

IN THE MATTER AN ADJUDICATION

in respect of a dispute between

INFRACO

of: 9 Lochside Avenue, Edinburgh EH12 9DJ

Referring Party

being a consortium of

Bilfinger Berger Civil UK Ltd (formerly Bilfinger Berger UK Ltd);

and Siemens Public Limited Company; and

Construcciones y Auxiliar de Ferrocarriles SA

and

tie LTD

of: 65 Haymarket Terrace, Edinburgh EH12 5HD

Responding Party

arising out of a

CONTRACT

in respect of Works known as the

INFRACO WORKS

authorised by the Edinburgh Tram (Line One) Act 2006

and Edinburgh Tram (Line Two) Act 2006

concerning

CHANGES TO RUSSELL ROAD RETAINING WALL TWO

DECISION

made by the **ADJUDICATOR** appointed under the terms of the Contract

Mr A E Wilson MA LLB DipArb CEng FICE MIHT MCIWES FCIArb

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INTRODUCTION

- 1 The Referring party initially comprised a consortium of Bilfinger Berger UK Ltd, subsequently Bilfinger Berger Civil UK Ltd, and Siemens Public Limited Company (“**Infraco**”). By an agreement made on 14 May 2008 (the “**Contract**”), Infraco undertook to carry out works (the “**Infraco Works**”) for the Responding party, **tie** Ltd (“**tie**”). By a tripartite minute of variation dated 14 May 2008, Construcciones y Auxiliar de Ferrocarriles SA joined the Infraco consortium.
- 2 The parties are represented by solicitors; I refer to them by party names
 - i) Infraco by Pinsent Masons LLP of Edinburgh
 - ii) **tie** by DLA Piper Scotland LLP of Edinburgh (acting ‘in house’)

Adjudication

- 3 The Infraco Works are authorised works in terms of the Edinburgh Tram (Line One) Act 2006 and Edinburgh Tram (Line Two) Act 2006 (the “**Acts**”). By s.80(2) and s.79(2) respectively of the Acts the provisions of the Housing Grants Construction and Regeneration Act 1996 s.108 and the Scheme for Construction Contracts (Scotland) Regulations 1998 Part I do not apply. The Contract provides by Clause 97 and Schedule Part 9 for Adjudication of any dispute not resolved by the internal dispute resolution procedure.
- 4 Disputes or differences arose, were not resolved by the internal dispute resolution procedure and I am informed that the parties agreed on 09 October 2009 to refer them to Adjudication. On 28 October 2009, Infraco copied to me a Notice of Adjudication and enquired if I was available to act; I confirmed that I was available to both parties the same day. I received the Referral on 06 November 2009. I held a telephone conference call with the parties on 09 November 2009 and agreed directions for the reference. The final date for a Decision was extended by agreement to 04 January 2010.

Procedure, Meetings and Visits

- 5 I conducted the reference in accordance with the Contract procedure and the agreed timetable. I held a meeting in Edinburgh on 15 December 2009 attended by the solicitors, experts and relevant members of the parties’ staff. I was handed additional agreed papers at the meeting. I did not visit the Site and did not take external advice.

Submissions and Witness Statements

- 6 The parties made the following submissions
 - i) Infraco
 - a) Referral 06 November 2009
 - b) Reply 26 November 2009
 - ii) **tie**
 - a) Response 20 November 2009
 - b) Rejoinder 03 December 2009

- 7 The submissions included statements of opinion by engineering experts
- i) Infraco Mr Ian Hunt BSc, CEng, FICE, MIStructE
 - ii) **tie** Mr Bob McKittrick BSc, CEng, FICE, FIStructE

Other parties

- 8 The ‘*Novation of Systems Design Services Agreement*’ was executed with and incorporated into the Infraco Contract. It provided for the subsisting SDS Agreement between **tie** and the “**SDS Provider**”, Parsons Brinckerhoff Ltd, under which the SDS Provider designed the Works, to be novated such that Infraco took over all rights and liabilities of **tie**.

Conventions

Quotations

- 9 I provide emphasis to some quotations by underlining and have changed the layout or abbreviations for clarity but I do not identify each instance. I do not attempt to mark or correct typos in quotations.

Section Numbering

- 10 I found some confusion in the numbering of sections in Schedule Part 4 – Pricing. Section 3.4 ‘*Pricing Assumptions*’ includes 43 sub-sections referred to as 3.4.1 and so on. Sub-section 3.4.1 is further subdivided into sub-sub-sections called 1.1, 1.2 and 1.3. These sub-sub-sections are variously numbered in the documents as, for example, 3.4 plus 1.1 being 3.4.1.1 or 3.4.1 plus 1.1 being 3.4.1.1.1. I have standardised on the shorter form as far as possible. Unless stated otherwise, Sections quoted are from Schedule Part 4

