Neutral Citation Number: [2020] EWHC 1232 (TCC)

Case No: HT-2019-000123

IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION
TECHNOLOGY AND CONSTRUCTION COURT

Rolls Building
Fetter Lane
London, EC4A 1NL

Date: 18 May 2020

Before :

BEFORE JOANNA SMITH QC SITTING AS A DEPUTY OF THE HIGH COURT

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Between :

DBE ENERGY LIMITED	**Claimant**
- and -	
BIOGAS PRODUCTS LIMITED	**Defendant**

- -
- -

Mr Mathias Cheung (instructed by **Reynolds Porter Chamberlain LLP**) for the **Claimant**
Miss Nicola Atkins (instructed by **Mills & Reeve LLP**) for the **Defendant**

Hearing dates: 25, 26, 27 February and 5 March 2020

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APPROVED JUDGMENT

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.

Covid-19 Protocol: This Judgment was handed down by the Deputy Judge remotely by circulation to the parties' representatives by email and release to Bailii. The date and time for hand-down is deemed to be Monday 18 May 2020 at 10:00.

JOANNA SMITH QC :

Introduction:

1. These proceedings concern the alleged breach of contract and/or negligence of the Defendant ("**Biogas**") in relation to the design, manufacture and supply of components required by the Claimant ("**DBE**") for incorporation into its newly built anaerobic digestion facility ("**AD Facility**") at Stovolds Hill, Cranleigh, Surrey ("**the Site**"). The AD Facility has a theoretical capacity to process 25,000 tonnes of food waste and generate up to 2.2 million m^3 of biomethane gas per year for injection into the national grid. Construction of the £12 million AD Facility commenced in September 2017 and was substantially completed in June 2018. The installation and commissioning of the plant, machinery and associated pipework and cabling continued thereafter.

2. DBE was incorporated as a special purpose vehicle for the design, construction and operation of the AD Facility in December 2016. DBE is owned by DBE Eco Limited (80%) and Privilege Investments Limited (20%). DBE Eco Limited is in turn owned by IBMS Group Limited ("**IBMS**") (50%) and Future Fuels Limited (50%). DBE is managed, and the AD Facility is operated, on DBE's behalf by IBMS under the terms of a Management Operating Services Agreement dated 31 July 2018 ("**the Management Agreement**").

3. Biogas is a company specialising in the design and build of components of anaerobic digestion plants in the United Kingdom for biogas production, storage, cleaning and utilisation, and as a manufacturer and supplier of associated equipment.

The Operation of the AD Facility

4. It is common ground that the production of biomethane gas at the AD Facility involves two main processes, the digestion of the food waste (referred to by the parties as "**the Digestion Side**") and the production of gas (referred to by the parties as "**the Gas Side**"). In summary, these processes work as follows:

4.1 On the Digestion Side, food waste is transported to site in lorries and is pre-treated until it forms a sludge-like feed ("**the Feed**"), at which point it is transferred into one of four buffer tanks. The Feed is then passed through a heat exchanger into one of two Pasteuriser Tanks ("**the Pasteuriser Tanks**") where it is pasteurised at up to 85°C for up to 1.5 hours before being passed into two large underground Digesters ("**the Digesters**"), each consisting of two anaerobic digestion tanks ("**the AD Tanks**"), for the microbiological AD process to take place. Within one of the AD Tanks in each Digester there are two AD Tank Heaters (four AD Tank Heaters in total ("**the Tank Heaters**")), whose job is principally (i) to bring the temperature of the microbial colony which carries out the AD process, referred to as "**the Seed**" up to the required level at the initial "seeding" stage; and (ii) to maintain the temperature of the Feed within the AD Tanks at around 40°C during periods of cold weather. Once in the Digesters, the Feed is continuously circulated around the AD Tanks, passed into the post-digestion storage tanks and replaced in the Digesters with fresh Feed in a continual cycle of up to 60 tonnes per day during full time operation.

4.2 On the Gas Side, the biogas generated from the process within the Digesters first passes into a gas storage pod before passing into the gas upgrade compound for treatment, where carbon dioxide and other trace gases are removed in order to achieve 99% biomethane gas. The purified biomethane is then sent to the grid entry unit for injection into the national gas network.

5. At the outset of production, the Digestion side must be commissioned first, followed by commissioning of the Gas side. Commissioning is a complex operation requiring the calibration of multiple systems and processes and communications between them. Only once a sufficient quantity of biogas is being generated is it possible to ramp up production to full capacity. However, owing to the fact that it is an organic process, ramping up of production involves the gradual increase in the amount of waste brought into the AD Facility and the careful monitoring and adjustment of the biological processes within the Digesters.

The Contracts between DBE and Biogas

6. It is common ground that on or around 30 October 2017, DBE entered into a contract with Biogas for the supply of the four Tank Heaters ("**the Tank Heater Contract**") and that on or around January 2018, DBE entered into a further contract with Biogas for the supply of the two Pasteuriser Tanks ("**the Pasteuriser Tank Contract**") (together referred to as "**the Contracts**"). Although originally in dispute, it is now conceded by Biogas that the Contracts are governed by DBE's standard terms and conditions ("**the DBE Standard Terms**"). It is also conceded that the Contracts are subject to implied terms as to satisfactory quality and fitness for purpose (pursuant to sections 14(1) and 14(3) of the Sale of Goods Act 1979 ("**the 1979 Act**") and sections 4(2) and 4(5) of the Supply of Goods and Services Act 1982 ("**the 1982 Act**").

7. A key issue in these proceedings, however, is the scope of Biogas' design obligations under the Contracts, including, importantly, the extent to which Biogas was required to ensure that the Tank Heaters and the Pasteuriser Tanks

were compatible with the rest of the components making up the Digestion Side of the operations at the AD Facility, in particular, the hot water system to which the Tank Heaters and Pasteuriser Tanks were connected.

The Events giving rise to the dispute

8. In October 2018 and January 2019 respectively, DBE discovered defects in the Tank Heaters and the Pasteuriser Tanks. In relation to the former, DBE says that pressure tests carried out on the circuits of the Tank Heaters in October 2018 using compressed air caused the Tank Heaters to buckle and fail. In relation to the latter, DBE says that on 29 January 2019 during commissioning involving the introduction of hot water into its water jacket, the first Pasteuriser Tank suffered a catastrophic buckling and bursting, a failure which was subsequently repeated in the second Pasteuriser Tank.

9. DBE seeks recovery of the loss and damage it says that it has suffered by reason of these defects and failures in these proceedings. Biogas denies liability and asserts a set off and counterclaim.

The Procedural History

10. At the outset, DBE contended that these proceedings were suitable for the Shorter Trial Scheme under CPR Practice Direction 57AB. Notwithstanding opposition from Biogas, this contention was accepted at the Case Management Conference and the trial was accordingly fixed to take place within a 4 day period, with the first day being set aside for reading and the remaining 3 days being used for the trial.

11. Although it has been possible to hear the evidence within the allotted 3 day hearing, that has only been the case with considerable cooperation from the parties, closely controlled cross examination and some degree of leniency over court hours. However, it was accepted from the start of the trial that closing submissions could not be shoe-horned into the available time and that they would have to be dealt with separately. In the event, written closing submissions were provided a few days after the end of the trial and a morning was subsequently set aside for oral closings.

12. I observe in this regard that I formed the view during the evidence that this was not really a case that was suitable for determination under the Shorter Trials Scheme, a view with which I understood both parties to agree during closing submissions. The trial bundle stretched to 11 bundles of documents and there were four witnesses of fact and four experts to be cross examined. In the time available it proved impossible to explore all of the issues in cross-examination. Each side referred to a number of authorities but, owing to shortage of time, I was taken only to a few. Whilst the Judge at the CMC cannot have been expected to have a clear view on this score, I would have expected the parties to ensure that they revisited the question of the suitability of these proceedings to be dealt with in this way from time to time and (where necessary) to raise any concerns over the time estimate with the court as quickly as possible and, at the very least, on the occasion of the PTR. I understand that although there was broad agreement over the timetable for the trial at the PTR, the Judge's attention was not drawn to the fact that closing submissions could not be accommodated within the 3 day hearing. The inevitable result of this omission was that it has

been necessary to find yet further court time (outside the 4 day estimate) to deal with this matter.

The Evidence

13. Each party relied upon the evidence of two witnesses of fact, which evidence was limited by reference to specific issues identified in the Agreed Directions for Case Management dated 19 July 2019. The trial has been conducted on the basis that it was only necessary for each party to put the principal parts of its case to the other side's witnesses, pursuant to paragraph 2.54 of Practice Direction 57AB.

The Claimant's Witnesses

14. DBE relied upon the evidence of Mr Steven Sharratt OBE, a director of DBE, and Mr Gerik (Ged) Van der Vliet, DBE's site manager.

Mr Sharratt

15. Mr Sharratt was originally a corporate finance partner in a major law firm before moving into business management roles. For the last 18 years or so he has invested in and managed several businesses in the construction and waste sectors and for the last 10 years or so he has worked in the waste and anaerobic digestion sector, gaining experience of the operation of AD plants and the AD Market. In addition to being a director of DBE, Mr Sharratt is also a director of DBE Eco Ltd and IBMS. Broadly, Mr Sharratt's evidence (in 3 separate statements) covered (i) the operation, commissioning and ramping up of the AD Facility; (ii) DBE's business and procurement model, (iii) the scope of Biogas'

involvement, (iv) facts relevant to DBE's claim for loss and damage, including mitigation measures proposed by Biogas, and (v) Biogas' counterclaim.

16. Mr Sharratt gave clear and confident oral evidence. Whilst he was unable to answer some of the technical questions put to him owing to his lack of engineering and technical expertise, his experience in the anaerobic sector was plain and I accept that Mr Sharratt was obviously doing his best to assist the court.

Mr Van der Vliet

17. Mr Van der Vliet has been an employee of IBMS since November 2016 and currently manages the day to day operation of the AD Facility. He has various qualifications in the construction industry and a substantial amount of practical engineering experience in respect of the installation, commissioning and operation of AD plants. However he is not a specialist process designer or a specialist designer of AD plants or equipment. During construction and commissioning of the AD Facility, Mr Van der Vliet acted as a coordinator on the Site, liaising with contractors and coordinating the construction, installation and operation/commissioning of the AD Facility. Broadly, Mr Van der Vliet's evidence (in 2 separate statements) covered (i) pre-contract discussions with Biogas; (ii) the scope of Biogas' responsibilities, (iii) the commissioning process which he coordinated and oversaw, (iv) the remedial solutions adopted by DBE and the mitigation measures suggested by Biogas, and (v) Biogas' counterclaim.

18. Mr Van der Vliet's oral evidence was at times rather hesitant and (as I set out below) he became confused on a couple of occasions. Furthermore, it became apparent during his cross examination that he may well have been somewhat out of his depth in trying to fulfil the role of coordinator for the construction of the AD Facility. He certainly does not appear to have kept abreast of the design information that was being generated, who was generating it and the precise contractual arrangements involved (including the need to document those arrangements). However, notwithstanding these points, I formed the impression that he was anxious to give proper consideration to the questions he was asked and that he was endeavouring to answer those questions to the best of his recollection.

19. Both Mr Sharratt and Mr Van der Vliet came under criticism during their cross examination owing to the fact that they raised some matters during their oral evidence which were not in their statements. However, this was true on both sides and was, to some extent at least, a consequence of the limitations that apply to the length of witness statements under PD 57AB. I do not consider that this in any way affects the credibility of the evidence they gave. Furthermore I observe at this stage that in general terms, the evidence in the DBE witness statements was more comprehensive and appeared to have been put together more carefully by reference to the underlying documents than was the case in relation to the Biogas witness statements.

The Defendant's witnesses

20. Biogas relied upon the evidence of Mr Martin Newey and Mr William Smith, both directors of Biogas.

Mr Newey

21. Mr Newey founded Biogas together with Mr Smith approximately 10 years ago and has more than 30 years' experience in the design and manufacture of equipment for wastewater, agricultural and industrial industries, including AD plants. Broadly his evidence (contained in 1 statement) covered (i) Biogas' involvement at the Site including the scope of its design obligations, (ii) the commissioning process, (iii) the failure of the equipment supplied by Biogas, (iv) the proposed alternative remedial solutions and (v) Biogas' counterclaims. Unlike DBE's witnesses, Mr Newey did not seek to rely on a witness statement in reply to DBE's evidence.

22. During his cross examination, Mr Newey conceded that his witness statement was inaccurate, first in relation to the attachment of standard terms and conditions to the Purchase Order for the Pasteuriser Tank Contract, second in relation to the precise nature of a discussion he had with Mr Sharratt on 11 October 2018 at the time of the failure of the Tank Heaters and third in relation to the identity of the drawing used to manufacture the Tank Heaters (Revision B and not Revision A). Mr Newey gave no explanation for these errors in his statement and I can only conclude that in its preparation he had not been as careful accurately to state the facts as he should have been. I note in this regard that Mr Newey asserted in his statement that Biogas' design input into the AD Facility was "*very limited*". However, he failed to deal with emails which he had sent, sketches he had prepared and invoices that Biogas had raised against DBE which suggest otherwise.

23. In the circumstances it seems to me that I should apply a considerable degree of caution to Mr Newey's evidence and seek to test it against the contemporaneous documents. Where it is inconsistent with those documents, I do not regard that it has any real credibility (see *Wetton v Ahmed and Others [2011] EWCA Civ 610* per Arden LJ at [14]).

Mr Smith

24. As co-founder and director of Biogas, Mr Smith's experience of the manufacture of equipment for use in AD plants is similar to Mr Newey's experience. He was responsible for supervising the fabrication and testing of the four Tank Heaters and two Pasteuriser Tanks supplied by Biogas to DBE and he dealt with this in his two short statements. In circumstances where Biogas has produced no evidence of this testing, notwithstanding that one might ordinarily expect there to be such evidence, it seems to me that I must treat his evidence with caution, although my general impression was that Mr Smith was trying to give accurate evidence.

25. In opening, Mr Cheung, acting on behalf of DBE, indicated that he would, in due course, invite the court to draw inferences from the failure on the part of the Defendant to call Mr Tim Clarke ("**Mr Clarke**") to give evidence. As I shall return to below, Mr Clarke was recommended to DBE by Biogas as a specialist AD process designer and was subsequently paid by DBE to carry out process designs for the AD Facility. It is DBE's case that Mr Clarke had a heavy and ongoing involvement in the design of the AD Facility and the design of the equipment supplied by Biogas and that, accordingly, his evidence would have been directly relevant to many of the key issues in these proceedings. Whilst

that point may well be right, as Ms Atkins on behalf of Biogas correctly pointed out in closing, Mr Clarke was paid by DBE and could just as easily have been called to give evidence by DBE. In the circumstances it seems to me that I cannot properly draw any inference as to the fact that his evidence was not available to the court; neither party chose to call him and I heard no explanation from either one as to why that was so.

The Expert Evidence

The Technical Evidence

26. Both parties relied on technical evidence as to the design, manufacture and commissioning of the Tank Heaters and Pasteuriser Tanks. The specific field of expertise for which the court gave permission at the CMC was the field of "*design, fabrication and installation of pressure equipment*". The technical experts each prepared a detailed expert report together with a Joint Statement ("**the Technical Joint Statement**").

27. DBE relied upon the technical expert evidence of Mr Peter Lumley, an experienced Chartered Mechanical Engineer whose specialist field is mechanical design and engineering in process equipment and storage tanks. It is clear from his CV that he has substantial technical and practical expertise in process design and in the design, construction and commissioning of pressure vessels, plants and pipelines in complex projects within the oil and gas, petroleum refining, petrochemical and pharmaceutical industries. Mr Lumley's obvious expertise was not challenged by Biogas. Mr Lumley had visited the site of the AD Facility and had examined the four failed Tank Heaters and the two failed Pasteuriser Tanks.

28. Biogas relied upon the technical expert evidence of Mr Stephen Marshall, a chartered engineer and Member of the Chartered Institution of Building Services (MCIBS) who has been a director of various Building Services design consultancies specialising in the design of multi-occupancy buildings for many years. His CV records that he has acted as an expert in disputes concerning mechanical installation for 20 years. Mr Marshall had not carried out an inspection of the failed Pasteuriser Tanks and Tank Heaters.

29. Under cross examination, Mr Marshall accepted that he did not have a mechanical engineering degree, that he was not an expert in the installation and commissioning of works in an AD plant or similar gasification plant and that he had not previously been involved in the design of equipment for gasification plants or similar anaerobic digestion facilities. In the circumstances, DBE contends that his qualifications and experience do not fall within the field of expertise identified by the court. Furthermore, DBE contends that Mr Marshall's evidence was partial and biased in favour of Biogas, first because he sought to introduce inadmissible material into his expert report (which material was subsequently removed by Order of the court at the PTR) and into the Technical Joint Statement (which material was subsequently removed by agreement between the parties on the second day of trial), second because various parts of his report exhibited a tendency to advocate in favour of Biogas' case, including by simply adopting Biogas' factual case without acknowledging the existence of an alternative factual position on the part of DBE and third because he was, on occasions, inclined in his report to make factual findings which were matters for determination by the court.

30. Whilst I have no doubt that Mr Marshall's relevant experience is clearly not as extensive as Mr Lumley's experience (as Mr Marshall himself acknowledged in the Technical Joint Statement), I do not accept that he has no relevant expertise in relation to pressure vessels or commissioning. As he explained in the Technical Joint Statement, it is part of his day to day engineering activity to design pressurised hot water circulating systems involving pressure equipment such as pumps, pipes and vessels having similar operational parameters to those found in the hot water system at the Site. In the circumstances, I reject the suggestion that Mr Marshall's opinions have no value.

31. I have more sympathy with the complaint that Mr Marshall has not been impartial in giving his evidence. In this regard my attention was drawn to Fraser J's recent observations in *Imperial Chemical Industries Ltd v Merit Merrell Technology Ltd (No. 2) [2018] EWHC 1577 (TCC)* at [236] to [237], and in particular 237(2) to the effect that "*it is not the place of an independent expert to identify which version of the facts they prefer. That is a matter for the court*". In my judgment, Mr Marshall did not take proper care in his report to set out the background facts in an impartial way and this resulted in the expression of views which appeared to me, on a number of occasions, to be biased in favour of Biogas. Furthermore, despite the clear identification by the court at the CMC of the issues that the technical experts were to address, Mr Marshall chose to try to introduce into his report (and later into the Technical Joint Statement) numerous other issues which did not arise from the pleadings. He also sought to assert as facts matters which were properly for the determination of the court.

32. In all the circumstances, I am bound to say that where there is disagreement between the technical experts, I prefer the opinions of Mr Lumley.

The Quantum Evidence

33. Both parties relied on the evidence of experts in the field of accountancy. DBE relied upon the report of Ms Kate Hart, a Chartered Accountant and partner in the forensic services department at Roffe Swayne. Biogas relied on the report of Mr Phillip Southall, a forensic consulting director with FAR Consulting.

34. In many respects there was not a great deal between the quantum experts, whose Joint Statement ("**the Quantum Joint Statement**") reflected a considerable amount of agreement, and I shall return later to the areas where they disagreed. In closing, Mr Cheung, on behalf of DBE, submitted that Mr Southall fell into similar traps to those encountered by Mr Marshall, that he opined on unpleaded issues, failed to have regard to documents supporting DBE's quantum case and was reluctant to make appropriate concessions. I do not agree. I found Mr Southall to be a clear and straightforward witness and I do not accept that, as a matter of generality, I must treat his opinions with caution, as suggested by Mr Cheung.

