpredictable weather conditions on its ADF business.

2. INFORMATION ABOUT THE TRANSACTION

- 2.1 Kilfrost and Clariant compete in the supply of ADF in the U.K. and in Europe. Until [X] when Clariant made an offer to Kilfrost for its ADF business, Clariant and Kilfrost were competitors and had had little contact.
- 2.2 In 2013-14 Kilfrost began to experience cash flow pressures, arising primarily as a result of two successive mild winters in Europe. During this period, Kilfrost began looking for opportunities to dispose of a significant part of its overall business, or raise alternative finance, in order to stabilise its financial position. While Kilfrost received a number of expressions of interest from potential buyers, the offer by Clariant in [X] was the most attractive, providing the best outcome for Kilfrost's customers, creditors, employees and shareholders at that point in time.
- 2.3 An initial approach was made to Kilfrost by [X]. This initial informal approach was to buy [X] and a non-disclosure agreement (**NDA**) dated [X] was exchanged with [X]. In [X] produced a Letter of Intent [X]. In [X] further discussions with [X] followed. At that stage the Kilfrost Board agreed that the company should consider other options beyond [X]. [X] (a well-respected boutique corporate finance advisory firm specialising in private company exits) was engaged to advise the shareholders on sourcing potential trade buyers. [X] was also engaged to source potential financial purchasers and investors for Kilfrost.
- 2.4 [X] received expressions of interest from [X] potential buyers [X]. Prior to commencing discussions, all [X] potential buyers were required to sign a NDA, following which they were provided with a brief information memorandum describing the Kilfrost business. After consideration

of the information memorandum, [X] and Clariant came forward as interested in purchasing Kilfrost's ADF business. [X].

- 2.5 Simultaneously with the trade exit process, [X] introduced a number of potential financial purchasers/ investors to Kilfrost including [X]. Each of these signed NDAs, and proposed term sheets were received from each of [X].
- 2.6 Gary Lydiate of Kilfrost met with Clariant in Germany [X], Clariant put forward a formal proposal to acquire the business and assets of the Kilfrost ADF business in two stages. The first draft of the Phase 1 Asset Purchase Agreement for the US and China businesses was received on [X].
- 2.7 [X] the Kilfrost Board [X] were agreed that Clariant's offer provided the best outcome for Kilfrost's customers, creditors, employees and shareholders, on the basis that it would enable all creditors to be paid, minimal redundancies would result and it would provide actual value for the Kilfrost shareholders. The phase I sale of Kilfrost's North American and Asian business was completed on [X].
- 2.8 On [X] Kilfrost and Clariant entered into a call option agreement pursuant to which Clariant could compel Kilfrost to sell its European ADF Business, RDF business and assets. The call option was exercised on [X]. Completion is conditional on all relevant merger clearances having been obtained.
- 2.9 Below is a table identifying Kilfrost's turnover attributable to the Assets being transferred pursuant to the transaction for the year ending September 2014.

Region	Revenue for FY ending 30 Sept 2014 (GBP)
US/Asia ([X] Total)	[X]
U.K.	[X]
EEA	[X]
[X] Total	[X]

3. RELEVANT MARKETS

Relevant Product Market

Aircraft de-icing fluid (ADF)

- 3.1 Clariant and Kilfrost only overlap in the supply of ADF. ADF is used for de and anti-icing aircraft.
- 3.2 ADF comes in four types (Types I, II, III and IV) and is typically composed of monopropylene glycol (**MPG**) together with other ingredients such as thickening agents, surfactants, corrosion inhibitors and coloured dye. These four types of ADF comply with standards published by the International Organisation for Standardisation (**ISO**) and The Society of Automotive Engineers (**SAE AMS**) and are described below. Clariant and Kilfrost produce ADF Type I, Type II, and Type IV but not Type III.
- 3.3 These different types of ADF are used depending on the weather and the level of protection required. In airports where the de-icing facilities are installed at the beginning of the take-off runway, use of Type I is normally sufficient (e.g. regional U.K. airports). If there is likely to be any delay to the take-off after de-icing then an anti-icing step with Type II or Type IV can follow. If the airport is of a size such that there is a considerable distance between the de-icing facility and the take-off runway, then it is necessary to use Type I and in addition Type II /IV in order to prevent the icing of the aircraft on its way to the runway (e.g. London Heathrow airport) .