NARRATIVE

- 11 The Contract provides a lump sum fixed Construction Works Price not being subject to variation except in accordance with its terms. The principal relevant terms for the purposes of this dispute appear in Schedule Part 4 concerning in particular Specified Exclusions and Pricing Assumptions; and clause 80 concerning '*tie Changes*'. The Specified Exclusions exclude from the Price matters arising from ground conditions not being reasonably foreseeable and the Pricing Assumptions provide amongst other matters for drawing changes exceeding normal development and completion of design; all subject to detailed provisions.
- 12 The '*Base Date Design Information*' ("**BDDI**") drawings for the Russell Road Retaining Wall Two, referred to as structure W4, showed four sections
- i) W4A – units 01 to 11 – 'L' shaped gravity structure
 - ii) W4B – units 12 to 14 – cantilever wall on piles
 - iii) W4C – units 15 to 18 – 'L' shaped gravity structure
 - iv) W4D – units 19 to 29 – cantilever wall on piles
- 13 On 18 July 2008 the SDS Provider issued to Infraco the '*Issued For Construction*' ("**IFC**") drawings for the Russell Road Retaining Wall Two. All sections save units 01 and 02 were shown as a cantilever wall on piles and the piles were of increased number, length and diameter than those shown on the BDDI drawings. On 14 October 2008, Infraco issued to **tie** an '*Infraco Notification of tie Change*' number 146 ("**INTC no. 146**") in connection with these drawings.
- 14 There followed a number of meetings and correspondence concerning the principle, detail and value of INTC no.146. On 26 February 2009 Infraco confirmed that at a meeting on 17 February 2009 **tie** had accepted in principle that a Notified Departure had taken place.
- 15 On 10 March 2009 **tie** stated that it '*anticipate(d) that a Notified Departure has occurred*' but requested further information concerning the details and who had instigated the change, and provision of an Estimate. On 11 March 2009 **tie** warned Infraco that it would be liable for any delay arising from the late provision of an Estimate. Infraco responded on 20 March 2009 stating that the delay to provision of the Estimate was the result of the late provision of IFC drawings for structure W3, which is not the subject of this reference.
- 16 A meeting was held on 26 March 2009 between Infraco, **tie** and the SDS Provider. The minutes were the subject of various exchanges. The gist was that the SDS Provider stated that the Site Investigation information provided at a late stage showing '*soft layer(s) at depth*' resulted in a change from L shaped to piled walls after the BDDI drawings were issued; that these were possibly changed as a result of a CAT II check; and issued to City of Edinburgh Council for technical approval without significant comment.
- 17 The SDS Provider revised the IFC drawings on 15 and 22 April 2009. On 14 May 2009 Infraco submitted to **tie** a qualified Estimate in the sum of £4,597,847.07 including amounts for
- i) Contaminated Material anticipated in the excavation
 - ii) Change to the Limits of Deviation being the footprint of the Works

- iii) Change to the Scope of Works between the BDDI and IFC drawings
- 18 The parties subsequently agreed to measure for payment the Contaminated Material when encountered; and that the Limits of Deviation will be dealt with separately. It follows that only the Change in Scope of Works is in dispute in this reference.
- 19 In correspondence and submissions, **tie** differentiated between two aspects of the Change in Scope of Works using the following nomenclature which I adopt
- i) **'Foundations'** being *'the change to foundation design of retaining units section 3 to 11 and 15 to 18 from an L shaped footing foundation to cast in-situ concrete piles and pile cap'*;
- ii) **'Piling'** being the change of *'the diameter, length and number of piles'* to retaining units section 12 to 14 and 19 to 29;
- to which I add in each case consequent ancillary changes.
- 20 On 22 May 2009, **tie** provided its initial comments including that the change in Foundations appeared to be beyond normal development and completion of design; but that the changes to the Piling was normal development and completion of design. On 05 June 2009, **tie** confirmed its position and valuation concerning the Foundations but stated that *'at some stage we will require to understand the technical reasons for the design amendment'*; and offered a commercial settlement in respect of the changes to the Piling.
- 21 On 04 September 2009 Infraco referred the valuation of the Estimate for the Foundations and Piling to the Dispute Resolution Procedure.
- 22 On 09 September 2009 **tie** issued **tie** Change Order no. 101 with reference to INTC no. 146 and the Estimate. **tie** deemed that the **tie** Change was urgent and had a potential significant impact on the Programme. As a result it instructed Infraco to proceed with the Works before the Estimate was agreed or determined. It is not stated in terms but by reference to INTC no. 146 the Change Order includes changes to the Foundations and Piling.

DISPUTE

- 23 Arising from these facts, the issues referred to adjudication comprise
- i) Whether the Change to the Russell Road Retaining Wall Two sections W4A and W4C, namely from 'L' shaped gravity structure to a cantilever wall on piles, constitutes a Notified Departure in terms of Section 3.4.1.1; being changes defined above as **Foundations**.
 - ii) Whether the Changes to the design of the Russell Road Retaining Wall Two of
 - a) sections W4A and W4C, namely from 'L' shaped gravity structure to a cantilever wall on piles; being changes defined above as **Foundations**; and
 - b) sections W4B and W4D, namely changes in the number, size and length of piles; being changes defined above as **Piling**;constitute Notified Departures and deemed Mandatory **tie** Changes
 - iii) The value of each Change
- 24 Infraco seeks that **tie** pays the Adjudicator's fees and reasonable expenses; and seeks a reasoned decision.

Previous Adjudication

- 25 Mr John Hunter adjudicated two disputes arising from the Contract concerning Gogarburn Bridge and Carrick Knowe Bridge and issued decisions on 16 November 2009. **tie** provided copies of these decision and the parties referred to them in submissions. However, the parties agree that no part of these decisions is binding upon me in this reference.

Jurisdiction

- 26 **tie** says that under Issue 3, I do not have jurisdiction to value any **tie** Change arising under Section 3.4.1.3 being '*as a consequence of the requirements of any Approval Body*'. It says this was not a matter referred to Adjudication. As this discussion requires a detailed understanding of the Contract and events giving rise to Issue 1 and 2, it is dealt with under Issue 3.

CONTRACT

BACKGROUND

- 27 The Infraco Contract includes 121 Clauses and a Schedule comprising 44 Parts divided into Sections. The parties differ as to the effect of these provisions and also as to the relevance of pre-Contract commencing.
- 28 I do not have to look at the pre-Contract commencing to construe the Parties intentions, as they are set out in detail in their written agreement. However, these events do assist in putting the terms into context and so they are set out briefly as follows.
- 29 By the SDS Agreement of 19 September 2005, the SDS Provider was engaged by **tie** to design the Infraco Works. It produced Base Date Design Information (“**BDDI**”) drawings at dates up to 25 November 2007.
- 30 On 20, 27 November 2007 and 06 December 2007 various Ground Investigation Reports (“**GI Reports**”) were issued to Infraco which are referred to in the Contract.
- 31 In October 2007 **tie** made Infraco the ‘*preferred bidder*’. Infraco carried out due diligence on the design information available up to 14 December 2007 and produced a Design Due Diligence Summary Report on 18 February 2008 which is included in the Contract as an appendix to Schedule Part 30.
- 32 Between 20 December 2007 and 09 May 2008 agreements were reached to increase the tendered Contract Price in respect of obligations accepted by Infraco of which I have no further details. Concurrently the SDS Provider continued to develop the design. Schedule Part 4 was included in the Contract providing Specified Exclusions and Pricing Assumptions. The Contract was executed on 14 May 2008.