35. For present purposes I make one observation about Ms Hart's evidence. Notwithstanding that it has been made abundantly clear in this court that, in forming his or her opinions, an expert ought not to rely on material that is not available to the other side's expert (see *Imperial Chemical Industries Ltd v Merit Merrell Technology Ltd (No. 2) [2018] EWHC 1577 (TCC)* at [237(1)]), Ms Hart made reference on a number of occasions in her report and in her oral

evidence to information she had received from DBE that was not in witness statements or documents before the court. She did not appear to appreciate that there was any issue with this approach and it can only be inferred that DBE's legal team did not alert her to the fact that she could not properly rely on such evidence in arriving at her expert opinions. In circumstances where Mr Southall has not had access to that information and it is not in evidence, I have concluded that I must disregard those parts of Ms Hart's evidence which rely on such material.

The Issues

36. The agreed outstanding issues between the parties are as follows:

36.1 Whether and if so to what extent Biogas owed any contractual design obligations under the Tank Heater Contract and/or the Pasteuriser Tank Contract;

36.2 Whether and if so to what extent Biogas owed a duty of care in tort to DBE in respect of the design and supply of the Tank Heaters and/or Pasteuriser Tanks;

36.3 Whether Biogas was involved in, aware of and/or ought to have taken into account the design and operating pressure of the hot water system when designing and supplying the Tank Heaters and/or Pasteuriser Tanks;

36.4 Whether Biogas has carried out structural design checks and/or all requisite tests in respect of the Tank Heaters and/or the Pasteuriser Tanks at all or adequately;

36.5 Whether Biogas exercised reasonable care and skill under the Tank Heater Contract and/or the Pasteuriser Tank Contract in designing and supplying the Tank Heaters and/or the Pasteuriser Tanks;

36.6 Whether the Tank Heaters and/or the Pasteuriser Tanks were of satisfactory quality and/or fit for purpose under the Tank Heater Contract and/or the Pasteuriser Tank Contract;

36.7 Whether the Construction Products Regulations and/or the Pressure Equipment Regulations were applicable to the design and supply of the Tank Heaters and/or the Pasteuriser Tanks;

36.8 Whether the Tank Heaters and/or the Pasteuriser Tanks were designed and/or supplied in accordance with the Construction Products Regulations and/or the Pressure Equipment Regulations (if it is held that they were applicable);

36.9 Whether, in all the circumstances, Biogas is negligent and/or in breach of the Tank Heater Contract and/or the Pasteuriser Tank Contract;

36.10 Whether Biogas' negligence and/or breach of the Tank Heater Contract and/or the Pasteuriser Tank Contract (if any) caused the failure of the Tank Heaters and/or the Pasteuriser Tanks and/or whether the failure of the Tank Heaters and/or the Pasteuriser Tanks (or parts of them) was caused by the action or inaction of DBE;

36.11 Whether and if so what losses DBE has suffered as a result of Biogas' negligence and/or breach of the Tank Heater Contract and/or the Pasteuriser Tank Contract (if any);

36.12 Whether DBE has failed to take reasonable steps to mitigate its losses;

36.13 Whether, and if so what, sums are payable from DBE to Biogas under invoices BGP3684, BGP3707, BGP3708 and/or BGP3709;

36.14 Whether and if so what sums DBE is entitled to set off against Biogas' entitlements (if any) under invoices BGP3684, BGP3707, BGP3708 and/or BGP3709;

36.15 Whether DBE and/or Biogas is entitled to interest on any sums found to be due.

37. One final issue arose between the parties, namely whether Biogas is in breach of clause 16.9 of the DBE Standard Terms and/or paragraph 9 of the Pre-Action Protocol for unreasonably failing to mediate.

38. Clause 16.9 of the DBE Standard Terms provides that "*In the event of any dispute arising under or in connection with the Contract, [DBE] and [Biogas] shall refer the matter to mediation before any proceedings are issued. Any unreasonable failure by either party to resolve the dispute without recourse to litigation shall entitle the other party to their costs of the litigation*".

39. DBE's case, as set out in paragraphs 28 and 29 of the Amended Particulars of Claim, is that Biogas unreasonably failed to provide a meaningful response to repeated invitations to mediate and/or to provide its consent to the proposal to mediate. In the circumstances, DBE claims an entitlement to recover its costs of these proceedings (whatever the outcome) as damages for breach of contract, alternatively as costs of the proceedings to be assessed. I shall return to this issue towards the end of my judgment.

The Contracts: the background facts and findings on those facts

40. The parties are in agreement that Biogas owed design obligations under both the Tank Heater Contract and the Pasteuriser Tank Contract. The key issue is the scope of those obligations.

41. It is Mr Sharratt's evidence, which I accept, that he first contacted Biogas in June 2017. At this stage, DBE had engaged a computer-aided design (CAD) draftsman, Graham Taylor ("**Mr Taylor**") of GT Design Solutions Limited ("**GT**"), but it needed to bring in detailed engineering and process design expertise and had identified Biogas for this role.

42. There were two types of design required at the AD Facility: process design (broadly defined as the flow of materials, the biochemical process and gas production) and mechanical design (broadly defined as the design of the actual hardware in the system; i.e. the components that enable the process to work). DBE was looking for a designer to undertake both elements.

43. Biogas held itself out on its website as "*a specialist over the last 10 years in the field of Biogas production, storage, cleaning and utilisation through the AD process*" with an ethos of "*design and manufacture first*".

44. It is Mr Van der Vliet's evidence, which I accept, that he had an initial meeting with Mr Newey in mid-June 2017. At this meeting Mr Van der Vliet explained that DBE was looking for detailed engineering and process design and Mr Newey made it clear that Biogas could provide what was required. I note that although Mr Newey refers to an initial meeting in his evidence, he appears to be referring to a meeting which took place in July 2017 (which I deal with

below) and which was attended by a greater number of participants. He does not refer in his evidence to a meeting with Mr Van der Vliet alone.

45. This initial meeting between Mr Van der Vliet and Mr Newey is referred to in emails exchanged shortly afterwards between them.

46. By an email dated 26 June 2017, Mr Van der Vliet referred directly to the meeting and asked Mr Newey to "*summarise your ideas on what we discussed and let me have a budget proposal please*", which he could give to Mr Sharratt to "*set the ball in motion*". It is clear that this email was not intended to refer to the supply of component parts because Mr Van der Vliet also said "*Naturally there will [be] additional cost for hardware*" and I accept Mr Van der Vliet's evidence that he was seeking a budget proposal for the process and mechanical design of the AD Facility. Indeed Mr Newey accepted in cross examination that he had not understood the email of 26 June 2017 to be seeking a quotation in relation to the supply of any hardware.

47. Mr Newey responded on the same day acknowledging that it had been a "*good meeting and a lot was discussed*". He went on to say that it was his understanding that DBE "*would want me involved with the fundamental design of the plant, calculations, equipment sizing etc*". Mr Newey then said that "*my colleague*" Mr Clarke would be able to provide DBE with "*process knowledge back up*" at £45 per hour and that if drawings were required then "*my Design Engineer's charge rate would be £30/hr*" (Mr Newey accepted in cross examination that a design engineer on this project would be a CAD draftsman). Mr Newey attached to this email CVs for himself and for Mr Clarke, together

with "*some documents/drawings for your information*". These drawings (which did not receive much, if any, attention at trial) included a General Arrangement drawing prepared by Biogas for a Digester/Gas Holder, a Biogas drawing which appears to show the process design for a "Supermix AD Plant", a Biogas drawing showing the Gas Holder details for the Supermix AD Plant, a detailed process calculation for a Supamix Ltd mixed waste AD plant which includes heat requirements and details as to the design of the heating system including heat requirements for each digester at the plant, and a digester plant schedule which appears to contain detailed design information. Although the copies are indistinct, all of the drawings appear to have Mr Newey's name on them. I infer from the provision of these documents (which was not dealt with in Mr Newey's evidence) that he was providing them to DBE to show the extent and scope of Biogas' previous experience in the process and mechanical design of a similar type of facility.

48. I pause here to note that although it is Mr Newey's evidence that he was unclear in June 2017 as to the nature of the services that DBE was inviting Biogas to provide, these emails do not suggest any lack of clarity on his part. Instead they appear to evidence a general understanding that DBE wanted Biogas to be involved in both the process and mechanical design of the AD Facility, together with a desire to evidence existing experience in engaging in such design. They certainly do not support Mr Newey's evidence (which I reject) that the discussions he had with DBE "*centred on what components DBE may potentially need from Biogas (and others) and the potential design of these components*".

49. The CVs attached to Mr Newey's email of 26 June 2017 both included the Biogas Logo. Mr Newey's CV presented him as a "*very experienced and knowledgeable*" mechanical/process engineer, with mechanical engineering qualifications and extensive design experience gained over 30 years of working in the water industry. The summary of his experience included the mechanical design of sewage products and the process design of sewage treatment plants. His "*Biogas Products Ltd responsibilities*" were listed as "*Development of outline designs for Client approval, scoping and pricing of equipment and process tenders, procurement and project management [and] client satisfaction*". In his witness statement, Mr Newey described himself as a specialist with "*more than 30 years' experience in the design and manufacture of equipment*" for various facilities including AD facilities. During his cross examination he agreed that he had experience of managing CAD draftsmen. There was evidence in the bundle that he had been involved in or around 2017 in developing an "*upgrade*" plant for farms with AD Plants so as to facilitate the use of some of their biogas as vehicle fuel and that this had involved the development of a "*novel design*" by Biogas.

50. Mr Clarke's CV appeared to suggest that his expertise was being offered to DBE under the umbrella of the Biogas name. The summary of his experience records that he had *"25 years' experience of development, design and implementation of anaerobic digestion processes and projects for treatment and energy recovery from a wide variety of liquid and semi-solid wastes…*". The information included on the CV suggested that since 2010, Mr Clarke had either been working for, or had a very close connection with, Biogas and, on the final

page it identified "*My Biogas Products Responsibilities*" as "*Process designs, development of outline designs for Client approval [and] process commissioning*".

51. During cross-examination, Mr Newey sought to suggest that he had not previously worked closely with Mr Clarke and, notwithstanding that he had described him at the time as a "*colleague*", he denied that this was the case. However, given the presence of the Biogas logo on Mr Clarke's CV (which Mr Newey was not able adequately to explain), I consider this unlikely. I accept Mr Van der Vliet's evidence that Mr Newey effectively sold Mr Clarke to DBE as a process designer with whom he had worked extensively in the past.

52. By email on 27 June 2017, Mr Van der Vliet sought an approximate figure from Mr Newey for the price of the anticipated work. Noting that he did not know precisely the scope of the work (which had not yet been agreed), Mr Newey suggested £8-10,000. Mr Van der Vliet suggested that the budget quote should instead be £20,000 and Mr Newey duly provided a budget proposal for Biogas to undertake identified work for £20,000 in an email of 27 June 2017. The work listed in the email was: "*attend meetings, outline process design, outline mech design, outline electrical design, detail M&E design, documentation*". Mr Van der Vliet forwarded this email on to Mr Sharratt on the same day, who replied by email that evening saying "*Thanks. My main concern is that he says 'Outline' design – we need detailed not outline. If its outline £20k is way too much!*". Under cross examination, Mr Sharratt clarified that his dissatisfaction with the outline nature of the proposed design had been in relation to the process design

because Mr Van der Vliet's email made a clear reference to detailed M&E design as falling within the budget proposal.

53. Unfortunately, there is little contemporaneous evidence as to what took place after the exchange of emails referred to above and, in particular, no contemporaneous evidence as to how the issue over the budget was resolved. There are certainly no contract documents setting out the design work that Biogas was to undertake and Mr Van der Vliet was not able to explain why this was so. However, in my judgment, the absence of formal contractual documents, however surprising it may be, does not necessarily lead to the conclusion that there was no agreement for Biogas to carry out design work, and in this regard I note Mr Van der Vliet's evidence that Mr Newey made an offer to carry out design work and was subsequently paid for doing that work. The contemporaneous documents are consistent with this evidence.

54. In an email dated 28 June 2017, copied to Mr Newey, Mr Van der Vliet proposed that he, Mr Taylor, Mr Newey and Mr Stuart Gower (of DBE) "*get together for a day to work on the detail of the digester process design*". Mr Sharratt and Mr Van der Vliet say (and I accept) that they (together with Mr Taylor) then attended a meeting with Mr Newey in Stockport on 5 July 2017 ("**the July Meeting**") and that at that meeting there was a detailed discussion as to the project, the precise scope of Biogas' involvement (process and mechanical design) and the involvement of Mr Clarke to assist Biogas with the detailed process design. Mr Newey recalled a meeting involving these participants but he did not place it in July 2017 after the emails referred to above nor did he identify it in his witness statement as a second meeting.

55. Insofar as Mr Newey's evidence in his witness statement is to the effect that he continued not to understand the nature of the task that was required of Biogas following what he referred to as an initial meeting with Mr Sharratt, Mr Van der Vliet and Mr Taylor (save that it related to the manufacture of components including Tank Heaters and Pasteuriser Tanks) I reject his evidence. In my judgment, given the emails that had been exchanged prior to the July Meeting and the extent to which the focus had already alighted on the precise nature of the design role that Biogas would be undertaking, it is highly implausible that there was no discussion around that role at this meeting. Indeed, I note from an invoice dated 16 August 2017 to which I shall return later in this Judgment that Mr Newey charged for 5 hours of time attending the July Meeting.

56. There is no suggestion in the documents following the July Meeting that Biogas did not understand the role it was to undertake. I find that following that meeting it was understood by everyone that Biogas would be providing the mechanical engineering design and that it would be working closely with Mr Clarke to develop the process design and that it would be charging an hourly rate for its services. Mr Taylor's role was understood to be the generation of accurate CAD drawings to record the designs. For the first time in his oral evidence, Mr Newey suggested that during the course of the July Meeting, it had become clear to him that DBE was inviting Biogas to undertake a very extensive role on the project but that owing to the fact that this was outside his remit, he had made it clear to DBE that in order to develop a design they needed to employ "*somebody who can do it all…provide that full service*". Again, I reject this evidence, which is both inconsistent with his witness statement

(which says that he learnt at the meeting that DBE had already engaged a specialist sub-contractor in the form of GT Design Solutions to provide engineering, design and consultancy services) and inconsistent with the contemporaneous documents. In particular, I note that there is no contemporaneous document evidencing that Mr Newey communicated to DBE that Biogas was incapable of providing the engineering services it required.

57. Mr Clarke's services were not provided to DBE via Biogas, but were instead paid for direct by DBE, a fact on which Biogas sought to rely in asserting that any process design work was in fact carried out by Mr Clarke and not by Biogas. Indeed, at one point in his cross examination, Mr Van der Vliet (despite initially maintaining that Mr Clarke was brought on board to work with Biogas in undertaking its design obligations), appeared to acknowledge that Mr Clarke himself carried out the process design. However, in my judgment he became confused over this issue and later on returned to his original position (which I accept), saying that the P&ID was designed by Mr Clarke with input from Mr Newey, that the process design was carried out by Mr Clarke "*in conjunction with Biogas*" and that Mr Newey and Mr Clarke were "*collaborating on the design*". I also accept Mr Sharratt's evidence in his second witness statement that Mr Newey made it clear that he and Mr Clarke would work together to provide a complete design service.

58. The documents do not evidence that Mr Clarke was solely responsible for the process design and I reject Biogas' submission that he was. Mr Clarke was originally presented to DBE as having the expertise to work alongside Biogas and the contemporaneous evidence shows that he did just that. Indeed by an

email dated 10 July 2017 Mr Clarke confirmed to Mr Newey that he would be "*happy to assist with design*" of the DBE AD Facility and forwarded an updated Project/Client Reference List from which it is clear that he was now operating under the banner of "*Wasteworks*". Mr Newey forwarded Mr Clarke's email and attachment on to Mr Van der Vliet on the same day saying "*As agreed, **I will proceed** to develop a P&I drawing and a weholite tank detail. Once these are done I would recommend we get together with Tim to review the process*" (***emphasis added***). He went on to request information that he required in the form of "*(1) Mavitech P&I and Control philosophy; and (2) Pasteuriser P&I and Control Philosophy (Graham – Monsall design)*". A P&I, or **P&ID** as it is also called in the documents, is a Piping and Instrumentation Diagram which shows the flow of piping through the AD Facility. Mr Newey accepted in cross-examination that "*as agreed with [Mr Van der Vliet] I would be involved with developing the P&I drawings, offering my Biogas side of things*".

59. Against the background set out above, Biogas began to carry out design work in respect of the AD Facility.

60. Under cover of an email dated 7 July 2017, Mr Newey sent a sketch (which he had prepared) to DBE showing "*Digester Tank connections*", including reference to heating elements, together with a drawing of what he referred to as "*drop in*" type heaters. The drawing (BG-STD-2000, Rev A), clearly marked with the Biogas logo, checked by Mr Newey and dated 2010, showed various details of a Digester heat exchanger (Mr Newey explained during his evidence that this drawing had been adapted for the design of the Tank Heaters). In the covering email, Mr Newey commented that he thought "*we should go to 3no*

630dia pipes as cross connections. Bottom one at tank base level…I have allowed conns [connections] for drop in type heaters…waiting for weholite to come up with a U value so we can do heat loss calcs. HW [Hot water] pipes flow/return will need to be run down top of each digester. Spoke with Incinerat8 and gave them a design brief. No response as yet." Weholite had been retained by DBE to provide the Digesters for the AD Facility.

61. On 10 July 2017, in response to Mr Newey's email of the same date referred to above, Mr Van der Vliet told Mr Taylor that Mr Newey was starting on the P&ID and that he wanted to see the Pasteuriser P&ID and Control Philosophy "*to save some time*". Mr Van der Vliet said "*We like the concept and want to include it in the design for the plant*". Mr Taylor sent a P&ID for the Pasteurisation System which he noted was confidential and for reference only, but said he did not have a control philosophy. Mr Van der Vliet forwarded this P&ID on to Mr Newey. Not satisfied, Mr Newey chased for a control philosophy in respect of the Pasteuriser, together with "*pump sizes/models for this job*" from Mr Taylor in an email of 12 July 2017. The following day, Mr Taylor again confirmed he did not have a control philosophy for the Pasteuriser but said that "*The Pasteuriser Heating Recirc. Pumps on this job were*", and then he gave details.

62. On the face of it, these emails of 10th and 12 July 2017 are peculiar because they appear to suggest that Mr Taylor already had access to drawings which he had prepared. However, as Mr Newey said unprompted in cross-examination, Mr Taylor had in fact been involved in a similar project previously involving Monsal and it seems that he had access to some of their drawings and design

information produced for that different project. This is apparent from a Monsal Pasteurisation Plant GA drawing which plainly shows that it was issued "*as built*" in October 2013 and it explains why Mr Taylor was willing to provide drawings from this project to Mr Newey "*for reference only*", and why he was able to identify the pumps used on the job. It also explains a later exchange of emails on 22 July 2017 in which Mr Newey asked Mr Taylor whether he had "*any Heat Transfer Coefficients that Monsal used to design their tube/shell heat exchangers*", adding the comment "*We have done our calcs and our physical sizes seem to be a lot smaller" (emphasis added)*. Under cover of his reply, Mr Taylor sent the requested details (a Monsal Design Guide dealing with Heat Exchanger Sizing) saying "*this is all I have but you didn't get this from me*". It would seem that Mr Newey was keen to save time in producing his design by looking at a similar design produced previously by another designer for a different facility.

63. On 17 July 2017 there was a further meeting between Mr Newey and Mr Van der Vliet because in an email of 18 July 2017, Mr Newey referred to the meeting "*yesterday*" and "*our discussion on the fundamental design process*". The email does not suggest that Mr Newey is unclear about what that process might involve or what Biogas' role might be. Instead it goes on to say that "*Tim [Clarke] is available next week to come over **to review** design*", a clear acknowledgement that the design is being conducted in the first instance by Biogas. On the same day (18 July 2017) Mr Newey emailed to Mr Van der Vliet his "'*Starter for Ten' for site layout*", a sketch prepared by him showing the general layout of the site.