- 3.4 Type I is used for the sole purpose of de-icing an aircraft. Type I (ISO 11075 and SAE AMS 1424) is around 80 % MPG and 20 % water and generally contains very little or no additional thickening agent. It is therefore good for de-icing areas which are already iced but is less suitable for anti-icing (i.e. on a precautionary basis to prevent surfaces icing up) since, due to its lower viscosity, it quickly flows off surfaces after use. For this reason Type I is used in sub-zero conditions without precipitation (e.g. where there is frost) or in the two-stage procedure in combination with ADF Type II / Type IV.
- 3.5 Type II, Type III and Type IV (ISO 11078 and SAE AMS 1428) are manufactured in fixed mixing ratios according to the required level of protection and then used by airports either diluted with water or undiluted: 50 %, 75 % or 100 %. They contain around 50 % MPG and 49 % water and can be used at temperatures down to -25 °C. Whilst they can be used for de-icing an aircraft, they are also used principally to "anti-ice" the aircraft, providing protection until the aircraft takes off. Types II - III have added thickening agents for better adhesion, which allow the de-icing fluid to adhere longer to the surfaces of an aircraft and even soak up (rather like a sponge) and liquefy a certain degree of winter precipitation. Type II, Type III and Type IV guarantee protection of over 30, 20 and 80 minutes respectively. However they use different thickening agents which means that the time for which the aircraft is protected from (re-)icing also varies.
- 3.6 Type II generally has a lower MPG content in its concentrated form¹ than Type I fluid due to the inclusion of a pseudo plastic thickening agent. This means that when applied to the surface of an aircraft, the viscosity is high, thus allowing the fluid to remain on and protect against freezing precipitation for a period of time. Typically the fluid film will remain in place until the aircraft attains 100 knots or so during take-off at which point the viscosity breaks down allowing it to readily flow off the critical surfaces. The holdover time for this type of fluid can be extended by increasing the concentration of fluid in the fluid/water mix.
- 3.7 Type III is principally designed for aircraft with low rotation/take-off speeds of less than 85 knots and it is rarely used. Whilst Type III fluids have holdover times typically less than those of a Type II fluid, holdover times are significantly longer than those of Type I fluids. Type III is not used by any customers in the U.K. or, as far as the parties are aware, in the EU. Type III is only used in North America.

Relevant Geographic Market

- 3.8 Kilfrost considers that the geographic scope of the supply of ADF is at least EEA wide. This is because from the demand-side, customers purchase on a pan-European basis. In addition, customers (both airports, airlines and ground handling agents) tend to request quotations from suppliers across Europe to give them the maximum possible choice of supplier and in order to obtain the lowest possible price and utmost supply security. There are many examples of customers switching between the various European suppliers, including for example:
- 3.8.1 In October 2015, [X] and [X] lost some contracts to [X] across continental Europe:
- 3.8.2 [X] Airport, Germany (previously supplied by [X])
- 3.8.3 [X], a major ground handler servicing Icelandic airports (previously supplied by [X]);
- 3.8.4 During [X], a [X] [continental European] airport consortium² switched supplier every year between [X] and [X].
- 3.9 Kilfrost notes that while many EU customers will purchase ADF from any of the main ADF suppliers with production facilities in Europe or from companies with production facilities outside Europe but with storage facilities in Europe, U.K. customers have a preference for suppliers with a manufacturing presence and local storage facilities in the U.K. This is because companies with U.K. production facilities and local storage depots are perceived by some customers as being able to better guarantee security of supply. However, customers are price sensitive and if a supplier

¹ "Concentrated form" refers to formulated de/anti-icing fluid i.e. it is ADF in its finished form which has not been diluted by the customer.

² [X]

were to offer sufficient storage to ensure security of supply, customers may consider using them if the financial incentive for them to do so was attractive enough. Customers have in the past switched to suppliers which held storage facilities but not any production facilities in the U.K.. [REDACTED]. While customers tend to contract mostly with a single ADF supplier at any one time, the nature of the market and the availability of credible suppliers from outside the U.K. means that upon the expiry of a contract, U.K. customers will consider non-U.K. suppliers of ADF alongside U.K. suppliers if the offer is attractive enough.