TERMS

Works

- 33 The Works to be carried out by Infraco are defined

Schedule Part 1 ‘*Infraco Works*’ means as the context requires, the EAL Works and all or any of the works to be constructed and completed and/or services to be provided and/or the plant, machinery and equipment to be supplied and installed by the Infraco and which are necessary to deliver the Edinburgh Tram Network and to subsequently maintain it, all in accordance with this Agreement and the Employer’s Requirements.’

The Employer’s Requirements comprises Schedule Part 2.

The Infraco Proposals comprises Schedule Part 30 to which the Due Diligence Report is appended.

Construction Works Price

- 34 The Contract provides

Clause 66.1 ‘*Subject to the terms of this Agreement, tie shall pay the Contract Price to the Infraco for the carrying out and completion of the Infraco Works.*’

Clause 4.3 ‘*Nothing in this Agreement shall prejudice the Infraco’s right to claim additional relief or payment pursuant to Schedule Part 4 (Pricing).*’

Schedule Part 4

Section 2.5 ‘Contract Price’ comprises capital expenditure and revenue expenditure as follows ...
‘Construction Works Price £238,607,664’ ...(other items) ... ‘Total of capital expenditure’ ...
‘Revenue expenditure’ ...’

Section 1.2 ‘The Construction Works Price is on a lump sum basis that is fixed until completion of the Infraco Works and not subject to variation except in accordance with this Agreement.’

Section 1.3 ‘This Part 4 of the Schedule sets out the various categories of items that may be subject to change, together with a mechanism for adjustment of the Contract Price including the Construction Works Price.’

- ii) Section 3.1 ‘The Construction Works Price is a lump sum, fixed and firm price for all elements of work required as specified in the Employer’s Requirements as Schedule Part 2 and the Infraco Proposals as Schedule Part 31* and is not subject to variation except in accordance with the provisions of this Agreement.’

* this is a typo as the document appears as Schedule Part 30

- 35 It follows that the Construction Works Price is a lump sum fixed price for providing the work specified in the Employer’s Requirements but subject to change for reasons provided in the Contract. The arrangements for Change are principally set out in Schedule Part 4. Such a Change is known as a Notified Departure and may become a Mandatory **tie** Change.

Notified Departure

- 36 A Notified Departure is defined

Section 2.8 ‘Notified Departure’ is where now or at any time the facts or circumstances differ in any way from the Base Case Assumptions save to the extent caused by a breach of contract by the Infraco, an Infraco Change or a Change in law.’

And in addition

Section 3.5 ‘... If now or at any time the facts or circumstances differ in any way from the Base Case Assumptions (or any part of them) such Notified Departure will be deemed to be a Mandatory tie Change ...’

- 37 The provisions relating the matters in dispute are as follows

Section 2.2 ‘Base Case Assumptions (“**BCA**”) means the Base Date Design Information, the Base Tram Information, the Pricing Assumptions and the Specified Exclusions’.

Section 2.3 ‘Base Date Design Information’ (“**BDDI**”) means the design information drawings issued to Infraco up to and including 25th November 2007 listed in Appendix H to this Schedule Part 4.

Section 2.4 ‘Base Tram Information’ means the information contained in the Tram Supplier’s technical response ...Not being an issue in this reference.

Section 2.9 'Pricing Assumptions' means the assumptions in respect of the Contract Price as noted in Section 3.4 below.'

Section 2.10 'Specified Exclusions' means items for which Infraco has made no allowance within the Construction Works Price as noted in Section 3.3 below.'

- 38 These give rise to two principal causes of adjustment to the Construction Works Price being the Specified Exclusions and the Pricing Assumptions. The Base Tram Information is not an issue and the BDDI forms part of the Pricing Assumptions as detailed below.

Pricing Assumptions

- 39 The background to the Pricing Assumptions is provided at

Section 3.2.1 'It is accepted by ~~tie~~ that certain Pricing Assumptions have been necessary and these are listed and defined in Section 3.4 below. The Parties acknowledge that certain of these Pricing Assumptions may result in the notification of a Notified Departure immediately following the execution of this Agreement. This arises as a consequence of the need to fix the Contract Price against a developing factual background. In order to fix the Contract Price at the date of this Agreement certain Pricing Assumptions represent statements that the Parties acknowledge represent facts and circumstances that are not consistent with the actual facts and circumstances that apply. For the avoidance of doubt, the commercial intention of the Parties is that in such circumstances the Notified Departure mechanism will apply.'

- 40 There are 43 no. Pricing Assumptions set out at Section 3.4. The main assumption relied upon by the parties is Sub-section 3.4.1 concerning Design. It provides

'The Design prepared by the SDS Provider (the IFC) will not (other than amendments arising from the normal development and completion of designs):

1.1 in terms of design principle, shape, form and/or specification be amended from the drawings forming the Base Date Design Information (except in respect of Value Engineering identified in Appendices C or D to this Schedule Part 4);

1.2 be amended from the scope shown on the Base Date Design information and Infraco Proposals as a consequence of any Third Party Agreement (except in connection with changes in respect of Provisional Sums identified in Appendix B); and

1.3 be amended from the drawings forming the Base Date Design Information and Infraco proposals as a consequence of the requirements of any Approval Body.

For the avoidance of doubt normal development and completion of designs means the evolution of designs through the stages of preliminary to construction stage and excludes changes of design principle, shape and form and outline specification. ...'