64. On 24 July 2017, Mr Newey emailed Mr Van der Vliet and Mr Taylor with his "Pasteuriser proposed design" for discussion at a forthcoming meeting. This included a pasteuriser heating schematic drawing labelled with the Biogas logo and checked by Mr Newey, together with a Pasteurising Sequence drawing. The schematic drawing showed hot water travelling through heat exchanger No 3 into the Pasteuriser Tanks. Mr Newey accepted in cross examination that this drawing formed part of the design process of developing a P&ID. Mr Van der Vliet described it as "*a fundamental basic design for the flow of water in the substrate*".

65. On 28 July 2017, Mr Newey sent a sketch to DBE which he had prepared showing potential heat recovery/use which he said should attract Renewable Heat Incentive ("**RHI**") payment.

66. On 31 July 2017, Mr Clarke emailed Mr Newey saying: "*Your heat pump diagram conflicts with what I propose – it might be a good idea to run things past each other before we send off to DBE*" and attaching a revised diagram. It is not clear from the documents what the "*heat pump diagram*" that Mr Clarke is referring to here is, but it is clear that it is a diagram that had been prepared by Biogas and that Mr Newey and Mr Clarke were collaborating on the output to be sent to DBE. Mr Newey acknowledged in cross examination that he must have provided some form of heat pump diagram. Mr Clarke's revised process flow diagram was accepted by Mr Newey in cross examination as "*part of the hot water system design*". In further email exchanges between Mr Newey and Mr Clarke on 2 and 3 August 2017, they discussed the detailed mechanical and process design, including the Pasteuriser design and specific heat requirements.

67. In an email dated 12 August 2017 to Mr Clarke, entitled HW [Hot Water] System, Mr Newey raised the design of the Pasteuriser Tanks and hot water system with Mr Clarke, making reference to his "*kW calcs*" which he said were to give an idea of the "*total Heat required*" and attaching a diagram of the process flow of the hot water system serving the Pasteuriser Tanks and AD Tank heaters. In response to a question from me, Mr Newey explained that this email formed part of the development (together with Mr Clarke) of a P&ID and that the calculation he was referring to concerned how much heat was required to raise the temperature of the sludge inside the Pasteuriser Tank. He went on to say that the drawing was "*a P&I drawing showing where hot water is required, and some simple calculations of how much hot water is required*".

68. Following discussions between Mr Van der Vliet, Mr Clarke and Mr Newey which appear to have involved a discussion of the process flow sketch and which Mr Newey described in cross-examination as "*teamwork*", Mr Newey agreed to revise his sketch by email dated 16 August 2017 to Mr Van der Vliet.

69. On 16 August 2017, Mr Newey submitted an invoice to DBE in the sum of £2,341.58 plus VAT for the "*Provision of Engineering Design Service*". This invoice included £1,925 for labour, £340 for mileage and £76 expenses, identified as accommodation and food for Mr Clarke. The breakdown on the second page of the invoice is illuminating. It records a total of 55 hours work. Aside from the 5 hours that Mr Newey spent at the July Meeting, it also identifies 8 hours spent on Outline design sketches and calculations, 4 hours spent reviewing the design of the Pasteuriser Tanks and the heating calculations (apparently a reference to review of the Monsal designs), 24 hours spent at three

separate design meetings, 4 hours spent on the Process Design Review, 6 hours on P&I sketches, 2 hours on the site layout review and sketch and 2 hours on the hot water system design. Mr Newey neither refers to this invoice, nor seeks to explain it in his witness statement. During his cross examination, Mr Newey confirmed that the diagram attached to the 12 August 2017 email amounted to hot water system design.

70. On 21 August 2017, Mr Clarke sent a P&ID to Mr Van der Vliet for discussion noting that following conversations with Mr Newey "***we** have decided to heat the sludge by hot water in a heat exchanger to 72-73°C prior to its entering the pasteuriser*" (***emphasis added***). Mr Clarke forwarded this email to Mr Newey who responded on 22 August 2017 with his own comments on the "*heat system*" and attaching his own sketch entitled "*Heat System*". This produced a response from Mr Clarke the following morning with his own further thoughts on the design. Mr Newey and Mr Clarke then had a discussion, following which, on the afternoon of 23 August 2017, Mr Clarke set out the conclusions they had arrived at in a further email. Mr Newey accepted in cross examination that these exchanges involved a development in the process design.

71. In an email to DBE on 23 August 2017, Mr Newey referred to the "*long chat*" he had had with Mr Clarke and provided an "*updated sketch*" prepared by him which he said was going to result in a revision to the P&ID. The updated sketch (which Mr Newey described in cross examination as a P&I schematic) is the Heat System sketch that he had originally prepared on 22 August 2017, but now amended to show additional details on the top right-hand side, including four 280 kW hot water boilers. It would appear that this sketch was provided to Mr

Clarke because later that same afternoon (23 August 2017), he sent a revised P&ID to Mr Newey noting that "*I have simply boxed off the Monsal system on my PID heat recovery exchanger – **to use exactly what you provided**. See insert on drawing*" (***emphasis added***). Mr Clarke asked Mr Newey in the email if there was "*anything else?*" and said he would do a set of flow-heating calculations for each stage.

72. The production by Mr Newey of the Heat System sketch, its subsequent provision to Mr Clarke in a revised form and his re-issue of the P&ID to take the revised sketch into account appears to be an example of the iterative process (referred to by Mr Van der Vliet in his oral evidence) whereby Mr Newey produced hand-prepared drawings and then provided them to Mr Clarke who would generate the formal drawing. The Heat System sketch took on particular significance in the proceedings when Mr Van der Vliet identified it as a sketch setting out the design of the hot water system and explained in re-examination his understanding as to what it showed. Mr Newey accepted that his exchanges with Mr Clarke over this period were "*all part of the P&I development*".

73. On 31 August 2017, Mr Newey emailed Mr Van der Vliet with the parameters that he said he and Mr Taylor had settled on for the design of the pasteurisation system ("*Parameters that **we** have settled on*" (***emphasis added***)). At that stage it was intended that the Feed would be heated to 73°C before going into the Pasteuriser Tanks with no extra heat being provided. However, Mr Newey noted in this email that they were considering "*putting heat jacket or pipes inside the Pasteuriser Tanks to enable [Hot Water] to be used to raise temp a few degrees if necessary*". The email concluded as follows: "*I have gone out for*

pump quotations to both Mono and Vogelsang and have sent them the hydraulic profile between Buffer Tanks and Pasteuriser Tanks. I will do the head loss calcs but also want the pump supplier to do as well". Attached to the email were two sketches prepared by Mr Newey showing the Buffer Tank/Pasteuriser Tank layout and the design of the main Heat Exchanger, including the hot water flow into the heat exchanger and the hot water temperature.

74. Also on 31 August 2017, Mr Clarke emailed to Mr Van der Vliet a copy of the latest P&ID for discussion. He noted that Mr Newey had some suggestions regarding changes in relation to operation and maintenance and that he would call to discuss.

75. On 1 September 2017, Mr Newey forwarded on to DBE a pump quotation from Mono.

76. On 8 September 2017, Mr Taylor sent an email to Mr Newey, copied to Mr Van der Vliet, attaching a Pasteuriser Tank Parameter drawing, which he and Mr Newey had discussed the previous day. The drawing was numbered D-AD-PT1 Rev A ("**the Parameter Drawing**"). It did not include a heat jacket. However, I accept Mr Van der Vliet's evidence that DBE was concerned to ensure that the temperature of the Feed did not drop upon its transfer into the Pasteuriser Tanks and that, to address this concern, Mr Newey recommended the addition of a heat jacket around the Pasteuriser Tanks. This was shown on drawing D-AD-PT1 Rev B, dated 18 October 2017.

77. On 12 September 2017 Mr Clarke provided a provisional revised P&ID to Mr Van der Vliet "*following your meetings and updates with Martin*" which he said

he had sent to Mr Newey "*for developing the engineering*". Mr Clarke noted that he was assisting Mr Newey on "*flow/pipe sizes etc equipment design selection*" and that he would issue a basic control philosophy to match the P&ID to ensure that everyone was "*on the same page*".

78. On 19 September 2017, Biogas issued a second invoice for "*Provision of Engineering Design Services*" in the sum of £2,185 plus VAT. The second page of the Invoice provided a breakdown of those design services, recording 24 hours for three design meetings in Mansfield, 8 hours for Heat Exchanger Design, 12 hours for P&I design and 8 hours for the Control Philosophy.

79. It appears that by the end of September, the Control Philosophy had in fact been prepared by Mr Newey. Aside from the entries in the 19 September invoice, on 26 September 2017, Mr Clarke sent to Mr Newey an email commenting on a draft of that document that he had received the previous day from Mr Newey. The Control Philosophy was a detailed document designed to define the control philosophy and associated user requirements for the site scheme and to detail the overall requirements on which the Functional Design Specification would be based, including the hot water heating system. Amongst other things, the Control Philosophy included (i) a list of motor pumps including the Pasteuriser Hot Water Feed Pump and Digester Tank Hot Water Pumps, all with motor powers of 1.5kW and (in later revisions) P&ID tag numbers; (ii) the sequence for hot water pumps to supply hot water to the Tank Heaters; and (iii) the sequence for hot water pumps to supply hot water to the heat jackets on the Pasteuriser Tanks. I note that Mr Newey made no mention of the Control Philosophy in his witness statement.

80. On 30 September 2017, Mr Newey sent to DBE the Control Philosophy and a revised P&ID "*for discussion*" the following Monday. There appears then to have been a design meeting on Monday 2 October following which, Mr Newey circulated by email revised P&IDs to reflect agreed actions, including the removal of heating from tank no2 of each Digester. At the same time, Mr Newey asked Mr Sharratt for details of the pump that had already been purchased.

81. Mr Taylor sent to Mr Newey the latest P&ID by email on 10 October 2017 (asking at the same time that Mr Newey confirm the pipework sizes and the pump specs) and a further version on 11 October 2017 (noting that a meeting was required to get all the process designs "*bottomed out and design frozen*").

82. On 18 October 2017 Mr Newey responded by email to the request for pipework sizes as follows: "*Sludge lines between Malvitec and Digesters say 150mm (same as Monsal); Digesters to Storage tanks 100mm; Hot Water to main Heat Exchanger 150mm; All other HW [Hot Water] pipes 40mm; Gas pipes as my sketch*". During cross examination it was put to Mr Newey that he provided these details (which were not caveated in any way) because he was involved in the hot water system design. His answer was "*I've been asked for some pipework sizes. Not just hot water, everything…Yeah but all right, I've come up with some figures. I'm not sure how I came up with them, but there was no hot water design done at that time. So these figures, I'm giving them out, you know, take it or leave it. You know, somebody has asked me to do my best judgment of what these pipe sizes should be. That's all it is*". He went on to say that he hadn't done any calculations but had given his "*best stab*" at what

the pipe sizes might turn out to be, concluding that "*Somebody's got to do a design of all this*". I find that it is clear from this answer that, whatever he says now, Mr Newey plainly regarded himself at the time as being closely involved in the design of the hot water system. I do not accept that he would have been prepared to provide calculations in circumstances where he had no involvement in the design.

83. On 19 October 2017 Biogas issued a third invoice for "*Provision of Engineering Design Services*" in the sum of £2,445 plus VAT. The second page of the Invoice provided a breakdown of those design services, recording, amongst other things, 30 hours spent on the Control Philosophy and its revision; 14 hours spent on P&I Design and Control Philosophy, 12 hours spent at design meetings on 2 and 16 October 2017.

84. By email dated 19 October 2017, Mr Newey wrote to Mr Van der Vliet noting that he had asked Mr Taylor to revise the P&ID to reflect discussions at a recent meeting and that he was currently revising the Control Philosophy. Mr Newey subsequently issued a number of further revisions to the Control Philosophy.

85. It is a curiosity of this case that, as Biogas rightly points out, there are no quotations or purchase orders passing between DBE and Biogas for the mechanical and process design of the AD Facility or indeed for the design of the Hot Water System at the AD Facility. I agree with Biogas that this is unusual and surprising given the value of this project and the complexity of the designs. I also agree that if Biogas was designing the overall system, one might have

expected to see more in the way of drawings, calculations and so forth, from Biogas.

86. However, in light of the contemporaneous documents referred to above and the evidence from DBE, I accept that although there appears to have been an omission to enter into detailed written contractual arrangements in respect of the mechanical and process design, Biogas was nevertheless contracted to involve itself in that design and, over a series of months, plainly became involved (in conjunction with Mr Clarke), clocking up 197 hours of design work and charging DBE for its involvement. Accordingly, I reject Mr Newey's evidence (which appears to me to be wholly inconsistent with the contemporaneous documents) that Biogas' design input was, in reality, very limited.

The Tank Heater Contract

87. In September 2017, Mr Newey sent Mr Van der Vliet a quotation for the design and supply of Tank Heaters.

88. On 28 October 2017, Mr Newey sent Mr Van der Vliet an updated quotation for the Tank Heaters in the following terms:

"**Design, supply, ex Works 4no Heating Elements and modify Heating Nozzles** = £3,675 each, £14,700 total
Cost to modify 4no Heating Nozzles to enable fitting of Heating Elements at a future date = £1,100 each, £4,400 total
Grand Total = £19,100
Price includes modification to the Extension nozzles and fitting of a plastic cover.
Manufactured in 316SS [Grade 316 Stainless Steel]

Design

Sketches attached with quotation".

89. It appears to be common ground that the "sketch" referred to in the Quotation is Drawing No BG-STD-2000, Rev A, a drawing produced in 2010 by Biogas for a different project, as Mr Newey accepted in cross-examination but had not made clear in his witness statement.

90. On 30 October 2017, DBE generated a Purchase Order number 0012 summarising the order as follows:

"*Design, supply ex works 4 heating elements and modify 4 heating nozzles to enable fitting of heating elements at a future date*".

On the second page of the Purchase Order is a list of items and specification which reflects this wording and identifies the total cost of the 4 heating elements at £14,700 and the total cost of the 4 nozzles at £4,400.

91. A further drawing was generated by Biogas dated December 2017; BG-STD-2000, Rev B. Under cross-examination, Mr Newey accepted that this was in fact the drawing from which the Tank Heaters had been manufactured. This drawing appears to show a change in the design: the four heat exchanger fins envisaged in Rev A had now been changed to two L fins. Neither Revision A, nor Revision B identifies any heat capacities, design pressures, applicable design and fabrication codes, inspection requirements, fabrication details or weld and pressure test requirements. I accept Mr Lumley's evidence that neither of these drawings represents an exhaustive design for fabrication of the Tank Heaters.

The Pasteuriser Tank Contract

92. Following a number of quotations from Biogas for the supply of Pasteuriser Tanks, Mr Newey sent to Mr Van der Vliet a Quotation dated 21 November 2017 which, insofar as relevant, specified the "***design, supply, ex works***" of Pasteuriser Tanks with a useable volume of 8m³, operating pressure of up to 50mbar, test pressure of 50mbar positive/5mbar vacuum, 2m in diameter, height above foundation of 5.35m and material 304SS. Under the heading "Comments", the Quotation noted that "*Price includes for a complete 3m high heat jacket (second skin) around tank*" and that "*Price includes for a structural design check completed by JM Dixon Associates*". Under the heading "Specification", the Quotation recorded: "*The body of the vessels to be insulated with the stated thickness of 50mm resin bonded mineral wool insulation slab secured with polypropylene banding. The cladding material to be 0.7mm thick stucco aluminium metal sheeting. All cladding to be secured 5/32" aluminium pop rivets. Any patches and trims to be fitted where required"*.

93. The Quotation referred expressly to the client drawing D-AD-PT1 Rev A. This drawing dated 8 September 2017 was prepared by GT on behalf of DBE and was entitled "*8m³ Pasteuriser Tank Parameter Drawing*" ("**the Parameter Drawing**"). I accept Mr Lumley's evidence that the Parameter drawing was not a fabrication drawing from which it would be possible to manufacture the Pasteuriser Tanks. It shows only the positions of the nozzles and the overall size of the Pasteuriser Tank. It does not show material thicknesses for the shell or the dished (hemispherical) ends. Further, the reference in the Quotation to a pressure of 50mbar and a vacuum of 5mBar only refers to the contents of the main cylindrical vessel of the Pasteuriser Tanks. It makes no reference to the

design criteria for the heat jacket, in particular the design pressure of the heat jacket.

94. GT issued further revisions of the Parameter Drawing D-AD-PT1: Rev B dated 18 October 2017 added the heat jacket and nozzles and Rev C dated 15 December 2017 revised the nozzles and added brackets. I accept Mr Lumley's evidence that these revised Parameter Drawings (which still made no reference to any design criteria of the heat jacket) remained inadequate for the purposes of fabrication of the Pasteuriser Tanks.

95. On 17 January 2018, DBE generated a Purchase Order for the Pasteuriser Tanks number 0029 summarising the Order as follows: "*Attached quotation dated 21.11.17 with reference to drawing D-AD-PT1-Rev A*". The List of Items and specification on the second page of the Purchase Order refers to the attached quotation and drawing, but also lists the "*design and supply*" of 2 Pasteuriser Tanks for a total sum of £45,500 and the "*delivery, installation and insulation*" of 2 Pasteuriser Tanks, including the supply of a crane at £10,900 (in fact the crane was never supplied).

96. It is Biogas' pleaded case that it manufactured the Pasteuriser Tanks in accordance with Parameter Drawing D-AD-PT1 (Rev C).

The DBE Standard Terms

97. As I have already said, it is common ground that the DBE Standard Terms were incorporated into the Contracts (and were emailed to Biogas on 8 September 2017). Amongst other things, the DBE Standard Terms included the following provisions:

97.1 Clause 2.1: "The Order sets out the only terms on which the Company is prepared to deal with the Supplier and they shall govern the Contract to the entire exclusion of all other terms and conditions";

97.2 Clause 3.1: "The Goods and/or Services shall be of the best available quality, design, materials and workmanship, be without fault and conform in all respects with the Order, requirements, specifications and/or patterns provided or advised by the Company to the Supplier";

97.3 Clause 3.2: "The Supplier shall perform its obligations under the Contract with the utmost skill, care and diligence. It shall ensure that all work is carried out by appropriately competent, qualified and trained personnel and in compliance with all applicable legislation and regulation";

97.4 Clause 3.6: "If any of the Goods and/or Services fail to comply with the provisions set out in condition 3, the Company shall be entitled to avail itself of any one or more remedies listed in condition 12";

97.5 Clause 4.1: "The Supplier shall keep the Company indemnified in full against all direct indirect or consequential liabilities (all three of which include, without limitation, loss of profit, loss of business, depletion of goodwill and like loss), loss, damages, injury, costs, and expenses (including legal and other professional fees and expenses) awarded against or incurred or paid by the Company as a result of or in connection with…4.1.1 defective or unsatisfactory design, workmanship, skill, care, quality or materials of or in the Goods and/or Services or any part of them";

97.6 Clause 8.2: "Without prejudice to any other right or remedy, the Company reserves the right to set off any amount to which it is entitled to payment by the Supplier whether under the Contract or otherwise against any amount payable by the Company to the Supplier";

97.7 Clause 12.1: "*Without prejudice to any other right or remedy which the Company may have, if the Goods and/or Services are not supplied in accordance with, or the Supplier fails to comply with, any of the terms of this Contract the Company shall be entitled to avail itself of any one or more of the following remedies at its discretion, whether or not any part of the Goods and/or Services have been accepted by the Company:*

12.1.5 to carry out at the Supplier's expense any work necessary to complete the Goods and/or Services it make them comply with the Contract; and

12.2.7 withhold suspend or set off against any payment due to the Supplier any sums which the Company is entitled to be paid by the Supplier under the Contract;

12.1.9 claim damages for any additional costs, loss or expenses incurred by the Company which are attributable in any way to the Supplier's breach of this Contract or failure to deliver the Goods and/or Services on or by the due date or at all."