- 3.10 From the supply-side, the market is characterised by at least pan-European, if not global supply. Currently, the main ADF producers in Europe supply customers across Europe and are not restricted only to supplying customers in the country in which they produce ADF. For example, Kilfrost is based in the U.K. but supplies ADF across Europe and beyond. [REDACTED]. In addition, suppliers of the key ADF main component, MPG, are based across the globe and deliver worldwide.
- 3.11 Pan European supply is made possible firstly by the fact that there are no differences in the national rules or requirements regarding the quality/purity of ADF. In all European countries and in most countries around the world, it is simply necessary for the products to meet the relevant ISO standards and be SAE AMS-certified.³ Secondly, transportation of ADF is straightforward; it can be easily transported by road or rail. It is non-hazardous; therefore there are no regulations applicable to the transportation of ADF. In addition, the transport costs for ADF are comparatively low meaning that transportation distance does not play a significant role in an ADF producer's decision to respond to a request for a quotation.
- 3.12 Further, whilst the products require local storage facilities prior to final delivery to customers, it is easy for an ADF manufacturer to establish storage and logistics facilities close to its customers. For example, it is possible to rent a local storage depot where the ADF can be stored until it is required by the customer. Indeed, Clariant did not supply into the U.K. until 2012 when it began supplying [REDACTED]. [REDACTED] has adopted an import model (as opposed to setting up production facilities in the U.K.) and rented a number of U.K. storage depots from which to supply its customers. Other competitors have adopted this model across Europe (e.g. Proviron, LNT etc.).

4. CONTRACT RENEWAL PROCESS

ADF Customers

- 4.1 Typically, within Europe, the parties sell to four types of customer: (i) airports, (ii) airlines; (iii) ground handling agents and (iv) defence customers. The nature of the customer base varies according to the country in question.
- 4.2 In the U.K., historically aircraft de-icing was carried out by airlines. However, aircraft de-icing is today one of many services which, in the main, is sub-contracted by airlines to ground handling agents, whereas in Austria, airports principally purchase ADF. [REDACTED] and [REDACTED] both supply ground handlers in the U.K., as well as making supplies to airlines and airports.
- 4.3 In the U.K., different customers will purchase supplies of ADF in respect of the same airport. For example, Heathrow is supplied by a number of suppliers as follows:
- Heathrow licenses several ground handlers to operate at the airport. Most airlines select one of these ground handlers to provide a range of services which may include the provision of de-icing services.
 - [REDACTED] conducts its own de-icing at Terminal [REDACTED] at Heathrow and buys ADF directly from ADF suppliers (as opposed to the ground handlers who usually buy the product). For non-Terminal [REDACTED] traffic, [REDACTED] contracts with one or more of the established service providers.
 - Specialist de-icing operators – de-icing is also performed by specialist providers e.g. [REDACTED].

³ Russia and China operate their own domestic certification regimes but these mirror the SAE International Standards

- Although Heathrow Airport itself is not a customer of ADF, Heathrow Airport stores ADF as an emergency back-up for operators at the airport. This fluid [X] is supplied by the ADF supplier [X] for emergency use [X].
- 4.4 There is a similar range of customer types based at Luton Airport. For example, there are six customers at Luton Airport including general aircraft service providers ([X]), specialist aviation maintenance operators ([X]) and ground handling agents ([X]).
- 4.5 The type of ADF customer at U.K. regional airports also varies e.g. Kilfrost supplies ADF to [X] baggage handlers at [X] Airport, but supplies directly to [X] Airport.
- 4.6 In addition to commercial customers, ADF is also purchased by defence customers. For example, the U.K.'s Ministry of Defence (**MoD**) purchases a specific product called AL-34 which is similar to normal ADF but has subtle differences. AL-34 is a proprietary product of Kilfrost [X]. The amount of ADF sold to the MoD is very small; the most recent ADF contract entered into by the MoD had a value over [X] years of [X], but this included windscreen washing fluid and pneumatic tool oil (the value of the supply of ADF per season is estimated at around [X]). The MoD is currently supplied by Kilfrost.

How contracts are renewed

There are a range of different forms of tender in the U.K. ranging from formal tender situations to more informal tenders or renegotiations.