Specified Exclusions

- 41 The Specified Exclusions from the Construction Works Price set out in Schedule Part 4 Section 3.3 are

- a) *Utilities diversions*
- b) *... St Andrew Square public realm project ...*
- c) *Ground conditions that require works that could not be reasonably foreseen by an experienced civil engineering contractor based on the ground condition reports provided to BSS (Infraco) on 20th and 27th November and 6th December 2007. Additionally the construction Works Price does not include for dealing with replacement of any materials below the earthworks outline or below ground obstructions/voids, soft material or any contaminated materials.*
- d) *Bernard St public realm ...*

42 Both parties rely to different effect on Section 3.3 c) as discussed below. Although in the Referral at paragraph 5.6.3, Infraco says this provision is not relevant to the present dispute, it does rely upon it at paragraphs 6.9.10 and 6.10.1.

Change procedure

43 The Contract includes several related mechanisms for Change. In summary these are

- i) **tie** Changes under Clause 80: **tie** proposes a Change and requests an Estimate of the money, time and contractual effects from Infraco to be valued by the mechanism provided; upon agreement **tie** issues a **tie** Change Order; by Clause 80.15, if the matter is urgent, **tie** may issue such a Change Order peremptorily.

- ii) Mandatory **tie** Changes are defined in Schedule Part 1

*‘means any addition, modification, reduction or omission in respect of the Infraco Works instructed in accordance with Clause 80 (**tie** Changes) which this Agreement specifically states will be a Mandatory tie Change’;*

Schedule Part 4 Section 3.5 provides *‘... If now or at any time the facts or circumstances differ in any way from the Base Case Assumptions (or any part of them) such Notified Departure will be deemed to be a Mandatory tie Change ...’;*

Clause 80.24 provides *‘Where pursuant to paragraph 3.5 of Schedule 4 ... **tie** is deemed to have issued a **tie** Notice of Change as a result of the occurrence of a Notified Departure, the provisions of this Clause 80 (**tie** Changes) other than Clause 80.19 shall apply.’*

Clause 80.13.2 provides that *‘...**tie** may ... except where the Estimate relates to a Mandatory tie Change withdraw the **tie** Notice of Change ...’*

- iii) Others: Clause 81 provides for Infraco Changes proposed by Infraco; Clause 82 for Small Works Changes; Clause 83 Accommodation Works Changes; Clause 84 for Qualifying Law Changes: these are not relevant to this reference save for the exclusions in Section 2.8, above.

44 It follows that a Notified Departure arising from the provisions of Schedule Part 4 gives rise to a Mandatory **tie** Change falling to be valued under Clause 80, which by Clause 80.13.2 cannot be withdrawn and can be the subject of a peremptory **tie** Change Order under Clause 80.15.

CONTRACT - DISCUSSION

Introduction

45 The parties disagree about how the Contract terms should be construed and how they should be applied to the facts to determine whether there has been a Notified Departure or Mandatory **tie** Change. As the essence of the dispute concerns the construction of the Contract, I deal with this first.

Infraco case

46 Infraco accepts that it is responsible for delivering the Infraco Works in accordance with the Employer's Requirements and Infraco Proposals. It says at issue is how much it is paid and any consequential time effects. It says that this is not a normal design and construct contract where the contractor accepts all of the risk of changes. The Pricing Assumptions were not unilateral statements in the nature of tender qualifications but agreed terms of the Contract to provide a mechanism whereby Infraco was paid for matters that were uncertain. The alternative would have been for Infraco to include for that risk at the time of Contract resulting in a higher Contract Price. Infraco says that it relies on the Contract and that does not place it at risk for matters expressly excluded or for imputed knowledge. It says that Clause 80 concerns valuation and does not determine whether a Notified Departure arises. Infraco accepts that **tie** is not responsible for every change between the BDDI and IFC drawings.

tie case

47 **tie** says that the basic proposition is that Infraco is to deliver the whole of the works specified in the Employer's Requirements and Infraco Proposals for a lump sum, fixed and firm price. The provisions for the possibility of change are not intended to place the risk or consequences of any and all changes on **tie**. This applies in particular to the normal development and completion of design. **tie** says that Infraco misinterprets these provisions such that they are bereft of any meaning. **tie** says that Infraco has failed to prove that the changes in dispute are not normal development and completion of design or shown that different facts or circumstances pertain to those prior to the date of Contract. **tie** says that the Price is not just for what is shown on the BDDI but for the Employer's Requirements subject to Specified Exclusions and Pricing Assumptions. **tie** also says that the mere occurrence of a change does not result in an entitlement for Infraco as it must comply with the requirements of Clause 80 and has not done so.

Design Responsibilities

Novation of SDS Provider

48 Schedule Part 23 comprises the SDS Novation Agreement under which Infraco took over the responsibilities of the designer formerly employed by **tie**. **tie** draws attention to the fact that it is Novation '*ab initio*' whereby Infraco accepts liability to **tie** for the whole of the design by the SDS Provider whenever it was carried out. Infraco accepts that it is obliged to complete all of the design but repeats that this does not determine whether or not it is to receive additional payment.

49 **tie** exercised its right under the Contract to carry out an audit of the performance of the SDS Provider in relation to the matters in dispute. This does not appear to have been conclusive and the parties do not take further any arguments concerning the performance of the SDS Provider as such.

Due Diligence Report

- 50 The Due Diligence Report by Infraco is appended to Schedule Part 30, the Infraco Proposals. It is dated 18 February 2008 but states it is based on design information provided up to 14 December 2007. It identifies significant omissions from the survey, geotechnical information and design.
- 51 **tie** says that Infraco carried out the Due Diligence Report for its own benefit in order to understand the design risks; and having done so it accepted the Novation of the SDS Provider. **tie** says that following the Due Diligence Report, various price increases were agreed.
- 52 **tie** sets out certain observations by Infraco in the Due Diligence Report including the level of risk it attached to aspects of the incomplete design for the Russell Road Retaining Wall. **tie** says the Report identified that the design for the Russell Road Retaining Wall was at that stage developed beyond the BDDI drawings but was yet to be approved by third parties. It further says that the Due Diligence Report does not circumscribe the Works required by the Employer's Requirements or the Price.
- 53 Infraco says it does not rely upon the Report in its Referral. It says the Due Diligence Report does not have the effect of defining normal design development as this is provided for in the Contract. It says that it undertook no further due diligence between the BDDI drawings of 25 November 2007, I assume it means information up to 14 December 2009, and the Contract date of 14 May 2008.
- 54 The Contract does not invoke the Due Diligence Report in terms. As far as I can ascertain, the Due Diligence Report was merely a procedure that Infraco reasonably wished to complete before accepting the obligations of novation of the SDS Provider. For these reasons, I do not consider that the Due Diligence Report either increases or diminishes the obligations of either party in respect of the Works to be completed or the Price.