97.8 Clause 16.1: "The Company's rights under these conditions are without prejudice and in addition to any rights implied by statute and at common law";

97.9 Clause 16.2: "Each right or remedy of the company under the Contract is without prejudice to any other right or remedy of the Company whether under the Contract or not".

98. Further, as I have said, it is admitted by Biogas that the Contracts also contained implied terms by virtue of section 14(1) (satisfactory quality) and 14(3) (fitness for purpose) of the 1979 Act and section 4(2) (satisfactory quality) and 4(5) (fitness for purpose) of the 1982 Act.

Events following entry into the Pasteuriser Tank Contract

99. Between entry into the Tank Heater Contract and the Pasteuriser Tank Contract, Biogas continued to be involved in general matters of design. On 15 December 2017, Mr Newey provided DBE with quotations for the pumps for the AD Facility and their pressure limits obtained from Anchor Pumps Limited. Mr Newey confirmed in cross-examination that in seeking this quotation, he had been aware of the flow rates and had estimated the pump heads (working pressure).

100. On 9 January 2018, Biogas invoiced DBE for engineering design services provided in November 2017, a total of 20 hours attending design meetings and revising the Control Philosophy.

101. Following entry into the Pasteuriser Tank Contract, Biogas continued to be involved with design. On 29 January 2018, Mr Taylor emailed Mr Newey to ask him to "*knock me a sketch up how you see the Hot Water Manifold…and the sizes…*". On 13 February 2018, Mr Newey and Mr Taylor exchanged emails confirming the pipework sizes for the hot water system and on 1 March 2018, Mr Newey provided Mr Van der Vliet with a spreadsheet providing details for all pumps required for the AD Facility, including details of their duty flow and duty heads. Mr Newey accepted in cross examination that the details in this spreadsheet were "*exactly the same*" as the Anchor Pumps Limited quotation provided in December 2017.

102. The Tank Heaters were delivered by Biogas to DBE on 3 May 2018. The Pasteuriser Tanks were delivered by Biogas and installed by DBE on 13 June 2018.

103. Although not directly relevant to DBE's claim, it is worth noting that between about September 2017 and April 2018, Biogas also designed and supplied (pursuant to Quotations and Purchase Orders) stainless steel extension nozzles for the Digesters; the gas holder; gas pipework and the gas mixing system for the AD Facility.

Issue 1: The extent of the design obligations owed by Biogas under the Contracts

104. It is Biogas' case in these proceedings that whilst it did have design obligations under the Contracts, they were extremely limited.

104.1 In the case of the Tank Heaters, Biogas pleads that the design was required to be in accordance with drawing BG-STD-2000, Rev A, "*albeit such design duties were limited to the choice of the plate thickness and the addition of internal stiffeners*". For what it is worth, this pleading appears to me to be in error, not only as to the relevant drawing (which should have been Rev B), but also as to the addition of internal stiffeners; it was Mr Smith's evidence that he decided to add internal stiffeners to the Pasteuriser Tanks. He does not suggest that he made a similar decision for the Tank Heaters.

104.2 In the case of the Pasteuriser Tanks, Biogas maintains that its design obligations were determined by the specification in the Quotation together with the Parameter Drawing. In her closing submissions, Ms Atkins, on behalf of Biogas, maintained that as a result of the level of specificity on Drawing D-AD-PT1 (Rev C), Biogas' design obligations were limited to the choice of appropriate thickness of the metal plate that was to be used.

105. Essentially Biogas says that it had no contractual obligation to have regard to the design requirements of the system into which the Tank Heaters and the Pasteuriser Tanks were to be installed. Biogas points out that the design obligations owed by a party will first and foremost be determined by the contractual documents and accompanying specifications and that, in this case, there was no specification provided to Biogas by DBE identifying the operating pressures of the hot water system and DBE never requested that Biogas calculate those pressures at any time prior to, or post, contract formation. Biogas says that the design work that it carried out was on an ad hoc basis only and did not involve the overall design of the hot water system. In any event, Biogas argues, the preliminary P&ID provided by Mr Clarke under the Wasteworks logo did not provide a finalised design for the hot water system and that, accordingly Biogas could not be expected to integrate its own design into a design that was, as yet, unfinished.

106. Biogas also argues (by reference to *Holland Hansen & Cubitts (Northern) Ltd v Welsh Health Technical Services Organisation (1985) 35 BLR 1*) that the design of the hot water system was beyond the extent of Biogas' own discipline and that accordingly Biogas could not be expected to consider its own design in that context.

107. I reject Biogas' case for the following reasons:

107.1 By way of preliminary comment, I note that:

107.1.1 The Tank Heater Design was not in accordance with BG-STD-2000, Rev A, as pleaded, but rather with BG-STD-2000, Rev B; it was, as

Mr Marshall confirmed, an adaptation of a design which had been used by Biogas for an earlier project. I also note that this appears to have involved a development in the design of the cruciform fins in the Tank Heaters.

107.1.2 The Pasteuriser Tanks were not built to the details in Parameter Drawing D-AD-PT1-Rev A, but rather by reference to D-AD-PT1-Rev C (or perhaps Rev D). Indeed, as I have already said, the Parameter Drawing (whether in its original form or revised) showed only outline dimensions. It was not a detailed fabrication drawing and it is common ground that Biogas was required to make decisions about, for example, the thickness of the outer wall of the Pasteuriser Tank and the inclusion of stiffening rings. The fact that the Parameter Drawing was prepared by GT resulted in a disagreement between the experts in the Technical Joint Statement as to whether Biogas was in fact truly responsible for the design of the Pasteuriser Tanks themselves, with Mr Lumley confirming that it was, by reference to the word "*design*" on the Quotation, and Mr Marshall opining that Biogas "*fabricated the Pasteuriser Tanks based on the 8m³ Parameter Drawing D-AD-PT1, without reconsidering the stated pressures. They used their empirical knowledge to choose the thickness of the outer wall of the main vessel, and to add an internal stiffening ring to assist with stability during manufacture*". This was not really a question for the experts, but in my judgment this illustrates the lengths to which Mr Marshall was prepared to go to advocate for Biogas' case. His opinion neither explains his disagreement with the proposition that Biogas was responsible for the design of the Pasteuriser Tanks, nor does it justify any such disagreement. On the contrary, it acknowledges that Biogas was required to carry out design work (referred to as "*empirical knowledge*") that went beyond the realms of the Parameter Drawing prepared by GT. As Mr Marshall confirms elsewhere in the Technical Joint Statement, the parameters identified in the GT Parameters Drawing were "*incomplete*".

107.2 In my judgment, the Contracts cannot be seen in isolation from the other activities that Biogas was engaged in on site. Those activities provide

important factual matrix evidence which cannot properly be ignored. This is not a case where Biogas was engaged as a sub-contractor to provide a component as a discrete or isolated piece of work. Whilst there is an unusual lack of contractual documentation evidencing the design work that Biogas was to undertake on this project, including a lack of any detailed specification, it is clear from the contemporaneous evidence to which I have referred above that Biogas and DBE agreed that Biogas would become involved in the mechanical and process design of the AD Facility, a design which necessarily involved the design of the Hot Water system. I accept Mr Sharratt's evidence that Mr Newey took the lead on that design, with detailed design input from Mr Clarke.

107.3 In the circumstances, it seems to me that in order to comply with its contractual duty to exercise reasonable care and skill in the design and fabrication of the Tank Heaters and Pasteuriser Tanks, Biogas was obliged to ensure that its design for the Tank Heaters and Pasteuriser Tanks could be safely integrated into the overall design of the AD Facility. It could not properly ignore the process and mechanical design work that it was undertaking, whether that design work was being done on its own, or (as I have found here) in conjunction with others. The act of working as a team with Mr Clarke did not divest Biogas of its duties in respect of that work (see *Cooperative Group Ltd v John Allen Associates Ltd [2010] EWHC 2300 TCC*, per Ramsey J at [180]).

107.4 Accordingly, as part of its express obligation to exercise the "utmost skill, care and diligence" in carrying out its obligations under the Contracts, Biogas was obliged to ensure that it understood what the operating pressures in the hot water system would be and that it took those into account in designing the Tank Heaters and the Pasteuriser Tanks. Put another way, Biogas was required to check that the design of the Tank Heaters and Pasteuriser Tanks was consistent with other parts of the system, including the operating pressures of the hot water system. Biogas was not designing the Tank Heater and the Pasteuriser Tanks in a vacuum; Mr

Newey had been closely involved in discussion of the P&ID for the process design and in the preparation of various schematic drawings. He had expressly and without reservation provided pipework sizes for the hot water system. He was aware, as he confirmed in cross examination, that the hot water pumps shown on the P&I Drawings would be connected to the hot water system ("*Obviously I'm aware*"). In the circumstances it seems to me to be divorced from all reality to regard Biogas' design obligations as (for the most part) limited merely to the drawings attached to the Quotations.

107.5 It is not an answer to this point to say that at the time of Biogas' design of the Tank Heaters and Pasteuriser Tanks the design of the hot water system had not been finalised. In circumstances where Biogas had taken on responsibility for, and was involved in, the process and mechanical design of the system it should have ensured that the Tank Heaters and the Pasteuriser Tanks were designed so as to take account of, and be compatible with, all other components in the system. In any event, I accept Mr Cheung's submission that it is clear on the documents that from 15 December 2017, Biogas was aware that the pump pressures in the quote that it had passed on to DBE ranged from 1 bar to 1.5 bar, an awareness that it therefore had well before DBE accepted its Quotation for the Pasteuriser Tanks. By March 2018, Biogas had itself produced a detailed schedule with specifications for the pumps in the hot water system.

107.6 Further, I do not accept that it is right to say that the design of the hot water system (and in particular the details involved in that design which were capable of impacting upon the design of the Tank Heaters and Pasteuriser Tanks) was beyond the scope of Biogas' own discipline. Biogas (and Mr Newey) clearly held itself out to DBE as having the expertise required to be involved in the "*fundamental design*" of the AD Facility. Mr Newey provided a budget quote to DBE on the assumption that his work would involve "*outline process design, outline mech design, outline electrical design, detail M&E design, documentation".*

> Furthermore, it is clear from the documents that, notwithstanding the absence of any formal contractual documentation, Biogas assumed responsibility over the course of the project for work on the process and mechanical design of the AD Facility. This is a very different factual context to the one with which the Court of Appeal was concerned in *Holland Hansen*, where it held that whilst consulting engineers were responsible for the profile of hospital flooring, matters of visual appearance or aesthetic effect were matters for the architects and not within the province of a structural engineer (see Dillon LJ at [31]).

108. Even if I am wrong that Biogas was involved in the process and mechanical design of the AD Facility, it is in my Judgement clear that a designer of the Tank Heaters and the Pasteuriser Tanks needed to have regard to the system into which its components would be integrated in any event. Mr Lumley's evidence, which was not challenged, was that on inspection it was apparent that (i) the outer shell of each Pasteuriser Tank acts as a pressure containing element for the 3m high water jacket; i.e. the jacket and outer shell of the Pasteuriser Tank together form a closed pressurised jacket which is to contain the pressurised hot water; and (ii) each of the Tank Heaters acts as a pressure containing element (i.e. a pressure vessel) containing hot water - the pressure will be generated by the hot water as it is pumped through the Tank Heaters. In the circumstances, I accept Mr Lumley's evidence that a reasonably knowledgeable and skilled engineer engaged in the design of the Pasteuriser Tanks and Tank Heaters was obliged as part of those obligations to check what the likely operating pressure was to be, so as to ensure that he factored this information into his design.

109. At one point in the Technical Joint Statement Mr Marshall accepts that Biogas should have asked for "*the applicable pressures*" (notwithstanding that it is his opinion that Biogas has only very limited design responsibilities), appearing to agree with Mr Lumley. He repeated this point under cross examination. However, later in the Technical Joint Statement, Mr Marshall seeks to suggest (implausibly in my judgment) that "*it would have been possible for Biogas to estimate the operating pressures with a reasonable degree of accuracy*". Whilst I reject any suggestion that it would be appropriate for the designer of a Pasteuriser Tank or Tank Heater merely to estimate their operating pressures, I note that implicit in this point appears to be an acknowledgment (consistent with his earlier statement that Biogas "*should have asked*") that information as to operating pressures is relevant to the design process, even if the designer is designing only the individual components.

110. Indeed, Mr Newey himself appeared to acknowledge as much during his evidence, when he was being questioned about the choice of 0.5 bar for the testing of the heat jacket: "*I felt that having been part of the development of the P&I and seen, you know, bits of discussion about the hot water system, that would be plumbed in, if it was half a bar, it was an acceptable figure to plumb, you know, into the low pressure hot water system*".

111. Finally, I accept DBE's submission that the exercise of the utmost care and skill also includes compliance with all applicable legislation and regulations, in this case the PED/PER 2016 and the Construction Products Regulations, to which I return below.

Duty to Warn

112. In addition to the obligations identified above, DBE asserts that as part of the requirement that it should exercise reasonable care and skill, Biogas was obliged to advise and/or warn DBE of the appropriate operating pressures of the Tank Heaters and Pasteuriser Tanks.

113. In light of the findings I have made as to the scope of Biogas' duties under the Contracts, it does not seem to me to be necessary that I should address this additional claim in any detail. It was not, in any event, pursued with any great vigour by DBE.

114. Suffice to say that I accept Biogas' submission that DBE has neither pleaded nor advanced a positive case on causation arising from a duty to warn and so could not have made out its case in this regard in any event.

Issue 2: The extent of Biogas' obligations in tort

115. Biogas accepts that it owed DBE tortious duties in respect of the design, fabrication and supply of the Tank Heaters and Pasteuriser Tanks that mirrored those owed pursuant to the Contracts, but it says that in light of the limited design obligations for which it contends, and/or Biogas' lack of expertise in relation to complex circulating hot water systems, Biogas did not assume responsibility at common law for economic loss caused by the incompatibility of the Tank Heaters and the Pasteuriser Tanks with the hot water system.

116. Given my decision as to the scope of Biogas' design obligations under the Contracts, I can deal with this point swiftly.

117. Guidance as to the circumstances in which a concurrent duty in tort will arise was given by Jackson LJ in *Robinson v PE Jones (Contractors) Ltd [2012] QB 44* at [80]:

"(i) When A assumes responsibility to B in the Hedley Byrne sense, A comes under a tortious duty to B, which may extend to protecting B against economic loss. (ii) The existence of a contract between A and B does not prevent such a duty from arising. (iii) In contracts of professional retainer, there is commonly an assumption of responsibility which generates a duty of care to protect the client against economic loss".

118. I accept DBE's submissions that there was, on the facts of this case, an assumption of responsibility for ensuring the compatibility of the design of the Tank Heaters and the Pasteuriser Tanks with the hot water system, together with reliance on the part of DBE on Biogas' expertise in dealing with both process and mechanical design. I accept that Biogas' position in this case extends beyond that of a simple manufacturer of goods, or building contractor with no design obligations and is analogous with that of a design and build contractor who can owe a duty of care in tort which is coterminous with its contractual duties (see *Storey v Charles Church Developments Ltd (1997) 73 Con LR 1* per HHJ Hicks QC at [21] to [31]).

Issue 3: Was Biogas involved in, aware of and/or ought it to have taken into account the design and operating pressure of the hot water system when designing and supplying the Tank Heaters and/or Pasteuriser Tanks?

119. In light of the analysis in relation to Issue 1 above, and for the same reasons, I find that Biogas was involved in, aware of and/or ought to have taken into

account when designing the Tank Heaters and the Pasteuriser Tanks the operating pressures of the hot water system.

120. Even on Biogas' own case, Mr Marshall's opinion (referred to above) is that Biogas "*should have asked for the [operating] pressures*".

Issue 4: Are the Construction Products Regulations and/or the Pressure Equipment Regulations applicable to the design and supply of the Tank Heaters and/or the Pasteuriser Tanks?

121. This issue is now to be seen against the background of my findings as to the scope of DBE's design obligations, and in particular that it was obliged to ensure that the design for the Tank Heaters and Pasteuriser Tanks could be safely integrated within the overall mechanical and process design of the AD Facility.

122. Pursuant to clause 3.2 of the DBE Standard Terms, Biogas was expressly obliged to ensure that "*all work*" carried out under the Contracts was in compliance with "*all applicable legislation and regulations*". DBE's case is that applicable legislation and regulations included:

> 122.1 The Pressure Equipment (Safety) Regulations 2016 (SI 2016 No.1105) ("**the PER 2016**"), which implements the Pressure Equipment Directive 2014/68/EU ("**the PED**") and sets out the standards for the design and fabrication of pressure equipment. Pressure Equipment under the PER 2016 is defined as "*vessels, piping, safety accessories and pressure accessories, including, where applicable, elements attached to pressurised parts…*". Regulation 3(1) of the PER 2016 provides that it applies to "*pressure equipment and assemblies with a maximum allowable pressure PS greater than 0.5 bar*". Regulation 8(2) states that "*Pressure equipment*

and assemblies to which this regulation applies must be (a) designed and manufactured in accordance with the sound engineering practice of a Member State in order to ensure safe use; and (b) accompanied by adequate instructions for use". It is Mr Lumley's evidence that, in the UK, the sound engineering practice of the member state is represented, for pressure vessels with a pressure of 0.5 bar and above, by adherence to the Specification for unfired fusion welded pressure vessels, PD 5500:2015 ("**PD 5500**"). The foreword of PD 5500 expressly states that it "*provides a specification for the design, manufacture, inspection and testing of pressure vessels…*". Paragraph 5.8.5 of PD 5500 identifies the calculation that is to be used to determine the "standard" test pressure to be applied to vessels and components.

122.2 Regulation (EU) No 305/2011 ("**the Construction Products Regulations**") which lays down harmonised conditions for the marketing of construction products. DBE relies in particular upon article 38 which provides that "*in relation to construction products covered by a harmonised standard and which are individually manufactured or custom-made in a non-series process in response to a specific order, and which are installed in a single identified construction work, the performance assessment part of the applicable system, as set out in Annex V, may be replaced by the manufacturer by Specific Technical Documentation demonstrating compliance of that product with the applicable requirements and equivalence of the procedures used to the procedures laid down in the harmonised standards*".

123. Mr Lumley is firmly of the view that the PER 2016 and PD 5500 apply to both the Tank Heaters and the Pasteuriser Tanks. His evidence, which I accept, is that based on his past experience of these standards and similar plant/equipment, both the Pasteuriser Tanks and the Tank Heaters are required to comply with the PER 2016 in the UK because both have maximum pressures in excess of 0.5

barg and because the Tank Heaters and the heat jacket around the Pasteuriser Tanks have volumes of in excess of 1 litre. He has calculated the total maximum pressure of the Pasteuriser Tanks' hot water circulation system in the hot water jacket surrounding the tanks at a minimum of 2.15 barg. He has calculated the total maximum pressure of the Tank Heaters at a minimum of 1.5 barg.

124. As an aside, I should note that, whilst I am aware of the distinction between the two units of measurement referred to in this case (bar being, as I understand it, a measure of absolute pressure and barg being a measure of absolute pressure minus atmospheric pressure), it was never suggested to me that there was any significance in that distinction for present purposes and, in their submissions, the parties made no attempt to distinguish between the two units of measurement, often using them interchangeably.

125. Mr Newey's own evidence is supportive of Mr Lumley's position. He accepted in cross examination that the PER 2016 applied to both the Pasteuriser Tanks and the Tank Heaters. Indeed in an email to Mr Van der Vliet dated 16 April 2018, Mr Newey agreed to provide pressure certificates "*in accordance with the PED regs*". Although Mr Newey never seems to have provided any such pressure certificates, he was clearly of the view that Biogas had to comply with the PER 2016.

126. In the circumstances, I reject Mr Marshall's evidence (as set out in the Technical Joint Statement) that no calculations were required by the PED/PER 2016 for vessels operating at the pressures which Biogas anticipated or indeed the pressures which Mr Lumley recommends. I should add that Biogas conceded

in closing that if I were to find, as I have, that Biogas had an obligation to ensure that the Tank Heaters and the Pasteuriser Tanks were compatible with the hot water system, then the PED/PER inevitably applied to them.