Formal tenders

- 4.7 In some cases, customers will engage in a formal tender process in which potential suppliers will be asked to submit comprehensive bids detailing proposed terms for the supply of ADF. In the majority of such formal tenders the parties are not aware of which other suppliers have actively submitted bids or which suppliers have been shortlisted. Where possible Kilfrost has provided its best internal view on the suppliers it believes to have tendered.
- 4.8 Airport customers in EU Member States are contracting entities within the meaning of the EU Utilities Directive and are required to invite public tenders once a relatively low threshold has been exceeded irrespective of whether they are public or private entities. Ground handling companies are not public entities and so are not subject to the EU Utilities Directive, meaning that many ground handling companies are not required to procure ADF by way of tender, although frequently do so.

Informal tenders

- 4.9 In most cases, however, the tender process is less formal in nature. Customers may, for example, sound out various preferred suppliers before asking one (or more) suppliers to submit price quotations. Alternatively, customers may send out requests for a quotation to potential suppliers and then negotiate individually with chosen bidders before making a final choice. On other occasions, customers may seek to renegotiate prices with their current supplier without inviting quotes from any other supplier (renegotiations). In these cases, the parties are again not typically aware of the potential alternative suppliers that customers have considered using.
- 4.10 Typically, contracts are [X] contracts, although in some cases they may be for supply for [X]. The duration of the contract varies by customer, and it is common for a customer to ask the supplier to provide quotes on both an annual and a multi-season basis. Customers tend to renegotiate their contracts during the summer months in preparation for supply during the next winter season. All customers will have contracts in place since it is essential that airports/airlines/ground handlers can obtain supplies very quickly when the weather deteriorates.
- 4.11 Contracts do not stipulate the minimum or maximum amount of ADF to be supplied as the amount of ADF purchased by customers varies [X]. Contracts simply tend to specify the type(s) of ADF to be supplied along with any agreed terms regarding delivery and price. Because the supplier bears all of the risk, switching costs for customers are low.

- 4.12 Some customers will specify the type and brand they wish to purchase. However other customers do not specify the brand of ADF. All customers require that the products reach AMS standards. It is possible that some customers may require suppliers to qualify as a preferred supplier. However, in these cases there will generally be a number of ADF suppliers who will have been nominated as a preferred supplier.

5. KILFROST'S STRATEGY IN THE SUPPLY OF ADF

- 5.1 Kilfrost's U.K. customers [X] rely on Kilfrost [X] to very quickly accelerate production from minimal production to producing [X] per day of fluid. Kilfrost is [X] holding [X] stock which it can provide readily to clients [X]. Kilfrost also has a local manufacturing presence in the U.K. enabling it to re-stock its tankers before they run out of ADF. This enables Kilfrost to ensure security of supply to its U.K. customer base.
- 5.2 Kilfrost not only produces [X] ADF products which are [X] by customers but also gives [X] customer support. This [X] Kilfrost from its competitors.
- 5.3 Kilfrost is currently continuing to supply ADF in the ordinary course of business in the U.K.

Kilfrost's Pricing Strategy

- 5.4 There is no contractual obligation on the customer to [X] amount of ADF, and instead the customer [X]. This means that the supplier [X] involved in supplying ADF. In view of this, and the fact that the supply of ADF is weather-dependent, it is important for suppliers to build in a margin in relation to ADF sales. For Kilfrost this is typically [X], allowing thus for a certain amount of hedging in times of mild winters.
- 5.5 The ADF industry is small therefore ADF suppliers in the U.K are aware of who they are competing with for individual customer contracts and how this will affect their sales strategy. However, customers do not have sight of the prices being offered to other customers.

6. BARRIERS TO MARKET ENTRY/EXIT

- 6.1 Kilfrost considers that to the extent that the formula required to manufacture ADF is a trade secret (and sometimes patent protected), barriers to the manufacture of ADF are not insignificant. Thus a company wishing to manufacture ADF from scratch would need to undertake research to identify an appropriate ADF formula. The formula would then need to be independently tested and meet regulatory approvals as well as to comply with various standards set by the International Organisation for Standardisation and the Society of Automotive Engineers. For example Type I, II and IV must comply with ISO 11078 and SAE AMS 1428.
- 6.2 Kilfrost notes however that i) there are a number of competitors who already have the necessary know-how to produce ADF, ii) other companies (such as chemical companies) have the necessary expertise to develop formula for ADF. Both of these groups could switch to supplying ADF in the U.K. and iii) a number of manufacturers of ADF worldwide can and do license their formula to other suppliers negating the need for a supplier to have to devise its own formula to enter the market. Examples of this include Proviron's manufacture and distribution of Cryotech's ADF product in Belgium for the U.K., the manufacture and distribution by [X] ADF product in [X] and the manufacture and distribution [X] to [X] using ADF products made with [X] formula.
- 6.3 Barriers to the distribution of ADF are not high. As discussed above under the Geographic Market Definition section, pan-European supply is made possible firstly by the fact that the national rules or requirements regarding the quality/purity of ADF in Europe are the same.
- 6.4 As mentioned under the Geographic Market Definition section, transportation of ADF is straightforward; it can be easily transported by road or rail. It is non-hazardous; therefore no special equipment is necessary to transport or store ADF. In addition, the transport costs for ADF are comparatively low meaning that distance does not play a significant role in an ADF producer's decision to respond to a request for quotation.