State of Knowledge of Infraco

- 55 **tie** says that Infraco has allowed in its Construction Works Price for normal development and completion of design and it is only when this departs from its '*normal course*' that Pricing Assumption Section 3.4.1 becomes relevant.
- 56 Infraco says that this argument by **tie** is flawed because it ignores the basis for pricing in the Contract. Infraco says that **tie** implies that development Infraco knew about prior to Contract was excluded from that Pricing Assumption; which is contrary to the terms of the Contract and the fact that the design was incomplete at BDDI. Infraco denies that it had knowledge of the matters stated by **tie**, in particular it says that the Due Diligence Report highlighted the uncertainty in the GI Reports. It says that it was because of this lack of knowledge that the Schedule Part 4 arrangements were incorporated in the Contract.
- 57 Infraco draws attention to Section 3.2.1, which provides that '*Pricing Assumptions represent statements that the Parties acknowledge represent facts and circumstances that are not consistent with the actual facts and circumstances that apply.*'
- 58 I agree that the state of knowledge of Infraco is not relevant insofar as the Contract makes express provision for the information and knowledge upon which the Price and other obligations are based.

Construction Works Price

59 **tie** says that Infraco implies that the Construction Works Price is defined by the BDDI; but **tie** says that it is defined by Contract Clause 66.1, the definitions and by the words of Section 3.1

The Construction Works Price is a lump sum ... for all elements of work required as specified in the Employer's Requirements as Schedule Part 2 and the Infraco Proposals as Schedule Part 31'

60 **tie** says a lump sum is construed under the '*inclusive price principle*' being that all indispensably or contingently necessary expenditure required to complete the Works is deemed included. The Employer's Requirements identify at Russell Road a '*New retaining wall required due to level difference.*'

61 **tie** says that the Pricing Assumptions merely protect Infraco from the BDDI evolving beyond the Employer's Requirements or changes due to a third party. It says that the '*normal development and completion of designs*' is all that is needed to construct the works in accordance with the Employer's Requirements. **tie** notes that Infraco accepts that it included in its Price a sum for design development.

62 **tie** says that Infraco was protected from the '*interim design*' of that part of the Works shown on the BDDI drawings only and only insofar as it developed in an unexpected way beyond what was required in the Employer's Requirements. It is not the case that its lump sum was solely for the design in the BDDI.

63 **tie** says that the Construction Works Price is based on the BCA not solely the BDDI. It says a Notified Departure requires a different set of '*facts and circumstances*' to the BCA. **tie** says that the change results from the same '*facts and circumstances*', namely the GI Reports under Specified Exclusion 3.3c).

Facts and circumstances

64 The words '*facts and circumstances*' are not defined directly in the Contract. However, Section 3.5 refers to the '*facts or circumstances differ in any way from the Base Case Assumptions*' and Section 2.2 defines the '*Base Case Assumptions*' as a specific set of documents. Section 3.2.1 refers to '*actual facts and circumstances*' being what exists at any given time and may differ from the '*facts and circumstances*' upon which the Contract is based. In my view, this narrows the interpretation of these words to the '*facts and circumstances*' comprising the Base Case Assumption documents or the related '*actual facts and circumstances*' that subsequently arise.

Conclusion

65 I conclude that the Contract provides that Infraco delivers the Infraco Works comprised in the Employer's Requirements for the Contract Price including the Construction Works Price being expressly a fixed lump sum save adjustment in accordance with the Contract. I do not agree that on a proper construction the Construction Works Price can be construed as being solely for the Works shown on the BDDI or any similar alternative construction.

66 The '*facts and circumstances*' to be considered are those comprising the Base Case Assumption documents or related '*actual facts and circumstances*'.

Specified Exclusion 3.3c)

67 **tie** says that this exclusion is only to shield Infraco from

- i) Ground conditions that require works that could not be reasonably foreseen by an experienced civil engineering contractor based on the ground condition reports provided to Infraco on 20 and 27 November and 06 December 2007; and
- ii) Dealing with replacement of (i) any materials below the earthworks outline or (ii) below ground obstructions/voids, soft material or (iii) any contaminated materials.

68 **tie** says no one Pricing Assumption has precedence over another. It says that Pricing Assumption Section 3.4.1.1 must be read in conjunction with this provision; such that alterations which are normal development and do change the '*design principle, shape and form and outline specification*' but arise from ground conditions that could have been reasonably foreseen are not Notified Departures. **tie** says that Section 3.3c) brings the GI Reports into the '*facts and circumstances*' to be considered in assessing whether a Notified Departure has taken place. **tie** says no enquiry is required into the meaning of Section 3.3c) as none of the relevant matters arise in the dispute.

69 Infraco says this is wrong because

- i) Section 3.3c) is to protect Infraco and not to limit its entitlement under any other provision of Schedule Part 4;
- ii) In the absence of a clear statement, the Pricing Assumptions and Specified Exclusions are to be read independently; and otherwise interpretation of a Notified Departure would be meaningless;
- iii) Section 3.4.1 is clear and not qualified as being subject to Section 3.3c); but
- iv) In any event, the Due Diligence Report indicates what could have been known from the GI Reports; and
- v) The second sentence of Section 3.3c) protects Infraco from the costs of soft ground even if it is indicated on the GI Reports.