127. In the Technical Joint Statement, Mr Marshall appears to accept that the Tank Heaters fall within PED, Chart 4, as requiring the exercise of "*Sound Engineering Practice*", albeit, he says, this does not mean there was a need to carry out any calculations.

128. However, Mr Marshall's evidence that Sound Engineering Practice in the circumstances of this case could be equated with the exercise of mere "*common sense*" strikes me as extremely surprising and highly unlikely and is perhaps to be explained by the fact that, as he acknowledged during his cross examination, he "*couldn't claim that [he] was familiar with the PER and PED in [his] normal course of business*…". I prefer Mr Lumley's evidence: "*As an engineer of 40 years' experience I would be appalled to hear [common sense] as the basis for which I have bought…a pressure vessel. I've never heard that suggestion at all; common sense. Sound engineering practice is not common sense, engineering is working things out and checking, and working to acknowledged standards, otherwise accidents happen, which is what has happened in this case*". I accept Mr Lumley's evidence that in this case, sound engineering practice required compliance with PD 5500, and the calculations set out therein at paragraph 5.8.5.

129. In this regard, it is worthy of note that Mr Marshall seeks to rely on calculations prepared by JM Dixon long after the event in or around May 2019 ("**the Dixon**

Calculations"), but these calculations were themselves performed in accordance with paragraph 5.8.5 of PD 5500, from which I infer an acceptance by JM Dixon that such was necessary. Mr Marshall does not explain this apparent inconsistency in his approach.

130. As for the Construction Products Regulations, Mr Lumley referred only briefly to these in his report, saying that, in his view, EU conformity assessment required both the Tank Heaters and the Pasteuriser Tanks to be CE certified to indicate their conformance with health, safety and environmental protection standards and to be supplied to DBE with operations and maintenance instructions including testing and commissioning procedures. I accept this evidence. Mr Marshall disagreed with it in his report on the grounds that CE marking applies only to items which are 'placed on the market' and that items fabricated by Biogas had not been 'placed on the market'. However during his cross examination he quickly acknowledged that he had been "mistaken" when he wrote that and had not referred to the relevant definition section.

131. In conclusion, therefore, I find that both the Construction Products Regulations and the PER 2016 applied to the design and supply of the Tank Heaters and the Pasteuriser Tanks.

Issue 5: Has Biogas carried out structural design checks and/or all requisite tests in respect of the Tank Heaters and/or the Pasteuriser Tanks at all or adequately?

132. I find that Biogas plainly did not carry out adequate structural design checks and other tests in respect of the Tank Heaters and the Pasteuriser Tanks, whether before or after fabrication, for the following reasons:

132.1 Biogas has not disclosed any contemporaneous records of structural design checks/calculations or pressure tests carried out prior to or at the time of the design and fabrication of the Pasteuriser Tanks and Tank Heaters.

132.2 The technical experts agree that with respect to both the Tank Heaters and the Pasteuriser Tanks there is no record of Biogas issuing any design documents that would include fabrication drawings, design calculations and pressure test certification and welding inspection records. There is also no record of Biogas preparing and issuing manufacturer's data books that would contain this documentation. I accept Mr Lumley's evidence that the industry practice is that all tests are recorded and included in the manufacturer's data book of the product.

132.3 The technical experts are in agreement that Biogas did not carry out adequate structural design checks and calculations prior to manufacturing the Tank Heaters and Pasteuriser Tanks.

132.4 The Quotation for the Pasteuriser Tanks noted that the price "*includes for a structural design check completed by JM Dixon Associates*". In my judgment, objectively construed, the parties must have intended that this structural design check should be carried out before supply of the Pasteuriser Tanks, as I can see little purpose to it otherwise. It is common ground that this did not happen; Biogas has disclosed no contemporaneous records of any such structural design check. Mr Marshall insisted in his evidence that it would be sound engineering practice to fabricate, supply and commission the Pasteuriser Tanks <u>before</u> any structural design check took place, a contention which to my mind again illustrated the partial approach he took to giving evidence. After a number of requests for sight of the structural design check, Biogas disclosed the Dixon Calculations on 29 August 2019, after these proceedings had been commenced. However, as I have said above, the Dixon Calculations were retrospectively prepared in around May 2019 and not at the time of the design and fabrication of the

Pasteuriser Tanks. DBE maintains that the Dixon Calculations are in any event inadequate, a point on which Mr Lumley was not challenged.

132.5 I accept Mr Lumley's evidence that Biogas should have prepared calculations to verify the design basis and check the strength of materials for both the Tank Heaters and the Pasteuriser Tanks. There is no evidence that it did so and Mr Newey confirmed in cross examination that it did not. Indeed, in response to the question as to how he had determined an acceptable pressure for the purposes of testing the Pasteuriser Tank and heat jacket, Mr Newey said, somewhat disconcertingly, "*I just did it, rightly or wrongly. You know, it could have been wrong…*". Mr Smith also agreed that there were no calculations done to ascertain the appropriate thickness of the metal used in the fabrication of the Pasteuriser Tanks, but that he had used his experience. He commented that "*It's lucky I didn't choose 1mm*".

132.6 The PED at article 4, paragraph 3 requires as a minimum that pressure equipment and assemblies "*shall be designed and manufactured in accordance with the sound engineering practice of a member state in order to ensure safe use. Pressure equipment and assembly shall be accompanied by adequate instructions for use*" and the PER 2016 (at Regulation 8(2)) makes similar provision. I have already found that the PER 2016 applies in this case and I have accepted Mr Lumley's evidence that in the UK, the sound engineering practice of the member state is represented, for pressure vessels with a pressure of 0.5 barg and above, by adherence to PD 5500. Section 3 of PD 5500 requires calculations to be carried out as to the minimum thicknesses or dimensions to ensure the integrity of the vessel design against the risk of deformation and collapse. Paragraph 5.8.5 requires calculations as to the "standard" test pressure. I accept Mr Lumley's evidence that without calculations, Biogas could not know the thickness of the materials required for the Tank Heaters and the Pasteuriser Tanks or understand the factors of safety involved.

132.7 Mr Smith maintained in his evidence that both the Tank Heaters and the Pasteuriser Tanks were tested following their fabrication. In respect of the former, he says that all four Tank Heaters were tested by individually air pressurising them to 1 bar and that this testing was carried out by introducing air into the pipes feeding the Tank Heaters, bringing it up to the gauge pressure (1 bar) and spraying the external area with a soapy water solution to check for any leaks. In respect of the latter, he says that Biogas individually air pressurised the inner tanks of the Pasteuriser Tanks to 3 bar internally before then attaching the heat jacket to the inner tanks and testing the heat jacket to 0.5 bar. Although there appear to be no contemporaneous records of this testing and there is no adequate explanation for the absence of records and the absence of pressure certificates, I accept Mr Smith's evidence that the testing he describes was carried out, subject to one point. I note that in an email dated 11 October 2018 sent to DBE on the day the Tank Heaters failed, Mr Newey asserted that they had been tested to 0.5 bar (and not the 1 bar described by Mr Smith). On balance I am inclined to accept the contemporaneous documentary evidence over that of Mr Smith. In any event, however, Mr Newey accepted in cross examination that "…*we were wrong because we didn't issue a…pressure certificate, which we should have done, and hands up, with (sic) didn't*".

132.8 Mr Lumley's opinion, which I accept, is that the tests carried out by Biogas were inadequate because they failed to take account of the total maximum pressures which would be operating in the heat jacket (a minimum of 2.15 barg) and the Tank Heaters (a minimum of 1.5 barg), thus failing to meet the PED/PER 2016 requirements.

Issue 6: Were the Tank Heaters and/or the Pasteuriser Tanks designed and/or supplied in accordance with the Construction Products Regulations and/or the Pressure Equipment Regulations?

133. The answer to this issue is plainly, no. Once it is accepted that PD 5500 identifies the relevant requirements of standard engineering practice under the

PER 2016, then there can be no doubt that Biogas failed to meet those requirements.

134. Pursuant to PD 5500, paragraph 1.4.2, the manufacturer is responsible for the completeness and accuracy of all design calculations and for compliance with all applicable requirements of the specification for the whole vessel. However, it is common ground that Biogas did not provide documentation required by paragraph 1.5.2.2, including a data book upon delivery of the Tank Heaters and Pasteuriser Tanks containing a set of fabrication drawings, design calculations, records of tests (including pressure test certificates) and CE certification. It provided no as built drawings or O&M manuals (the latter being required to comply with the specific requirement of regulation 8(2)(b) of the PER 2016 that pressure equipment is to be accompanied by "*adequate instructions for use*"). Insofar as Mr Smith suggested for the first time in his oral evidence that Biogas did in fact have adequate welding records in respect of fabrication, I reject his evidence. If those records had been available, I see no reason why Biogas would not have disclosed them in the course of these proceedings, particularly in circumstances where they were specifically identified within DBE's disclosure requests.

135. It is also common ground that Biogas did not carry out any of the design calculations required by PD 5500. In particular, Biogas did not carry out calculations as to minimum thicknesses or dimensions to ensure integrity (PER 2016, paragraph 3.1.1-3.1.3), it gave no consideration to loads, including internal and external design pressures (PER 2016, paragraph 3.2.1-3.2.3), it did not calculate the standard test pressure (PER 2016, paragraph 5.8.5.1) and it did

not calculate the thickness of a jacketed cylinder subject to external pressure (PER 2016, paragraph 3.11.2.3).

136. Whilst it was Mr Lumley's evidence that the presence of stiffening rings in the Pasteurisation Tanks indicated to him that the basic strength of the cylindrical body was insufficient based on the thickness and material selected by Biogas, it was Mr Smith's evidence that he made the decision to add stiffeners to ensure stability of the tank walls during the fabrication process and not to provide any better performance on the part of the Pasteurisation Tanks. Given the absence of any design calculations on the part of Biogas, together with Mr Smith's admission that he determined the thickness of the walls by reference only to his own experience, it seems inherently unlikely to me that the stiffeners were included as part of a conscious design to improve performance and accordingly I accept Mr Smith's evidence in this regard. In circumstances where the internal stiffeners were not designed to improve the strength and lateral stability of the Pasteuriser Tanks, I do not see that there was any requirement for Biogas to carry out calculations in this regard pursuant to paragraph 3.6.2.2 of PD 5500.

137. Mr Lumley's evidence, which I accept, is that the CE certification (to be compliant with the Construction Products Regulations, articles 8 and 9) would include affixing nameplates to the Tank Heaters and Pasteuriser Tanks. There is no evidence that Biogas did this.

138. In summary, Biogas failed to supply the Tank Heaters and Pasteuriser Tanks in accordance with the requirements of the Construction Products Regulations and the PED/PER 2016. This was, in my judgment, a breach by Biogas of the

express terms of the Contracts to comply with applicable legislation and regulations and further, it was in breach of the contractual obligation to exercise care and skill. I note in passing that I understood Biogas to concede in its closing submissions that a finding of failure to exercise reasonable care and skill would almost certainly lead to a finding of failure to comply with PED/PER 2016. I turn to the exercise of reasonable care and skill in the next section.

Issue 7: Did Biogas exercise reasonable care and skill under the Tank Heater Contract and/or the Pasteuriser Contract in designing and supplying the Tank Heaters and/or the Pasteuriser Tanks

139. In my judgment, and having regard to the matters already set out above, Biogas failed to exercise reasonable care and skill under both Contracts in designing and supplying the Tank Heaters and the Pasteuriser Tanks.

140. I accept Mr Lumley's evidence that, with knowledge of the design of the hot water systems (which I have found that Biogas had by reason of its involvement in the design of that system), a reasonably competent designer and supplier of the Tank Heaters and the Pasteuriser Tanks would have identified that they were to contain pressurised hot water at 90°C and at pressures above 0.5 barg. There is no evidence that Biogas either identified or considered this and, in the circumstances, I accept that it fell below the requisite standard of care in failing to consider and take into account in its design the compatibility of the Tank Heaters and Pasteuriser Tanks with the hot water system at the AD Facility. In particular, Biogas failed to design and supply Tank Heaters and Pasteuriser Tanks which it had taken steps to ascertain were capable of withstanding the operating pressures of the associated water pumps.

141. As part of its failings in relation to design, Biogas failed to comply with the requirements of PED/PER 2016 and PD 5500, together with the Construction Products Regulations, in the various ways identified above. As Mr Lumley said under cross-examination: "*It was for Biogas to actually do the calculations and specify exactly what the pressure would be and to provide operation and maintenance instructions in accordance with the PER so that nobody got hurt*". Biogas failed in this regard.

142. Even if I am wrong that Biogas had knowledge of, and was involved in, the design of the hot water system, I also accept Mr Lumley's evidence (which appears to me to be supported by Mr Marshall) that the reasonably competent designer and supplier of the Tank Heaters and the Pasteuriser Tanks would have sought information on the operating pressures of the hot water system. Biogas failed to do so.

143. I reject Mr Marshall's evidence that Biogas was entitled to rely upon GT in respect of the design of the Pasteuriser Tanks, on the basis that GT was the "true owner" of the design having prepared the Parameter Drawing D-AD-PT1. I have already found that the Parameter Drawing was not an exhaustive design for fabrication and it is common ground that Biogas was required, for example, to determine the thickness of the walls of the Pasteuriser Tanks. Mr Marshall seeks to minimise the significance of this by referring to the use by Biogas of its "empirical knowledge" (a reference to Mr Smith's evidence that he took the decision to fabricate the walls to a 4mm thickness based on his own experience), but in my judgment, this is clear evidence that (as the Quotation makes clear), Biogas was in fact required to design the Pasteuriser Tanks. Further and in any

event, I accept that Mr Taylor's role was to draw up CAD drawings and in this case it appears that he did that following discussions with Mr Newey, as is clear from an email he sent to Mr Newey on 8 September 2017 attaching the Parameter Drawing in what was said to be a "*Preliminary*" version, "*as discussed yesterday*". The decision to add a heat jacket to the design appears to have been taken during a discussion between both Mr Taylor and Nr Newey, as recorded in Mr Newey's email of 31 August 2017.

144. In addition to its failure to take steps to ensure the compatibility of the Tank Heaters and Pasteuriser Tanks with the hot water system, I accept Mr Lumley's evidence that the reasonably competent designer and supplier of these components would have prepared detailed design drawings for their fabrication. Neither drawing BG-STD-2000 (for the Tank Heaters), which Mr Smith accepted was a generic drawing which gave no information as to how the welds and joints actually came together, nor drawing D-AD-PT1 (for the Pasteuriser Tanks) was sufficient for this purpose. There is no evidence of Biogas producing any further designs or drawings and in this regard too, it fell below the standards to be expected of it.

Issue 8: Were the Tank Heaters and/or the Pasteuriser Tanks of satisfactory quality and/or fit for purpose under the Tank Heater Contract and/or the Pasteuriser Contract

145. As I have already recorded, Biogas admits the existence of implied terms under the 1979 and the 1982 Acts. Insofar as the implied term as to fitness for purpose is concerned, Biogas admits that it was an implied term that the Tank Heaters and Pasteuriser Tanks should be "*reasonably fit for the particular purpose made*

known to Biogas". While the Particulars of Claim are silent on the precise purpose that DBE contends was made known to Biogas, paragraph 24.2 of the Reply makes it plain that it is DBE's case that "*Biogas was at all material times responsible for and fully aware of the design of the hot water system at the AD Facility, such that it was reasonable to expect Biogas to design and/or supply components which would adequately withstand the operating pressures of the water pumps and shut in heads that formed part of the hot water system*".

146. In closing, Biogas referred me to *J Murphy & Sons Ltd v Johnston Precast Ltd [2008] EWHC 3024 (TCC)*, a decision of Coulson J in which he considered in some detail the question of whether to imply a term as to fitness for purpose into a sub-contract for the supply of piping which was installed in an environment where foam concrete would be present. Ms Atkins submitted that DBE's case on fitness for purpose could not survive this decision.

147. In *J Murphy* it was agreed by the parties that the piping had to be fit for the purpose of carrying potable water but the Defendant objected to any broader implied term and Coulson J agreed with this objection, holding that the sub-contract did not incorporate an implied term as to fitness for purpose "*in conjunction with the foam concrete environment*". As I understand his judgment, he did so primarily on the grounds that he was dubious about the surrounding physical conditions of the pipe being said to equate to its purpose but that in any event, that particular purpose was not clearly identified by the Claimant at the time of the sub-contract, it was not made known to the Defendant and, further, there was no evidence that the Claimant relied on the skill or judgment of the Defendant in relation to any decision connected with

the foam concrete (a necessary requirement under section 14(3) of the 1979 Act and under section 4(5) and 4(6) of the 1982 Act).

148. In my judgment and in light of the factual findings that I have already made, the circumstances of this case are very different from those facing Coulson J in *J Murphy*. Here Biogas was involved in the mechanical and process design of the AD Facility, a design which necessarily involved the design of the hot water system and an understanding of the pressures operating in that system. Biogas was obliged to ensure that its design for the Tank Heaters and the Pasteuriser Tanks could be safely integrated into, and would be compatible with, the overall design, including with reference to the water pressure. This was not a situation in which the Tank Heaters and Pasteuriser Tanks were to be located in a particular environment the details of which were not made known to them; on the contrary, the Biogas components were to be integrated into a system whose details were known to Biogas because of its involvement in the design of that very system. Furthermore, as I have already held, DBE was relying on Biogas to ensure compatibility within the process and mechanical design.

149. Accordingly I accept DBE's case that neither the Tank Heaters nor the Pasteuriser Tanks were fit for their purpose, which involved not only their effective operation as components in their own right but also their safe integration into the hot water system at the AD Facility, which in turn necessitated an ability to withstand the operating pressures of the water pumps and shut in heads that formed part of that water system. I also accept Mr Lumley's evidence to this effect.

150. I note in this regard, Mr Marshall's concession in the Technical Joint Statement that the Tank Heaters and the Pasteuriser Tanks were "*not fit for the purpose to which they were put*". In circumstances where I have already found that Biogas was involved in the design of the hot water system, I reject Mr Marshall's additional evidence that the Tank Heaters and Pasteuriser Tanks were, nevertheless, "*fit for the purpose to which Biogas anticipated that they would be put*". This evidence clearly relied heavily on the assumption that Biogas had very limited design obligations, an assumption which does not bear detailed analysis.

151. Very little time was spent during the trial and in submissions on the issue of whether the Tank Heaters and Pasteuriser Tanks were of satisfactory quality, and given my findings in DBE's favour as to breach of contract, negligence and fitness for purpose, I am not going to consider this issue in any detail. Mr Lumley's evidence went no further than to say that, absent documentation as to the design of the Tank Heaters and Pasteuriser Tanks, there was an indication of poor manufacturing quality. However, beyond this "indication", I have seen no real evidence that the workmanship carried out by Biogas was defective and I note that Mr Marshall's evidence in this regard was not challenged. No particular allegation in respect of the quality of the components supplied by Biogas was raised by DBE. Accordingly, I reject DBE's case in this regard.

Issue 9: In all the circumstances, was Biogas negligent and/or in breach of the Tank Heater Contract and/or the Pasteuriser Contract

152. In all the circumstances set out above, Biogas was negligent and in breach of the Contracts in its design, fabrication and supply of the Pasteuriser Tanks and Tank Heaters.

Issue 10: Did Biogas' negligence and/or breach of the Tank Heater Contract and/or the Pasteuriser Contract cause the failure of the Tank Heaters and/or the Pasteuriser Tanks and/or was the failure of the Tank Heaters and/or the Pasteuriser Tanks (or parts of them) caused by the action or inaction of DBE?

153. Mr Lumley and Mr Marshall have agreed in the Technical Joint Statement that "*both the Tank Heaters and the Pasteuriser Tanks failed because the design and thickness of materials was insufficient strength to contain the pressure of the hot water system*".