- 6.5 Further, while it is necessary to be able to have the manufacturing capability to produce sufficient product of the requisite standard to meet the customer's requirements, it is not necessary to possess a local manufacturing facility to be able to guarantee supply of ADF either in the U.K. or the rest of Europe/ the world. It is sufficient to hold sufficiently large storage facilities and to stockpile enough ADF to be able to ensure supply to the relevant customer(s) as and when they need it. This would mean having a manufacturing facility that can produce sufficient quantities as well as stockpiling sufficient amounts to cover the time it would take to ship additional supplies to that storage facility. It is easy for an ADF manufacturer to establish storage and logistics facilities locally to its customers. For example, it is possible to rent a local storage depot where the ADF can be stored until it is required by the customer. As such, it is possible to import ADF from manufacturing plants in continental Europe (or further afield) (as opposed to setting up production facilities in the U.K.) provided a supplier stockpiles sufficient ADF to be able to meet its customers' expectations. A number of competitors have adopted variations of this 'import' model across Europe [REDACTED]. [REDACTED].
- 6.6 Stockpiling is made simpler because ADF does not perish. As a result it is possible to store ADF for many years, (although it is necessary to have ADF tested every three years to ensure the product still meets relevant standards). In reality most, if not all of the ADF is sold within 18 months of manufacture.
- 6.7 While Kilfrost considers that there are reputational barriers to entry, these are due to customer's concerns regarding security of supply which makes them risk- averse – they prefer to remain with tried and tested suppliers who can guarantee supply of a high quality product and provide good customer service. Kilfrost's experience is that U.K. customers value the fact that Kilfrost is able to provide them with good customer service and with security of supply of ADF. Kilfrost is able to ensure security of supply not only because it manufactures ADF in the U.K. but because it [REDACTED]. Kilfrost is within [REDACTED] hours drive of approximately [REDACTED] of its customers by volume and is within [REDACTED] hours drive of all customers. As well as its manufacturing site, it has [REDACTED] further depots close to the main airport hubs. That said, customers are also price sensitive and can and do switch supplier. Kilfrost is of the opinion that any competitor which is committed to stockpile sufficient ADF to provide security of supply, is able to succeed in this industry.
- 6.8 There have been limited amounts of entry and exit into the U.K. ABAX exited in 2012. This was due to the fact that in 2010 when there was a very harsh winter, ABAX failed to supply certain customers due to pressures on its manufacturing facilities in continental Europe.
- 6.9 Clariant entered the U.K. market in 2012 by [REDACTED]. This contract is due for renewal [REDACTED].
- 6.10 Kilfrost is not aware of any competitor strategy for sizeable entry into or expansion in the supply of ADF in the U.K. in the next three years.

7. THE COUNTERFACTUAL

Pre-sale of US/Asian ADF business

In 2013-14 Kilfrost experienced serious cash-flow issues and was under pressure from its banks to remedy the situation. It therefore had to sell part of its business. If the merger had not taken place, Kilfrost is of the view that [REDACTED].

Post sale of US/Asian ADF business

7.1 [REDACTED].

7.2 [REDACTED].

8. THE COMPETITIVE EFFECTS OF THE MERGER

Competition occurs in this market on a number of parameters: price, service quality (security of supply) and to some extent innovation. Kilfrost considers that while customers may fear a loss of competitive effects as a result of the merger, because entry/expansion in the distribution of ADF is

possible, were suppliers prepared to commit the right resources to guarantee supply, there would be sufficient actual and potential competition for the supply of ADF in the U.K. to constrain the merged entity from increasing price, reducing service levels and reducing innovation post-merger.