70 In my view, the Specified Exclusion Section 3.3c provides protection for Infraco in two areas.

- i) The Price does not include for work resulting from ground conditions that a hypothetical '*experienced civil engineering contractor*' could not have foreseen based on the GI Reports. As this clause is exclusionary, Infraco may make the case that certain works could not have been foreseen and show that it is entitled to additional payment. In my view, it does not mean that any or all works that could have been foreseen based on the GI Reports are necessarily included in the Contract Price; that is a matter for the Employer's Requirements and the Pricing Assumptions.
- ii) The Price does not include for dealing with obstructions, voids, soft and contaminated material below the earthworks outline. Again as this is exclusionary, it does not necessarily mean that Infraco is responsible for these matters above the '*earthworks outline*'; although in the absence of relevant provisions it appears that it is. I have not enquired as to the definition of '*earthworks outline*' in this Contract and do not comment further.

iii) For these reasons, I do not consider that Section 3.3c) is to be read so as to qualify other Pricing Assumptions; although it may, of course, provide protection to Infraco that does not arise under those Pricing Assumptions.

71 I note that Section 3.3c) must be read in conjunction with the operative provisions Section 3.3.1 and Section 3.5. Section 3.3.1 provides that if Infraco is required to carry out a Specified Exclusion it becomes a Notified Departure and Section 3.5 provides that such a Notified Departure is a Mandatory **tie** Change if the '*facts and circumstances*' differ from the Base Case Assumptions. I understand in this context '*facts and circumstances*' to mean the GI Reports identified in Section 3.3c).

Pricing Assumption Section 3.4.1.1

Introduction

72 As a matter of construction, the Pricing Assumptions in Section 3.4 must be read in conjunction with the enabling Section 3.2.1 and operative Section 3.5.

73 Infraco draws attention to Section 3.2.1. It makes it clear that the '*developing factual background*' means that statements of '*facts and circumstances*' upon which the Contract Price is fixed may not be the actual '*facts and circumstances*' that apply. I have considered the definition of '*facts and circumstances*', above. I take the words '*that apply*' to mean that exist at the date of the Agreement. This provision has the effect of dealing with any discrepancies that arise between the BDDI drawings, the GI Reports and the '*developing factual background*'.

74 **tie** draws attention to Section 3.5. It clarifies that '*If at any time the facts and circumstances differ in any way from the Base Case Assumptions such Notified Departure will be deemed to be a Mandatory tie Change*'. The Base Case Assumptions are defined to include the BDDI, Pricing Assumptions and Specified Exclusions.

75 Infraco relies principally upon Pricing Assumption Section 3.4.1.1. It concerns changes in design between the BDDI and IFC drawings. It is common ground that there are changes and broadly what those changes comprise.

'The Design prepared by the SDS Provider (the IFC drawings) will not (other than amendments arising from the normal development and completion of designs):

1.1 in terms of design principle, shape, form and/or specification be amended from the drawings forming the Base Date Design Information (the BDDI drawings) ...

For the avoidance of doubt normal development and completion of designs means the evolution of designs through the stages of preliminary to construction stage and excludes changes of design principle, shape and form and outline specification.'

Meaning of Technical Words

76 The parties did not argue that the first and second phrases, repeated below, were of different meaning

design principle, shape, form and/or specification

design principle, shape and form and outline specification.

77 These words are in normal usage, nevertheless, the experts gave evidence of their understanding of their meaning in the technical context. They agreed that the differences between their definitions would not result in a significant difference in interpretation. Mr McKittrick for **tie** relied on dictionaries for the most part and I prefer his definitions as follows

Design principle: a fundamental source in the formulation of an idea and turning it into a practical reality

Shape: the total effect produced by the outlines of a thing

Form: the external shape or appearance of an object as distinct from the matter of which it is composed

Specification: the contract documents specifying the nature and quality of the work

78 The Contract defines

‘normal development and completion of designs’ as the

‘evolution of designs through the stages of preliminary to construction stage’

but it is not without difficulty. ‘*Evolution*’ means ‘*development from earlier forms*’ and so, on the face of it, the word ‘*normal*’ is not defined.

79 Mr McKittrick for **tie** provides these definitions, albeit that he does not explain the word ‘*normal*’.

- i) Normal Development of Design: the process of analysing a structure and ensuring that, for example, the concrete and reinforcement are adequate to resist the specified forces. British Standard Codes of Practice and European Standards are employed during this task. Drawings are then prepared to show the details from which the contractor can build the structure.
- ii) Completion of Design: the process of finalising designs, receiving comments from relevant approval bodies, checking of design calculations and drawings, completing drawings.

80 Mr Hunt for Infraco gave two definitions

- i) *‘Normal development and completion of design means those changes that an experienced contractor and his engineer can expect in providing full construction information. This will extend from the odd reinforcement bar here to a small dimensional adjustment there. ... Strictly, even such minor changes could be defined as being at least one of design principle, shape form and specification. ...’*
- ii) *‘Normal: in the context of this Contract, ‘normal design development’ is what could reasonably be anticipated as further development of a design from the currently achieved position along the design development time line ... in this case from the design as defined in the BDDI.’*

81 I adopt the definition by Mr McKittrick preceded by the sentence from Mr Hunt ‘*Normal development and completion of design means those changes that an experienced contractor and his engineer can expect in providing full construction information.*

Examples of Changes

82 As noted in the above definitions, Mr Hunt says that almost any detailed change, for instance the slight adjustment of a dimension or location of a reinforcement bar, could be construed as a change in *design*

principle, shape and form and outline specification and fall outside *'normal development and completion of designs'*. However, Mr Hunt says that in his opinion it was not the intention of the parties that such a minor change would be a notified change. When questioned, Mr Hunt said that what he described as *'reasonable'* changes comprising normal development and completion of designs could not be determined by any particular criterion; it was in his view a matter of engineering judgement based on experience.

- 83 Mr McKittrick agrees that the parties could not have intended minor changes to be notified changes; he considers that Mr Hunt has not applied this principle consistently. He is also of the opinion that a design and construct contractor can expect much larger changes in design; implicitly as part of *'normal'* development of the design. He says that in his opinion Infraco did allow for *'amendments to design arising from the evolution of the design through the normal course of development and completion of designs through to completion of construction stage to achieve the Employer's Requirements.'*
- 84 Mr McKittrick had a different engineering judgement of the evidence. He said that Infraco knew about the facts and circumstances that gave rise to the revised design of the Russell Road Retaining Wall and thus the changes implemented were the result of normal development of the design.