154. Thus, it is common ground between the experts that the mode of failure was exposure to pressures which exceeded the test pressures assumed by Biogas during the testing described by Mr Smith. As Mr Marshall makes clear in his report, "*It is clear to me that all of the affected components failed in exactly the way which they would be expected to, when they came to be subjected to pressures which they were not designed to withstand*".

155. Given that Biogas was responsible for the design and for the thickness of the materials used in the fabrication of the Tank Heaters and Pasteuriser Tanks, it might therefore appear at first blush that the case on causation is straightforward. However, Biogas argues that the Tank Heaters failed because they were exposed to excessive test pressures during commissioning by DBE and that there was a failure to mitigate in relation to the Pasteuriser Tanks and

so I must consider their arguments as to the Tank Heaters and the Pasteuriser Tanks separately in this regard.

The Tank Heaters

156. The pipework at the AD Facility was subject to testing by Vanguard (2001) Limited ("**Vanguard**"), the pipework contractor, in around September 2018. No documentary evidence of this testing has been disclosed by DBE, but Mr Van der Vliet's evidence, which I accept, is to the effect that, despite repeated requests for testing certificates, Vanguard failed to provide them. During his re-examination, Mr Van der Vliet said that he had witnessed "*probably upwards of 95%*" of the testing on the pipework and that this testing had gone on for a number of weeks. By reference to a Vanguard "Safe Working Method Statement", Mr Van der Vliet confirmed that the testing had been carried out to the required pressure of 6 or 7.5 bars, 1 bar at a time, so as to avoid any shock pressure.

157. On 11 October 2018, Mr Van der Vliet was informed by Vanguard that there was a problem with the test at the last joint immediately before one of the Tank Heaters. Mr Van der Vliet's evidence is that he was told by the Vanguard engineer that he had only just started pressurising the system but that there was no pressure registering on the gauge and it had not even reached 100mbar. The intended pressure for the pipework was considerably more than that – according to Mr Van der Vliet, some 7.5 bar. Mr Van der Vliet went to the site of the problem and says that he could hear air escaping from the gas offtake stub at the end of the Digester, such that it was clear that there must be a leak from the Digester rather than a problem with the pipework or a joint.

158. Mr Van der Vliet's evidence is that it was then decided that the remaining three Tank Heaters should be tested to see whether the problem encountered in respect of the first Tank Heater was an isolated problem. Mr Van der Vliet says that having checked the pump schedule provided by Biogas, he asked the Vanguard engineer not to go above 1.5 bar in testing the remaining Tank Heaters (evidence which is corroborated by an email he sent to Mr Newey on 11th October 2018). He then witnessed the tests himself. In each case, the airline from the compressed air tank was connected to the valve in the inlet pipe closest to the Tank Heater and the gauge was located on the valve in the outlet pipe closest to the Tank Heater. The Vanguard engineer slowly started to open the valve but, in each case, as he also recorded in his email to Mr Newey, the same problem occurred: the gauge barely moved and air could be heard escaping from the offtake stub. Mr Van der Vliet then lifted one of the Tank Heaters out of its Digester, only to find that it was badly damaged, with areas of severe buckling and deformation and split welding. Mr Van der Vliet took some photographs, which he sent to Mr Newey.

159. Biogas contends that Mr Van der Vliet's description of the testing of the Tank Heaters is inaccurate, that in fact, the manner in which they failed (namely buckling towards the bottom of the Tank Heater) is consistent with pressurisation by water (as opposed to air), that a pressure of 100mbar is no more than can be produced by the human lungs and that the logical conclusion is that the Tank Heaters all failed, not on 11 October, but at some time earlier when they were not properly isolated by Vanguard but were instead subjected to pressures of at least 6 bar (for which they were not on any view designed)

during the pressurisation of the pipework with water. Biogas says that this hypothesis is consistent with the presence of foam escaping from the split welds on the Tank Heaters (visible in one of the photographs taken at the time). Furthermore, Biogas points to Mr Smith's evidence that during a conversation with Mr Van der Vliet on 11 October 2018, he distinctly recalled being told that Mr Van der Vliet had heard dripping, information that led Mr Smith to assume that the testing has been done using water.

160. For the first time during his cross examination, Mr Van der Vliet explained that the Tank Heaters could not possibly have been exposed to excessive water pressure because the flexible hoses that were designed to link the Tank Heaters to the pipework had not yet arrived and further because there was no water on site at that time to run into the system. He maintained that the testing was done using air pressure.

161. I find it surprising that this important evidence was not included in Mr Van der Vliet's witness statements, but, having regard to the contemporaneous documents available to me, I accept his evidence that the system was pressurised with air and not with water and I am inclined to think that Mr Smith is mistaken in his recollection. In particular, I note Mr Van der Vliet's specific reference to the use of air in his email of 11 October 2018 to Mr Newey. I also note that Mr Marshall accepted in his cross examination that the foam seen in one of the photographs appeared to be some form of sponge (and not foam produced by water), albeit there remains a question mark over how a sponge could have got into the Tank Heater, a point on which I am not going to speculate. Finally, I have regard to Mr Marshall' evidence during cross examination that the

buckling to the Tank Heaters was not in any event conclusive evidence of pressurisation by water. In this regard, Mr Marshall maintained that the photos of the damaged Tank Heater showed buckling towards the bottom of the component (consistent with water damage), although it was not at all clear to me that he was right about that, the buckling appearing not far below the mid-point of the Tank Heater. Mr Lumley was not cross examined on this point.

162. During his evidence, Mr Van der Vliet sought to suggest that a pressure of 100 mbar, whilst consistent with the pressure produced by human lungs, was itself capable of causing the Tank Heaters to fail, saying that he had been led to believe that this was the case "*by the experts*". Importantly, in my judgment, this evidence was not supported anywhere in Mr Lumley's report, which did not really address the point. Mr Marshall's evidence in cross examination, which in this instance I accept, was to the effect that the Tank Heaters could not have failed at 100 mbar. Further, that when a Tank Heater with a 3 mm casing fails, it would be a dramatic event, with (as he put it) the casing going "*donk*" as it buckled. I note in this regard that Mr Van der Vliet gave no evidence to suggest that he had heard any sound being emitted from the Tank Heaters on the 11 October 2018 other than air escaping. I find it implausible in the extreme that damage of the type illustrated in the photographs shown to the court could have occurred to theses substantial metal components without any sound accompanying the damage.

163. Notwithstanding that I accept DBE's evidence to the effect that the system was not pressurised using water, I am not satisfied that DBE has established on balance that the damage to the Tank Heaters was caused by the negligence of

Biogas in their design. Put another way, I am not satisfied that but for Biogas' negligence, the Tank Heaters would not have failed. I say that because it is entirely unclear to me what did in fact cause the substantial buckling to the Tank Heaters to take place and I do not believe that I am in a position to conclude that, on balance, it must have been caused by Biogas' negligence and breach of contract.

164. Mr Lumley makes the general comment in his report that if Biogas had designed and fabricated the Tank Heaters in accordance with the statutory PER requirements, there would have been no mechanical failures, he says that Biogas' testing (after the event) has demonstrated that the Tank Heaters failed with buckling at 1.6 barg and he concludes that DBE's actions during commissioning as described by Mr Van der Vliet, with the assistance of Vanguard, did not contribute to the failure of the Tank Heaters. What he does not do, however, is deal anywhere in his report with the mechanism of failure.

165. On DBE's own case, which I accept, the Tank Heaters were not pressured with water and nor were they pressured beyond 100mb. I agree with Mr Lumley that the commissioning carried out on 11 October 2018 could not have contributed to the failure of the Tank Heaters in the sense that it does not appear to have involved excessive pressurisation. However, equally, the commissioning carried out on 11 October 2018 does not appear (on DBE's own evidence) to have involved anything more than what Mr Lumley himself described as "minimal" pressure; i.e. pressure that Mr Van der Vliet acknowledged, is nothing more than that produced by the human lungs. Given the dramatic buckling to the Tank Heaters, I cannot see how pressurisation to such a minimal

extent could possibly have caused the damage and I find it telling that Mr Lumley did not put forward any theory in support of the proposition that the Tank Heaters must have failed at 100mbar of pressure. Under cross examination on this point, Mr Lumley was able to point only to the witness evidence and to the Dixon Calculations. He was wholly unable to say how, or in what circumstances, the Tank Heaters had in fact failed.

166. In circumstances where the experts have agreed that the Tank Heaters failed because they were not able to contain the pressures of the hot water system, but where DBE's own evidence does not support the proposition that the Tank Heaters were subject to such pressures on 11th October 2018, I am unable to conclude that Biogas' negligence caused the damage. One explanation, given the expert's agreement, would appear to be that each of the four Tank Heaters was over-pressurised (presumably with air) at some time prior to 11th October 2018, perhaps at a time when Mr Van der Vliet was not present to observe the testing. Another explanation is that at some time prior to 11th October 2018 each of the Four Tank Heaters was pressurised only to the design pressures that Mr Lumley says they should have been capable of withstanding, but failed anyway. However, I have no evidence on which to conclude one way or the other.

Pasteuriser Tanks

167. In contrast to the evidence (or lack of it) in relation to the Tank Heaters, the experts have reached a considerable amount of agreement in relation to the Pasteuriser Tanks.

168. They agree that the Dixon Calculations show that the Pasteuriser Tanks had an external design pressure (i.e. a pressure arising from the heat jacket) of 0.63 barg. Mr Lumley's calculations, with which Mr Marshall expresses his agreement in the Technical Joint Statement, identified a minimum test pressure for the heat jacket of 2.15 barg which, as Mr Lumley points out, exceeds the design pressure assumed by the Dixon Calculations by over 300%. As both experts appear to agree, the Dixon Calculations clearly show that the maximum allowable external pressure exerted on the cylindrical body of the Pasteuriser Tanks (by virtue of the pressurised hot water jacket) was 0.63 barg and "*therefore catastrophic failure was inevitable at pressures over 0.63 barg in the pressurised hot water jacket*".

169. Mr Van der Vliet described the circumstances in which the first Pasteuriser Tank failed in his witness statement: *"…on 29th January 2019, my first step for commissioning purposes was to fill the Pasteuriser Tank jacket with water from the hot water circuit. After approximately 15 minutes, I noticed water coming out of the manway. I immediately closed off the water and went to have a look. I found that water had burst through the inner wall of the jacket into the main body of the tank. The inner wall was severely deformed…"*. I accept this evidence.

170. In his report, Mr Lumley referred to this passage in Mr Van der Vliet's evidence explaining that effectively Mr Van der Vliet was describing a situation in which "*the failure occurred at the pressures produced by the hot water pump under operational flow conditions i.e. at around 1.25 barg*". I did not understand Mr Marshall to disagree with this statement, beyond asserting in his report that the

water jacket and thus the inner vessel were somehow subjected to pressures in an "*uncontrolled*" way. However, he was unable to explain what he meant by this in cross examination and I am not satisfied that there is any evidence of excessive or uncontrolled pressures being applied to the Pasteuriser Tanks.

171. On the contrary, I find that the failure to the first Pasteuriser Tank occurred when water was introduced to it at pressures for which it should have been designed. In the circumstances, I am satisfied that the failure of the first Pasteuriser Tank was caused by Biogas' negligence and breach of contract. Had it been designed to withstand the pressures to which it would be subjected by the hot water system, it would not have failed.

172. In its closing submissions, Biogas appeared to accept that it could not resist DBE's case on causation in relation to the Pasteuriser Tanks, but instead chose to put its case on the basis of a failure to mitigate. In the circumstances, I shall address the question of mitigation next.

Issue 11: Did DBE fail to take reasonable steps to mitigate its losses?

173. In relation to the Pasteuriser Tanks, Biogas says that following the failure of the first Pasteuriser Tank, DBE should immediately have obtained an engineer's advice as to the reason for the failure and the potential for a remedial scheme designed to save the second Pasteuriser Tank. Biogas says that such remedial scheme would have involved hydraulic separation.

174. Instead, having investigated possible options (and no one having suggested hydraulic separation) and finding itself in a position of some urgency owing to the fact that the first Digester had been seeded and was ready to start feeding,

DBE tried to commission the second Pasteuriser Tank on 13 February 2019, albeit as explained by Mr Van der Vliet, it filled the main body of the tank with cold water first in order to support the jacket from the inside prior to filling the jacket from the return flow. However, the second Pasteuriser Tank failed in a similar manner to the first and could no longer be put to use. Ultimately after searching around for alternative tanks, DBE located two (smaller) tanks ("**the Landia Tanks**") which were no longer needed by their existing owner and were available for delivery. The Landia Tanks were cheap and could be used immediately but would not be a permanent solution owing to their size.

175. Biogas relies on Mr Marshall's evidence to the effect that an "obvious" remedial scheme would have involved hydraulic separation, with a view to putting the second Pasteuriser Tank to use: "*There was a variety of ways to address the limited capability of the inner vessel of the Pasteurising tank to accept external pressure. In short, the heater jacket needed to be hydraulically separated from the LPHW system in order to restore the heating function of the jacket. It is a commonplace problem with a standard solution, to allow heat to be transferred, without pressure…That would have required an additional circulation pump, power supply and header tank, all on the scale of a domestic heating system*". Biogas pleads in its Defence that "*had DBE acted reasonably and sought expert input as to appropriate remedial schemes it would have been advised of [a scheme involving hydraulic separation]*".

176. Biogas argues that in circumstances where the second Pasteuriser Tank could have been utilised with minimal, inexpensive, additions, DBE should never

have tested that tank to destruction and Biogas is not responsible for a substantial part of the losses alleged by DBE in respect thereof.

177. I reject Biogas' case that DBE caused its own losses in respect of the Second Pasteuriser Tank by reason of a failure to mitigate, for the following reasons:

178. First, I remind myself that the duty to mitigate is not an exacting one. The classic statement, to which I was referred, is that of Lord Macmillan in *Banco de Portugal v Waterlow [1932] AC 452 (HL)* at 506*: "Where the sufferer from a breach of contract finds himself in consequence of that breach placed in a position of embarrassment the measures which he may be driven to adopt in order to extricate himself ought not to be weighed in nice scales at the instance of the party whose breach of contract has occasioned the difficulty. It is often easy after an emergency has passed to criticize the steps which have been taken to meet it, but such criticism does not come well from those who have themselves created the emergency. The law is satisfied if the party placed in the difficult situation by reason of the breach of a duty owed to him has acted reasonably in the adoption of remedial measures, and he will not be held disentitled to recover the cost of such measures merely because the party in breach can suggest that other measures less burdensome to him might have been taken".*

179. Second, the burden lies with Biogas to establish the existence of a failure to mitigate. It has provided no quotations or other factual evidence to prove that it would have been a quicker and cheaper means of remedying the defects than simple replacement of the Pasteuriser Tanks. It has provided no detailed propositions or calculations whatsoever and I agree with Mr Sharratt when he

says in his second statement that Biogas has not explained why the hydraulic separation scheme would have worked or would have been more cost effective. For the first time in the Technical Joint Statement, Mr Marshall came up with new proposals for a heat exchanger and circulating pump which he costed (without any indication as to the source of his costings). Mr Lumley was unable to deal with these in circumstances where he did not have the requisite factual information. I note that Mr Sharratt has obtained an email from Red Kite (a specialist AD Plant designer and operator) dated 7 November 2019, which suggests that hydraulic separation, even if possible, would have taken at least 13 weeks to implement, would have cost over £40,000 and would have been unlikely to achieve the necessary PED certification. Whilst I do not attach a great deal of weight to this email, it does underscore the significant uncertainties around the remedial proposals advanced by Biogas.

180. Third, although Biogas was informed of the failure of the first Pasteuriser Tank by letter dated 1 February 2019, in which it was explained that a solution was required as a matter of urgency because the Seed would begin to die within days, Biogas did not suggest that hydraulic separation would enable the second Pasteuriser Tank to be used. In this regard, I note that the letter expressly referred to the fact that the second Pasteuriser Tank had not yet been used but that it was inferred that it had been designed and fabricated in the same way as the first. Biogas did not reply to the letter, prompting a further letter to be sent to it on 11 February 2019, this time from RPC, DBE's appointed solicitors. The idea of hydraulic separation as a means of mitigating loss was not advanced until Biogas' Defence in these proceedings.

181. Fourth, DBE (through Mr Van der Vliet) liaised with Centriplant, a specialist tank designer and manufacturer, to identify the best remedial solution that would be both quick and effective to enable DBE to save the Seed. On 29 January 2019, Mr Van der Vliet emailed Mr Mark Williams of Centriplant sending him drawings of the Pasteuriser Tanks and asking him for a report of his views as to the reasons for the failure. The email went on "*I will need a timescale on any remedial work, replacement (new or modified). Also, what are your views on the viability of the other tank? Is it worth trying to commission the heating circuit, or is there a modification you could do in a short timescale that would get that tank running for say 6 months to give us some breathing space before you build/supply another. I'm very tight on time with this so any input asap would be appreciated*". Mr Van der Vliet emailed Mr Williams again the following day asking whether he had any ideas for bracing the second tank so that it could be used within a few weeks. Mr Williams replied by email on 31 January 2019, making no suggestion of hydraulic separation, but instead saying that "*to use the other tank I think you would need to get an engineer to survey the tank and then calculate if we could put a new internal shell in the tank, to do that we will need to take the tank back to our workshop, cut the top off and slide in a new shell*". Mr Williams estimated the "budget" price of this exercise at approaching £22,000 with a delivery time of 6-8 weeks. I accept Mr Van der Vliet's evidence that he was unattracted by this proposition, that the estimate provided was likely to be exceeded and that he did not believe this could be done within 6-8 weeks. I also accept his evidence that he discussed the matter with Mr Sharratt and that it was agreed that the Centriplant proposal was not a viable option.

182. Fifth, Mr Sharratt's evidence, which I also accept, was to the effect that it was imperative that an alternative solution was found quickly so as to save the Seed from dying and very substantial losses being incurred. It was his view that the quickest and most cost-effective means of achieving this was by purchasing the Landia Tanks, which were delivered on 25 February 2019. In the difficult circumstances that DBE found itself, I do not believe he can be criticised for taking this view.

183. Sixth, I accept Mr Lumley's evidence in his supplemental report to the effect that hydraulic separation would not have been an obvious solution to a reasonable customer or engineer, not least because of the inevitable concerns around the safety of the second Pasteuriser Tank and the lack of clear information as to the maximum pressures that it could withstand. I note the experts both agree that no reasonably experienced and competent engineer would have proposed re-using overstressed components and I accept Mr Lumley's evidence that to make the second Pasteuriser Tank compliant with the PED it would have been necessary to undertake an engineering survey and laboratory test work, followed by preparing redesign drawings, calculations, test results, proof tests, attaching nameplates and issuing operation and maintenance instructions, which would have taken considerable time and cost.

184. Seventh, I accept DBE's evidence that the first Pasteuriser Tank would have had to be replaced in any event so as satisfactorily to complete the commissioning/ramping up process. Mr Marshall suggests in his report that a single functioning pasteuriser could have avoided delays and losses. However, I accept Mr Sharratt's evidence that the AD Facility was designed to run the two

Digesters on separate circuits, each comprising and fed by one of the Pasteuriser Tanks – it would not have been possible to feed both Digesters with only one Pasteuriser Tank and it would therefore have been impossible to reach full capacity.

185. Finally, for all the reasons set out above, I reject Biogas' submissions in closing that DBE and Mr Lumley took a flippant attitude to the decision to test the second Pasteuriser Tank, rather than to continue to seek ways in which it might be saved. DBE was rightly concerned to salvage its business by finding a viable alternative to the Pasteuriser Tanks as quickly as possible. It had every reason to believe that the second Pasteuriser Tank would fail in just the same way as the first and little time in which to carry out the testing that would have been required in order to gain any form of comfort that the second Pasteuriser Tank could be used safely. Biogas did not suggest a viable alternative option.

186. As for the Tank Heaters, I note that even if I had found that Biogas' negligence and breach of contract had caused their failure, the technical experts are in agreement that DBE's remedial measures for the damaged Tank Heaters were reasonable. Biogas did not pursue its case on failure to mitigate in relation to the Tank Heaters in closing.

Issue 12: What, if any, losses has DBE suffered as a result of Biogas' negligence and/or breach of the Pasteuriser Contract

187. I focus for present purposes on the loss and damage suffered by DBE by reason of Biogas' negligence and breach of the Pasteuriser Contract. In case this matter goes further, I deal briefly at the end of this section with the losses that I would

have held had been suffered by DBE arising by reason of the failure of the Tank Heaters.

188. I deal in turn with each of the heads of loss claimed by DBE in respect of the Pasteuriser Tanks, which I take from Appendix 2 to its Closing Submissions. I note in passing, however, that at least one arithmetical error appears to have crept in to that Appendix in totalling the figures, and so I have myself considered each individual head there set out and arrived at my own determination as to the totals.

Cost of installing temporary tanks

189. DBE claims £30,237.04 in respect of the cost of installing the temporary Landia Tanks. This figure is set out in a table in Mr Sharratt's witness statement and Mr Van der Vliet goes into more detail on the individual invoices. Ms Hart does not address this head of loss in her report but Mr Southall has sought to verify the sums claimed and in his report he accepts that he has been able to verify some £16,137 as follows:

Landia Tanks	£10,000
Crane Hire	£450
Transport	£600
Hoses	£1,355
Instrumentation	£990
Pipes and fittings	£1,714
Top fittings	£428
Electrician	£600

190. Mr Southall notes that the electrician's costs of £600 reflect 2 days on site but that he has not seen any timesheets to verify that these two days were in fact

spent dealing with the failure of the Pasteuriser Tanks. However, Mr Sharratt confirms in his first statement that two days of electrician's time was spent dealing with the Landia Tanks and, given Mr Van der Vliet's confirmation that one day was spent dealing with the level sensors on the Landia Tanks and another day was spent working on the electrical connections, I accept that DBE spent £600 on electrical work that was solely connected with the failure.

191. As to the remainder of the sum claimed, DBE claims £12,900 in respect of IBMS and labour in relation to the investigation of defects and installation of the Landia Tanks and £1,200 in respect of a SCADA programmer.

Management Fees of £12,900

192. As to the claim for £12,900, I note that there is an invoice raised by IBMS and that it expressly refers to "*investigation and temporary resolution of pasteuriser tank defects for the period January to May 2019*". £5,400 is included in the invoice for a senior engineer/site supervisor and a skilled hand. £7,500 is included in the invoice for 5 days of a Director's time. Mr Southall notes that he has seen no worksheets to corroborate this time, that it is unclear whether this amounts to a commercial rate and he queries whether the £5,400 might represent time that Mr Van der Vliet was spending on site (in circumstances where he was on site in any event). He also queries whether the £7,500 relates to time spent by Mr Sharratt. He points out that this invoice has not yet been paid by DBE.

193. I note that it is clear from Mr Van der Vliet's evidence that this invoice does indeed represent his time together with the time of a DBE site operative. It

would also appear from Mr Sharratt's evidence (paragraphs 40 and 46.2) of his first statement that the £7,500 represents 5 days of his time, although he does not explain what this involved. Mr Sharratt says that the work covered by this invoice is due and payable under the Management Agreement which entitles IBMS (as Manager) to charge DBE (as Owner) a reasonable fee for Additional Services. Mr Sharratt confirms in his statement as director of both IBMS and DBE that the invoice will be paid in due course. He made the same point during cross examination in relation to a similar invoice relating to the Tank Heaters, saying that the invoice reflects an "*actual liability*" which he would expect to be shown as such on the balance sheet. In re-examination he explained that even if DBE did not make a recovery from Biogas the IBMS invoices would have to be paid, "*It's not conditional*".

194. Having regard to the terms of clause 3 of the Management Agreement and doing the best I can on the available evidence, I am prepared to accept that the £12,900 shown on the IBMS invoice is due and payable by DBE and I agree with its submissions that it is unsurprising that a significant amount of staff and management time was diverted from productive work in order to address the disruption caused by the defective Pasteuriser Tanks. In the circumstances it seems to me to be reasonable to infer that staff and management time would have otherwise been applied to other revenue generating activities (see *Aerospace Publishing Ltd v Thames Water Utilities Ltd [2007] EWCA Civ 3* per Wilson LJ at [86]). I find that £12,900 is properly due from Biogas as damages.

SCADA Programmer Fees

195. As to the claim for £1,200, Mr Southall notes that he has seen no contemporaneous evidence of the time spent by SCADA programmers, nor the appropriate daily rate. This is explained by Mr Van der Vliet's first statement in which he confirms that he estimates that Pro Control Automation Limited spent at least 2 days at a daily rate of £600. Whilst an invoice has not yet been received, Mr Van der Vliet says he fully expects that an invoice will arrive. Mr Sharratt confirms this expectation and, in circumstances where I accept that work has been done, I also accept that £1,200 is payable by DBE in relation to this work and that it is accordingly recoverable as damages from Biogas.

196. I award a figure of **£30,237.04** under this head.

Replacement and Reinstallation of Pasteuriser Tanks

197. DBE claims a total figure of £151,200 for the replacement and reinstallation of the Pasteuriser Tanks. This figure is broken down as follows:

- Supply of two replacement Tanks by Centriplant £110,000 (£55,000 each)
- Cladding and insulation £17,800 (£8,900 each)
- Disassembly and Reassembly costs £23,400

198. Biogas' main point in response to this head of claim is that the proposed replacement Pasteuriser Tanks represent a significant element of betterment in circumstances where the original two Pasteuriser Tanks supplied by Biogas cost £56,000 in total. However, in closing, Biogas accepted that success on the part of DBE in its claim for breach of warranty would entitle it to recover the cost of

the more expensive replacement tanks, subject to the court being satisfied that on balance DBE was likely to purchase them.

199. Mr Sharratt's evidence in his first statement is to the effect that the Landia Tanks are not suitable as permanent replacements because at only 2.5m³, they are a fraction of the size of the 8m³ Pasteuriser Tanks and that DBE will need larger tanks to increase the throughput of feed as ramping up progresses. I accept this evidence and find that on balance DBE is therefore likely to purchase new Pasteuriser Tanks.

200. Given that I have found a breach of warranty, I also find that Biogas must therefore pay to DBE **£110,000** for the supply of the two replacement Tanks together with **£17,800** for cladding and insulation, figures which are consistent with a quotation from Centriplant dated 25 March 2019, and supported by the evidence of Mr Sharratt and Mr Van der Vliet, which I accept.

201. As for the costs of disassembly and reassembly, Mr Southall points out that he has seen no quotations from third party suppliers for each phase of the work and that £4,000 of the £23,400 is said to be "contingency cost", i.e. a cost which might not necessarily be incurred. The figure of £23,400 comes from an estimate provided by Mr Van der Vliet to Mr Sharratt in an email of 18 February 2019, in which he breaks down that figure into separate sums albeit without any substantiation. These separate sums in fact appear to me to include some £5,200 contingency.

202. I accept that costs will be incurred in dismantling the Landia Tanks and reassembling the new Pasteuriser Tanks at the AD Facility and (absent any

better evidence) I also accept that Mr Van der Vliet's estimate is likely to be reasonable, given his experience of the AD Facility and the fact that he appears to have based his estimate insofar as it relates to the hire of a crane and an articulated boom on pre-existing invoices. I note that his estimate was not challenged and that he confirmed in his statement that he believed it to remain valid and reasonable. Having said that, I have no explanation as to his thinking behind the contingency fees and I am not prepared to allow fees which might not be necessary. Accordingly, I award DBE the sum of **£18,200** for disassembly and reassembly.

203. The total sum payable by Biogas to DBE under this head is therefore **£146,000**.

Loss of Revenue by reason of delay

Delay

204. The remainder of DBE's claim in relation to the failure of the Pasteuriser Tanks arises by reason of what is alleged to be a delay in the operation of the AD Facility caused by the knock on effect of the delay between the date of failure of the first Pasteuriser Tank (i.e. 29 January 2019) and connection and operation of the temporary Landia Tanks (i.e. 13 May 2019).

205. Somewhat surprisingly, in my judgment, DBE has called no evidence from a delay expert to substantiate its case that delay caused by the failure of the Pasteuriser Tanks was critical in the sense that it affected the ultimate date of commencement of operations at the AD Facility. Instead, it relies heavily on the evidence of Mr Sharratt (to which I shall return in a moment), together with a "schematic" said to illustrate the delay impact, which was produced for the

first time with DBE's written closing submissions. Mr Cheung explained that this Schematic was purely designed to illustrate what Mr Sharratt "meant" in his evidence, namely that without the failure of the Pasteuriser Tanks, the operation of the AD Facility would have commenced 15 weeks earlier than it in fact did. Mr Cheung maintained that he did not require expert evidence to support this proposition, which he said was very simple and purely a matter of fact.

206. However, there are in my judgment at least two significant difficulties with the claim for 15 weeks' delay. The first is that there is no explanation as to why commissioning of the Landia Tanks took so long and indeed it became apparent during the oral evidence that in fact many other essential works were being carried out within the time frame in any event. As Mr Van der Vliet said: "*At that time we had a lot of work to do on the gas side*", including a first pass at gas to grid on 17 April 2019. Thus it appeared clear that the period of time taken to replace the Pasteuriser Tanks did not, in itself, result in similar delay to the AD Facility.

207. The second difficulty is that the only evidence available to DBE to establish that there was a 15 week delay in operating the AD Facility at 100% capacity is Mr Sharratt's first statement in which he says (in paragraph 68) that "*everything that has happened during commissioning and ramping up is happening 15 weeks later than it would otherwise have done. The converse is also true – but for the failure of the Pasteuriser Tanks, DBE would have been generating revenues from the production of gas fifteen weeks earlier than is the case*".

208. Paragraphs 62 and 63 of Mr Sharratt's statement were central to this proposition:

"*62. ...but for the failure of the Pasteuriser Tanks, the commissioning and ramping up chronology would broadly have been as follows:*
Late November 2018: commissioning of Digestion Side begins
Late April 2019: Commissioning of Digestion Side completes/Commissioning of Gas Side begins (although as noted above there was likely to be some overlap between these stages)
Late May 2019: Commissioning of Gas Side completes/ramping up begins (again as noted above there was likely to be some overlap between these stages)
Late September 2019: Ramping up completes, AD Facility in full production".
63. However…as a result of the interruption in commissioning caused by the failure of the Pasteuriser Tanks, the actual chronology was, or was expected to be as follows:
Late November 2018: commissioning of Digestion Side begins
28 January 2019: Commissioning interrupted by the failure of the Pasteuriser Tanks
13 May 2019: Landia Tanks become operational, commissioning of Digestion Side resumed.
Mid-May 2019: Commissioning of Digestion Side completed/Commissioning of Gas Side began (this was sooner than expected because DBE wanted to try to mitigate its losses by accelerating the commissioning of the Gas Side)
Late July/early August 2019: Commissioning of the Gas Side was expected to complete and ramping up expected to begin.
January 2020: Ramping up was expected to complete".

209. Mr Sharratt confirmed in his evidence that he was carrying out a comparison in these paragraphs between the "but for" position and the "actual" position. However, a number of questions arise: first, why was the ramping up in the counter-factual scenario expected to take less time than in the actual scenario?

Second, in circumstances where commissioning of the Digestion Side was anticipated to complete in late April 2019 in the counter-factual scenario, but in fact completed in mid-May 2019, why is the period of delay for which DBE argues 15 weeks, rather than about 2 weeks? Third, why did the commissioning of the Gas Side in fact take longer than was expected in the counter-factual scenario – did that have anything to do with the failure of the Pasteuriser Tanks? Fourth, in circumstances where Mr Sharratt's statement was dated 7 November 2019, what stage had been reached as at the date of his statement?

210. These questions were put to Mr Sharratt in cross examination and save that he confirmed that the commissioning of the Gas Side in fact took longer than expected for reasons which were entirely unrelated to the failure of the Pasteuriser Tanks (specifically issues arising in relation to a rhinology test), he was not able to provide a satisfactory answer to any of them. His clear understanding appeared to be that there was a 15 week delay because DBE had been due to start feeding the Digesters in January 2019 but could not do so because of the failure of the Pasteuriser Tanks until the temporary Landia Tanks were commissioned in May 2019, and no doubt he was right about this.

211. However, there is a great deal of difference between identifying such a delay and extrapolating it across the remainder of the commissioning/ramping up stages (or as Mr Cheung put it "*shunting everything back by 15 weeks*") in circumstances where on Mr Sharratt's own evidence, commissioning of the Digestion Side was in fact only delayed by two weeks and the further delay thereafter to the commissioning of the Gas Side had nothing whatever to do with the failure of the Pasteuriser Tanks. I do not hold Mr Sharratt responsible for

the lack of clarity engendered by this section of his statement; I have no doubt that it was drafted with considerable legal assistance. However, it became abundantly clear during his oral evidence that Mr Sharratt did not fully understand the case that he was being asked to support in his evidence and nor did he appreciate that the simple proposition that there had been a 15 week period of delay between the failure of the Pasteuriser Tanks and the commissioning of the Landia Tanks was not the end of the story when it came to considering what impact that failure in fact had on the eventual date of full operation of the AD Facility.

212. Mr Cheung sought to address this issue in closing by acknowledging that the words in paragraphs 62 and 63 of Mr Sharratt's statement were "*not entirely felicitous*" and had caused some confusion. As I understood his submissions, he then went on to assert that paragraph 62 of Mr Sharratt's statement did not really mean what it said, and that in fact paragraph 62 was not intended to inform the court as to what would have happened in the 'but for' scenario, but rather was intended to illustrate DBE's thought processes at a very early stage – i.e. that it was only a very early projection of what was going to happen and in fact had no relevance to these proceedings because it would not have materialised anyway. Mr Cheung went on to say that the Schematic was "*a graphical analysis to show what [Mr Sharratt] actually meant*" (*emphasis added*).

213. However, I agree with Ms Atkins that very far from illustrating the evidence given by Mr Sharratt, the Schematic purports to show a completely different timeline for the counterfactual "but for" scenario, which, as far as I can see, is wholly unsupported by any evidence, much less by the evidence in Mr Sharratt's

statement. It appears effectively to seek to re-write paragraphs 62 and 63 of Mr Sharratt's statement. Indeed, the very fact that DBE felt the need to try to introduce this Schematic to "explain" Mr Sharratt's evidence only serves to illustrate, in my judgment, the fact that Mr Sharatt's statement, on which DBE's entire case on delay depends, simply does not support that case.

214. In my judgment, DBE has not put before the court sufficient evidence on which I can properly find that the failure of the Pasteuriser Tanks caused a 15 week critical delay to operation of the AD Facility, and I accordingly reject DBE's case in this regard.

215. It seems to me that the available evidence does no more than establish on balance that there was, at most, a 2 week delay caused by the failure of the Pasteuriser Tanks, i.e. the period from late April to mid-May 2019.

Loss of Revenue

216. DBE's claim for loss of revenue is made by reference to a breakdown of the revenues that DBE expects to generate once the AD Facility is fully operational. Inevitably, given that the AD Facility has not yet reached full capacity, this involves a number of assumptions, explained by Mr Sharratt in his evidence, including a key assumption as to the maximum waste throughput at the facility per annum (25,000 tonnes) and per week (479.45 tonnes).

217. Biogas criticises DBE's claim for loss of revenue on the grounds that it is pure speculation. Biogas says that there is no clear evidence as to when the AD Facility will achieve full capacity and as to precisely what its revenues will be when (and if) it does achieve it. Biogas complains that DBE has provided

insufficient disclosure in support of its claim and that DBE relies heavily on out of date and heavily redacted forecasts for its assumptions (including as to the annual maximum capacity of the AD Facility) – the most recent forecast dating from June 2019. Biogas says that, in the circumstances, the court cannot determine, on balance, DBE's loss.

218. Mr Cheung responds that the fact that there are evidential difficulties to DBE's claim should not be a total bar to recovery. He relies primarily on the evidence of Mr Sharratt and he refers to the forecasts as a "sanity check", pointing out that DBE's funders were satisfied that the forecasts were sufficiently reliable and that Ms Hart's criticism during her oral evidence of the early forecasts appearing somewhat "rough and ready" did not apply to the later forecasts. He rejects the suggestion that there should be more recent forecasts in circumstances where forecasts were to be provided annually and Mr Sharratt confirmed in his evidence that DBE has disclosed the most recent forecast which ran to 2022. He points to the fact that the forecasts show the operating expenses and that neither expert has identified any other expenses that might be relevant. He explains that the redacted parts of the forecasts are not relevant to the assessment of loss.

219. More generally, Mr Cheung says that the court should assess DBE's damages as best it can on the available evidence. In this regard, he relies on an extract from the judgment of Lord Reed JSC in *One Step (Support) Ltd v Morris Garner [2018] UKSC 20* at [37]-[38]:

"The quantification of economic loss is often relatively straightforward. There are, however, cases in which its precise measurement is inherently impossible.

As Toulson LJ observed in Parabola Investments Ltd v Browallia Cal Ltd (formerly Union Cal Ltd) [2011] QB 477, para 22:

"Some claims for consequential loss are capable of being established with precision (for example, expenses incurred prior to the date of trial). Other forms of consequential loss are not capable of similarly precise calculation because they involve the attempted measurement of things which would or might have happened (or might not have happened) but for the defendant's wrongful conduct, as distinct from things which have happened. In such a situation the law does not require a claimant to perform the impossible, nor does it apply the balance of probability test to the measurement of loss".

An example relevant to the present case is the situation where a breach of contract affects the operation of a business. The court will have to select the method of measuring the loss which is the most apt in the circumstances to secure that the claimant is compensated for the loss which it has sustained. It may, for example, estimate the effect of the breach on the value of the business, or the effect on its profits, or the resultant management costs, or the loss of goodwill…The assessment of damages in such circumstances often involves what Lord Shaw described in the Watson, Laidlaw case 1914 SC (HL) 18, 29-30 as "the exercise of a sound imagination and the practice of the broad axe".

38. Evidential difficulties in establishing the measure of loss are reflected in the degree of certainty with which the law requires damages to be proved. As is stated in Chitty, para 26-015:

"Where it is clear that the Claimant has suffered substantial loss, but the evidence does not enable it to be precisely quantified, the court will assess damages as best it can on the available evidence"

220. In circumstances where I have found that there has been a 2 week delay to the operation of the AD Facility caused by Biogas' negligence and breach of contract, and where I accept the evidence that such delay cannot be recovered once the AD Facility is fully operational as the biological gas generation process cannot be sped up, it does seem to me to be clear that the Claimant has suffered

loss of revenue. Whilst the process of assessing that loss cannot be an exact science and inevitably involves an assessment based on the available evidence (including the opinions of the quantum experts), it seems to me that, consistent with the guidance in *One Step* set out above, I must do my best to arrive at a fair and reasonable figure.

221. The Quantum experts are in agreement that the preferred approach to calculating loss of profits is to calculate the gross profits expected to have been generated once the AD Facility was fully operational over the period of delay suffered by the Claimant but for the failure of the Pasteuriser Tanks (referred to as the Capacity Method).

222. The Quantum experts also agree that the following loss of income and direct costs are relevant to the calculation of loss of profits:

222.1 Gate fee income;
222.2 Base revenues generated on sale of gas;
222.3 Income from sale of Green Gas Certificates ("**GGC**")
222.4 RHI Revenue;
222.5 Administrative fees;
222.6 Utility costs; and
222.7 Costs of disposal of residual plastic and digestate.

223. The quantum experts disagree over whether staff costs, fuel costs, insurance, repairs, depreciation and rates saved should also be taken into account.