Interpretation

- 85 Infraco takes a literal approach arguing that the BDDI drawings shall not be amended in terms of *'design principle, shape and form and outline specification'* and that anything not shown on the BDDI is an amendment; save for *'reasonable'* changes. It also says that it is not obliged to prove the reason for any Change.
- 86 **tie** says that Infraco is construing the Contract too narrowly by relying upon the words *'excludes changes of design principle, shape and form and outline specification'* to the exclusion of the remainder of the Contract. **tie** relies upon *Modern Engineering v Gilbert Ash* [1974] AC 689 as authority for construing the Contract as a whole. **tie** says that by excluding any changes in *'design principle, shape and form and outline specification'* it *'swallows up the whole scope of ... all Pricing Assumptions and Specified Exclusions'* and cannot be correct. It says that Infraco is obliged to design the Works to achieve the Employer's Requirements.
- 87 **tie** further says that in order to invoke Pricing Assumption Section 3.4.1.1 that the matter must
- i) be identified on the INTC; and
 - ii) be shown on the BDDI drawings in order to be *'amended'*; and
 - iii) not be additions to, further detail or development; and
 - iv) the amendment must be a change in design principle, shape and form or outline specification; and
 - v) not arise from normal development and completion of designs; and
 - vi) the *facts and circumstances* must differ from the BCA; and
 - vii) not be a breach of contract, Infraco Change or Change in Law.
- 88 In particular, **tie** says that Section 3.4.1.1 merely applies to the amendment of something that was as a fact shown on the BDDI and did not apply to additions in order to achieve the Employer's Requirements

which arose in the normal evolution of the design. It says the BDDI drawings were only an interim design and required development.

89 **tie** also says that the interpretation by Infraco cannot be what the parties intended; for it could enable Infraco to introduce a change for its own purposes, as it has control of the SDS Provider, and that could become a Notified Departure. However, with the exception of a reference to the pile diameter, referred to later, **tie** does not take the matter further.

90 In seeking what it considers a proper construction of Section 3.4.1, **tie** makes three main arguments. In doing so **tie** relies upon further authorities being in summary

Wickman Tools v Schuler AG [1974] 1 AC 23 ‘*the more unreasonable the result the more unlikely it is that the parties can have intended it ...*’ and

Mannai Ltd v Eagle Star Ass. Co Ltd [1977] 1 AC 749 quoting Lord Diplock ‘*if detailed semantic and syntactical analysis of a word in a commercial contract is going to lead to a conclusion that flouts business common sense, it must be made to yield to business common sense.*’

91 In the first place **tie** says that the ‘clarification’ to Section 3.4.1 commencing ‘*for the avoidance of doubt normal and completion of designs means ...*’ is of no effect. A clarification cannot amend what goes before and it patently fails to clarify it, so that the test is whether what goes before is itself complete. **tie** says that the words going before the clarification are clear enough on their own.

92 Secondly, **tie** suggests reorganising Section 3.4.1 to clarify the meaning as follows

‘The Design prepared by the SDS Provider (the IFC drawings) will not (~~other than amendments arising from the normal development and completion of designs~~): 1.1 in terms of design principle, shape, form and/or specification be amended from the drawings forming the Base Date Design Information (the BDDI drawings) ... (other than amendments arising from) ~~For the avoidance of doubt normal development and completion of designs means the evolution of designs through the stages of preliminary to construction stage and excludes changes of design principle, shape and form and outline specification.~~’

93 I replace below the phrase ‘*design principle, shape, form and/or specification*’ by ‘A’ with the result that Section 3.4.1 reads as follows

‘The IFC drawings will not in terms of ‘A’ be amended from BDDI drawings other than amendments arising from the evolution of designs through the stages of preliminary to construction stage and excludes changes of ‘A’.’

94 On the face of it on a literal reading,

- i) this provision is tautological since the first and last parts provide that there shall be no amendments in terms of ‘A’ other than amendments due to evolution of design excluding ‘A’; and
- ii) it cannot apply to any change since a change which complies with the definition in the second part ‘*evolution ... excludes ‘A’*’ does not comply with the first part ‘*in terms of ‘A’*’; or
- iii) as a matter of fact, it is difficult to see what changes could be made that would satisfy the

requirements for a Notified Departure which renders it a nullity.

95 Thirdly, **tie** says that in construing the Contract as a whole the '*facts and circumstances*' surrounding the Change must be taken into account. In the matter of the Foundations and Piling, **tie** says there was no difference in the facts and circumstances. It relies on the proposition that as Section 3.3c) excludes certain ground conditions, by implication others are included. **tie** says the facts and circumstances must take into account the GI Reports, Due Diligence Report and the state of the Design known to Infraco. I have already concluded that these arguments are incorrect on the basis of the definition of Base Case Assumptions and the proper construction of Section 3.3c).

96 In conclusion, **tie** submits in Rejoinder paragraph 5.24, that what is intended by Pricing Assumption Section 3.4.1.1 is that the

'Design prepared by the SDS Provider will undergo the normal development and completion of design and will not in terms of design principle, shape, form and/or specification be amended from the drawings forming the BDDI (except in relation to Value Engineering).'

97 I take this statement by **tie** to be subject to its other contentions, in particular

- i) That it applies to *amendments* to the BDDI not *additions* and so on
- ii) It assumes a change in the *facts and circumstances*
- iii) It qualifies *normal development*

98 In response, Infraco says that the **tie** definition of '*normal development*' of the design is not the definition as in the Pricing Assumption. It says that Mr McKittrick's definition robs the Pricing Assumption of any meaning. Infraco says that a definition referring to the design evolving in unexpected ways or beyond Employer's Requirements is nonsense as it is not in the Contract; and the Contractor does not need protection from changes in the Employer's Requirements as there is an adequate mechanism already.