224. There is no doubt that, as Biogas contends, the Quantum experts are at something of a disadvantage in these proceedings because, as they both acknowledge, there is indeed a paucity of documentary evidence in support of

the Claimant's claim and they have had to factor a variety of assumptions into their respective assessments. In circumstances where the AD Facility is not yet operating at full capacity, the experts have no definitive means of knowing whether it will ever reach full capacity and, if it does, what profits it will generate. As Ms Hart points out in her report, "*actual information as to its profitability does not exist*".

225. These uncertainties led to the experts concluding in the Quantum Joint Statement that "*it is impossible for either of them to conclude with certainty (i) that the deductions in respect of utility and disposal costs accurately reflect the deduction that should be made when seeking to assess DBE's losses; and (ii) whether, and if so to what extent, further costs should be deducted when seeking to assess DBE's loss*". They agree that "*the same can be said for income*".

226. Notwithstanding the experts' reservations, consistent with the decision I have made above and doing the best I can, I shall now turn to look in detail at the individual elements making up DBE's claim for loss of profits, which DBE calculates at £3,962.91 per day, or, for a loss period of 2 weeks, £55,480.74. By contrast, Mr Southall calculates the daily lost profit at £1,631.24, which for a loss period of 2 weeks would amount to £22,837.36.

Gate Fee Income

227. Mr Sharratt explains in his first statement that gate fees are the prices charged to customers, usually by the tonne, for taking their waste for disposal. He explains that DBE has assumed an average gate fee of £20 per tonne on 100% of waste inputs which will generate a total of £1,369.80 per day. This assumes

a rate of 479.45 tonnes of waste input per week, an assumption that Mr Sharratt says is reasonable given the prospective customers for the AD Facility and the state of the market. The assumed rate of 479.45 tonnes of waste input per week has been applied by both experts in their reports.

228. Mr Sharratt notes that the market price for disposals is very fluid, that the price can range between £0 and £60 per tonne and that £20 is therefore a conservative estimate for the purposes of this claim. He exhibits to his statement various letters and fee invoices designed to illustrate the range of rates that can be achieved and he acknowledges that "*the predominant rate achieved so far*" is £15 per tonne although he says that this is not an accurate reflection of the rates that DBE can reasonably expect to achieve once it is fully operational.

229. During his oral evidence, Mr Sharratt confirmed that he had recently agreed a new contract for the balance of the AD Facility's requirements of 400 tonnes per week at a minimum gate fee of £20.

230. Although the reasonable or obtainable value of gate fees is not within the expertise of either of the Quantum experts, both have sought to assist the court in determining whether Mr Sharratt's assessment of £20 per tonne is reasonable by reference to a report prepared by The Waste and Resources Action Programme dated July 2019, which I have looked at online. Ms Hart's view (by reference to the 2017 and 2018 median gate fees for local authorities in respect of anaerobic digestion facilities of £26 and £27 respectively, and a mode gate fee for 2018 of £15-£20) is that Mr Sharratt's evidence is reasonable. Mr

Southall, on the other hand, points to the median commercial spot price of £15, which is consistent with the predominant rate achieved to date by DBE.

231. Doing the best I can, it seems to me that in circumstances where it was Mr Sharratt's evidence that he has recently agreed a new contract at £20 per tonne, I should accept that as the best available evidence of the reasonable and obtainable gate fee. I also accept Mr Sharratt's evidence that a rate of 479.45 tonnes of waste per week is reasonable. Accordingly, I accept that DBE's lost gate fees for a period of two weeks amount to £1,369.80 x 14, a total of **£19,177.20**.

Gas

232. The next element of DBE's loss claim concerns the income that will be achieved from the sale of gas into the national grid when the AD Facility is operating at full capacity. This is broken down into three elements, the price for the gas itself, the income from GGC sales and a rebate. An assessment of the loss in relation to these elements requires an understanding as to the estimated maximum amount of gas that will be imported into the national grid when the AD Facility is working at full capacity.

233. Mr Sharratt's evidence, based on his experience of calculations carried out in relation to a similar plant with which he has previously been involved, which I am prepared to accept absent any other definitive evidence, is that 95% of the waste inputs at the AD Facility will be converted into feed and that the feed will then be converted into biomethane gas at a rate of 27 therms/tonne. Ms Hart said in her report that Mr Sharratt had informed her that the conversion rate was

likely to be at least 97%, but in circumstances where this is not supported by any evidence before the court, I have no regard to this evidence.

234. I note, however, that Mr Sharratt does say in his statement that he regards a 95% conversion rate as a conservative estimate and also that Mr Southall confirms in his report by reference to a Wasteworks Process Flow diagram that this rate "*does not appear unreasonable*", although I view this of marginal relevance in circumstances where I fail to see how the conversion rate could possibly fall within the realms of Mr Southall's expertise.

235. I accept Mr Sharratt's evidence that the net effect of these assumptions is that the AD Facility will export an estimated amount of 12,297 therms/week (1,756.85 therms/day) of biomethane into the grid.

236. Income is receivable from the sale of the biomethane gas injected into the national grid under a Biomethane Services Agreement between Barrow Shipping Limited and DBE dated 18 June 2018. I was not taken to this agreement during the hearing and heard no detailed submissions about it, but it would appear that both parties agree that its effect is that DBE will receive whatever the industry standard rate is for gas at the relevant time. In his statement, Mr Sharratt estimated this at 63p/therm, but by the time of the hearing (and against the background of evidence from the experts that gas prices have been in decline), Ms Hart had reduced this figure to 22p/therm (a considerable drop on the figure of 41p/therm agreed in the Quantum Joint Statement) and that is the figure that DBE invites me to apply, and I accept. It equates to £386.51 per day or £5,411.14 over a 2 week period.

237. The Biomethane Services Agreement provides that DBE will work together with Barrow Shipping Limited to sell GGCs. Schedule 1 to the Agreement provides that any income from the sale of such certificates shall be shared in the proportions, 90% to DBE and 10% to Barrow Shipping Limited.

238. The Quantum Experts agreed in the Quantum Joint Statement that a reasonable GGC rate was 7.9p/therm, but Ms Hart reduced that rate to 4.2p/therm at the hearing. I accept her evidence that this amounts to £67.14 per day for 90% of the gas exported, or £939.96 over a 2 week period.

239. As for the rebate, Mr Sharratt's evidence is that rebates valued at 95% of gas exported at 2.34p /therm will be received. He bases this evidence on a spreadsheet provided to him by Mr Rayson of Barrow Shipping Limited in 2018 and he confirms that he has checked with Mr Rayson since that date and has been told that the rebate rate needs no updating.

240. Mr Southall draws attention to the fact that Mr Rayson caveats his advice about rebates as follows: "*The rebate is a big unknown, is network dependent and influenced by the pressure tier you connect to; I've put in a broad average but worth noting that some sites are in fact charges rather than rebates*." Whilst, absent any evidence of rebates in relation to this site, Mr Rayson's caveat would have led me to reject the claim for rebates, I note that DBE has disclosed a "Self-Billing Invoice" which evidences an entitlement to a rebate at a rate of £0.0316 per therm, and this is in fact the figure now claimed by DBE. Notwithstanding Mr Southall's reservations about this figure, doing the best I can on the available

evidence, I accept that DBE can expect a rebate of £52.74 per day at a rate of 0.0316/therm, namely £738.36 over a 2 week period.

241. Taking the figures identified above for gas, GGC sales and rebates, I value the gas revenue element of DBE's claim at £7,089.46 less an agreed 2% admin charge on the gas price (as provided for in the Biomethane Services Agreement) of £7.73, a total of **£7,081.73** for a 2 week period.

Revenue from the Renewable Heat Incentive Scheme

242. It is Mr Sharratt's evidence, which I accept, that RHI is based on the therms of biomethane gas exported to the grid and is calculated at the guaranteed tariff rate that DBE has secured through accreditation with Ofgem. The rate is increased annually with inflation and the experts are agreed that it is currently £1.67/therm. In circumstances where I have already accepted a rate of gas production of 1,756.85 therms/day, this equates to a daily figure of £2,933.94 or **£41,075.16** over a 2 week period.

Conclusion on Revenues generated over a 2 week period

243. Taking the gate fees, the total gas revenues and the revenue due under the RHI together, DBE's loss of revenue over a 2 week period amounts to **£67,334.09.**

Costs to be deducted

244. DBE accepts that certain deductions fall to be made to the loss of revenue figure.

245. First, fuel costs of £17 per day (£238 over 2 weeks), a figure which appears to be agreed between the experts.

246. Second the costs of disposing of digestate and residual waste, agreed by the experts in the sum of £916.91 per day in Appendix 1 to the Quantum Joint Statement, but subsequently reduced by Ms Hart to £669.06 per day. The figure of £916.91 appears to be supported by Mr Sharratt's evidence that a realistic estimate for weekly disposal costs is £6,418.63. I accept his evidence and the agreed figure produced by the experts of £916.91 per day, a total reduction of £12,836.74.

247. Third, utility costs of £153.42 per day. This figure is less than the £172.60 included by Ms Hart in the Joint Statement (and estimated by Mr Sharratt in his statement) and considerably less than Mr Southall's figure of £520.78 per day. Put shortly, the difference between DBE and Biogas is that Biogas does not accept Mr Sharratt's evidence that only 70% of DBE's total utilities usage is related to production, it questions Mr Sharratt's evidence that DBE's total utilities costs at full production will be £90,000 and it says that the forecast costs are inconsistent with the actual utility invoices disclosed by DBE. Doing the best I can on the very limited evidence available to me, I am prepared to accept Mr Sharratt's evidence of £172.60 per day or £2,416.40 over 2 weeks.

248. I find that, in relation to the heads of deduction which are accepted by DBE, a total deduction of **£15,491.14** falls to be made.

249. Biogas contends for a number of additional deductions which are rejected by DBE. These are staff costs, insurance, rates, repair costs and depreciation. These deductions were identified by Mr Southall for the first time in the Quantum Joint Statement and I deal with them briefly as follows:

249.1 Staff Costs: Mr Southwell says that each of the forecasts disclosed include an increase in monthly staff costs of approximately £3,000 per month as production ramps up. He therefore takes the view that extra staff costs at full capacity are likely to be in the region of £100 per day. In response, Ms Hart refers to information she has obtained from DBE which is not contained in its witness statements. I reject her evidence in this regard. Under cover of a letter from its solicitors dated 12 February 2020, DBE disclosed invoices for staffing costs borne by IBMS and recharged to DBE at a flat rate during 2019 and contended that there had been no change in staff costs and no recruitment was planned for the foreseeable future. However, in circumstances where the AD Facility has not yet reached full capacity and DBE's own forecasts (on which they seek to rely for other purposes) anticipate an increase in staff costs, I accept Biogas' submissions that I have no evidence to suggest that staff costs will not increase, as appears to have been planned, as production ramps up and accordingly, I accept Mr Southall's assessment of £100 per day, or £1,400 over the course of 2 weeks.

249.2 Insurance: Mr Southall points out in the Quantum Joint Statement that according to the June 2019 forecast (which is the most recent forecast available to the court), insurance costs are forecast to increase by a further £1,670 per month, i.e. say £55 per day, once ramping up starts. Accordingly, he makes this deduction in Appendix A to the Quantum Joint Statement. In reply, Ms Hart refers to information that she has obtained from DBE which is not contained in the witness statements and which I reject. However, under cover of the letter of 12 February 2020, DBE's solicitors disclosed an invoice dated 3 April 2019 demonstrating that its insurance had been arranged between the March 2019 and the June 2019 forecasts and that the premiums are charged for a full year. Accordingly, DBE says that its insurance costs are plainly not linked to production. I accept that the invoice is evidence of this proposition and I reject Biogas' case that there should be a deduction for insurance costs.

249.3 Repair Costs: Mr Southall points out that DBE's forecasts include repair costs for each month, commencing once production starts, with the daily cost

being £41. This cost is projected to increase further during 2020. Mr Southall includes this cost as a deduction in Appendix A to the Quantum Joint Statement. In reply, Ms Hart again refers to information she has obtained from DBE which is not contained in the witness statements and which I accordingly reject. DBE has not disclosed any documents which bear upon this issue and, absent evidence to explain the entries in the forecast, I am inclined to accept that a deduction of £41 per day should be made, namely £574 over 2 weeks.

249.4 Rates: Mr Southall identifies in the Quantum Joint Statement that DBE's forecasts suggest that the rates only commence once the AD Facility is in production. He makes the point that if this is the case then a delay in commencement of full production will result in a cost saving for DBE which, based on the forecasts, he calculates at £128.73 per day. In reply, Ms Hart again refers to information she has obtained from DBE which is not contained in the witness statements and which I accordingly reject. DBE refers me to a Waverley Council Guidance Note which makes it plain that rates are payable by those who occupy business premises and asserts (in the letter of 12 February 2020) that DBE has been told by the Council that rates are payable from the completion of construction. However, I note in this regard that DBE has disclosed no evidence of any correspondence/discussions with the Council to this effect, or of any rate payments it has yet made. In the circumstances I tend to agree with Biogas that the lack of documentation is surprising, not least because annual rates charges of £50,000 are included in the forecasts. Doing the best I can to approach this exercise in a fair manner, it seems to me that in light of DBE's own forecasts, I should accept Mr Southall's proposed deduction of £128.73 per day, amounting to £1,802.22 over 2 weeks.

249.5 Depreciation: Mr Southall maintains for the first time in the Quantum Joint Statement that but for the failure of the Pastueriser Tanks, the AD Facility would have depreciated earlier (on my assessment, 2 weeks earlier) than will now be the case. In the premises he says that depreciation should be deducted from DBE's loss. I reject this suggestion. Mr Southall accepts that his depreciation analysis only holds good if throughput impacts on the useful

economic life of the AD Facility as a whole and I have seen no factual evidence to suggest that this is the case. DBE contends that depreciation of an AD Facility is not linked to throughput, especially in circumstances where that facility largely consists of civil building works and stainless steel plant and pipework which do not depreciate as a function of throughput. I am inclined to agree. I also accept Ms Hart's observation in the Quantum Joint Statement that the useful economic life (and hence depreciation) of the AD Facility is determined not by reference to throughput, but by reference to the length of the lease for the site, namely 25 years. Rather than extending the useful economic life of the AD Facility, the failure of the Pasteuriser Tanks and the resultant 2 week delay ate into the finite useful life of the AD Facility such that there are in fact no savings in relation to depreciation.

250. In light of my findings above, there is an additional deduction from revenue of **£3,776.22**.

Conclusion on the claim for loss of revenue

251. Accordingly I find a total loss of revenue of **£48,066.73** (£67,334.09-£15,491.14-£3,776.22).

The Tank Heaters

252. Before moving to the Counterclaim I should briefly address the damages in relation to the Tank Heaters, in the event that my conclusion on causation is the subject of challenge.

253. Biogas did not challenge the cost of replacing the Tank Heaters which amounted to £11,281.84. In addition to these costs, DBE also claimed management fees due to investigation of defects and re-fabrication of the Tank Heaters in the sum

of £750, which I would have allowed for similar reasons to those given above in respect of management fees relating to the Pasteuriser tanks.

254. Finally, DBE also claimed £13,800 for additional running costs due to loss of efficiency in the Tank Heaters. I would have accepted Mr Sharratt's evidence on this score and awarded the figure claimed.

Issue 13: Is DBE entitled to interest on the sums due?

255. I have not heard any submissions on the question of interest, and nor was this topic dealt with in the written submissions from the parties, but it seems to me that it is not necessarily straightforward in circumstances where the court is concerned, to a substantial extent, with loss that has not yet been incurred by DBE.

256. In circumstances where the parties have not had an opportunity to address me on this issue, I intend to leave it to be determined at the consequentials hearing, and I invite the parties to ensure that they make appropriate submissions on the point at that stage.

Issue 14: Are sums payable from DBE to Biogas under invoices BGP3684, BGP3707, BGP3708 and/or BGP3709?

Issue 15: Is DBE entitled to set off any sums against Biogas' entitlements (if any) under invoices BGP3684, BGP3707, BGP3708 and/or BGP3709?

257. There was no time during the trial for any cross examination on the Biogas counterclaim and no time for any submissions. I was not taken to the relevant documents and I was effectively asked simply to resolve the counterclaim on paper.

258. In short, Biogas' case as set out in its Defence and Counterclaim is that in breach of the terms of the Contracts, DBE has failed to settle four outstanding invoices in the total sum of £14,640.

259. Mr Newey's evidence was to the effect that the invoices remained outstanding despite the work having been completed. Mr Sharratt's evidence on the other hand, was to the opposite effect.

260. Doing the best I can on the available material and bearing in mind that I have preferred Mr Sharratt's evidence to that of Mr Newey, I reject Biogas' counterclaim:

260.1 Invoice BGP3708 (£2,256 including VAT): this invoice was raised pursuant to the Pasteuriser Tank Contract and specifically includes reference to the requirement under that contract for Biogas to "*deliver, install and insulate (including supply of crane)*". However, as Mr Sharratt confirmed in evidence and I accept, Biogas did not in fact complete the entire package of works under this contract due to the omission of cladding and craneage. Accordingly, DBE paid £50,400 to Biogas against the original total contract sum of £56,000. I accept Mr Sharratt's evidence that, in the circumstances, far from owing anything further to Biogas, DBE could potentially have sought a repayment from Biogas and I note that Biogas has made no attempt to explain how, if at all, it has given any allowance for craneage and cladding in this invoice. I reject Biogas' claim in relation to invoice BGP3708.

260.2 Invoices BGP3684 and 3707 (in respect of which claims are made for £4,800 and £6,000 respectively) concern works in relation to the Gas pipework system and the Gas mixing System. The sums claimed represent a partial amount of the figure included in these invoices. I accept DBE's case, as evidenced in Mr Sharratt's second statement, that these invoices are not due and payable in circumstances where Biogas has not completed the works (which, contrary to Biogas' Defence do

not appear to have arisen in respect of the Contracts). I note that Mr Newey acknowledged on a number of occasions in emails that these works had not been completed and that Mr Van der Vliet took photos of the components that were yet to be installed on or around 19 September 2019. I accept DBE's submission that Biogas has not discharged the burden of establishing that the gas mixing system and the gas pipework system were in fact completed such that the monies claimed became due and owing. I note in this regard the concession in Biogas' closing submissions that "*some of the works*" were not completed; the issue of credit notes in respect of the works that Biogas says were not completed does not to my mind establish an entitlement to the sums claimed.

260.3 Invoice BGP3709 (£1,584): This invoice is for £2,508 including VAT but the claim made by Biogas is for £1,584 in circumstances where a credit note has been issued for the balance. The invoice relates to "*extra works instructed on site*" involving cleaning. I accept the evidence of Messrs Sharratt and Van der Vliet that these works were not instructed by DBE and that DBE never agreed to pay for them and I note that the invoice was not raised for some three months after the works were carried out and that Mr Newey admits (in his email of 5 September 2018) that Biogas had agreed to carry out at least some of the works free of charge. Although Mr Newey says in that email that Mr Van der Vliet "*was fully aware*" that those works took longer than anticipated, he does not say that Mr Van der Vliet instructed the works or agreed to pay for them and I accept Mr Van der Vliet's evidence that he did not do so, particularly given that he could have called Weholite back to carry out the cleaning as it was their responsibility in any event.

Conclusion

261. If I have calculated correctly, then the total sum that I have awarded in DBE's favour is **£224,303.77**.

262. Where I have found in DBE's favour on its claim, at least in part, it seems to me that there is no real need to determine the issue of alleged failure to mediate, not least because this judgment is already a great deal longer than I would have

liked. Should it be relevant to the question of costs in due course, I shall address it then.

263. I intend to hand this judgment down at a consequentials hearing, which will be heard remotely given the current Covid-19 pandemic and should be listed for the parties' convenience. At that hearing I shall determine all outstanding consequential matters flowing from this judgment, including the question of interest on the award that I have made to DBE and costs.