99 Infraco says that **tie** is wrong to urge an investigation into the facts and circumstances surrounding the Works as '*encapsulated in the Base Case Assumptions*' as Infraco priced against the BDDI. I have already concluded that the BCA facts and circumstances are those expressly identified but that Infraco has priced against the Employer's Requirements subject to the adjustments provided in the Contract.

Conclusions

100 It appears that something has gone wrong with the language of Section 3.4.1.1 as, on the face of it, on a literal reading some part must be redundant to give it meaning. I consider that the formulation advanced by **tie** most nearly expresses the true intention of the parties as can be discerned; namely that Pricing Assumption Section 3.4.1.1 should read that the

'Design prepared by the SDS Provider will undergo the normal development and completion of design and will not in terms of design principle, shape, form and/or specification be amended from the drawings forming the BDDI (except in relation to Value Engineering).'

101 As to '*normal*' development, I consider that this is the progression towards the Employer's Requirements as would be expected by an experienced contractor and his designer. If this results in amendment of the

design principle, shape, form and/or specification shown on the BDDI drawings then it becomes a Notified Departure, subject to the following paragraphs.

- 102 I agree with **tie** that the word '*amendment*' can only apply to something shown on the BDDI drawings not an addition to achieve compliance with the Employer's Requirements being the overriding obligation. The amendment must be to one of the characteristics of *design principle, shape, form and/or specification* as discussed below.
- 103 On any of the definitions of *design principle, shape, form and/or specification* discussed, Infraco took the '*narrow*' view that almost any detailed change was an amendment. It will be seen that I do not agree with the concept advanced by Infraco of '*reasonable*' changes being excluded from the Pricing Assumption in order to give it meaning. That is a subjective test and if such were intended, I think the parties would have said so and expressed some criterion such as the '*reasonable design and build contractor*'. Equally, I do not accept the '*broad*' proposition by **tie** that a very wide range of matters that are amendments would be '*expected*' by a design and build contractor and so included in the Price. This applies equally to matters known to Infraco after the BDDI date.
- 104 I think the correct interpretation lies in the proper application of the definitions to the facts; to which I return under the relevant issues. By way of indication
- i) The *design principle* is a fundamental principle rather than a design detail; for example a change from insitu to precast concrete changes the *principle* of the design
 - ii) The *shape*, being the total effect produced by the outline; I do not consider this necessarily changes due to a dimensional change; for instance a rectangle may remain a rectangle
 - iii) The *form*, being the external appearance; I consider that the appearance may or may not change as a result of a small dimensional change; it is a matter of scale
 - iv) The *specification*, being the nature and quality of the work; I do not consider that the nature or quality of say an insitu concrete deck, changes because it is thicker or more heavily reinforced

Relationship of Sections 3.3c) and 3.4.1.1

- 105 There are several a potential conflicts.
- i) The Specified Exclusions relate to a state of knowledge, namely the listed GI Reports, whereas the Pricing Assumptions relate to defined drawings, being the BDDI, and to other Base Case Assumptions. It follows that in relation to the same set of facts, they could yield different conclusions. However, as each procedure independently limits the obligations placed upon Infraco for the Price, there should be no resulting conflict.
 - ii) Section 3.5 requires a change in the '*facts and circumstances*' compared to the Base Case Assumptions in order to become a Mandatory **tie** Change. I have concluded that the '*facts and circumstances*' on a proper construction are those comprising the Base Case Assumption documents as defined in the Contract. It follows from the previous paragraph that the Pricing Assumptions and Specified Exclusions in Sections 3.3c) and 3.4.1.1 respectively, should be

construed on that basis of their own facts and circumstances.

Notified Departure

- 106 The definition of Notified Departure in Section 2.8 includes a saving provision '*save to the extent caused by a breach of contract by the Infraco, an Infraco Change or a Change in law.*' **tie** says that Infraco must prove that the Change does not fall within any of these exclusions. **tie** says that it reserves its rights as to whether the Notified Departures were caused by these excluded events. **tie** also says that to investigate this matter requires an explanation of the underlying '*facts and circumstances*'.
- 107 Infraco says that it is not obliged to prove that the Change was not '*caused by a breach of contract by the Infraco, an Infraco Change or a Change in law.*' It says this is proving a negative and that the normal test of balance of probability applies. It also notes that **tie** carried out an audit and says that it did not reach the conclusion that the Notified Departure was caused by any of these excluded matters.
- 108 **tie** says that Infraco accepted the risk of a change in facts and circumstances '*caused by a breach of contract by the Infraco, an Infraco Change or a Change in law*' and '*normal development and completion of designs*' and ground conditions '*reasonably foreseen by an experienced civil engineering contractor.*' Infraco says that whether changes were foreseeable is not the point as the Contract shows that both parties did foresee changes and made provision to price them.
- 109 I agree that the obligation to satisfy the saving provision is decided on the normal balance of probability. I do not agree that an investigation of facts and circumstances, design development and ground conditions is required to ascertain whether a particular change satisfies the terms of Section 3.4.1.1 and constitutes a Notified Departure, provided that there is no *prima facie* evidence that the saving provisions apply. There is no such evidence.

Compliance with Clause 80

- 110 **tie** says that Infraco has not complied with its obligations to provide a timely Estimate in accordance with Clause 80 and in particular has not provided all information prior to the Referral. It says
- i) Both parties must act reasonably in respect of any extension of time for submission
 - ii) The onus is not on **tie** to value a Change but on Infraco to provide all necessary information
 - a) Relevant BDDI
 - b) Technical reason for and person making the Change
 - c) Compliance with design submission requirements
 - d) Factual and technical grounds for Change
 - e) Compliance with obligation to mitigate
 - f) Confirmation of no Infraco Breach, Infraco Change or Change in Law
- 111 **tie** says the IFC drawings were issued on 11 July 2008 but the INTC no. 146 issued on 14 October 2008, being some 18 weeks later. It says this is a breach of Clause 60.1. It also notes that the Estimate was issued on 14 May 2009, being outside the 18 days provided in the Contract.
- 112 **tie** lists a large number of items that it says are omitted from the Estimate. Many of these relate to

programme, mitigation, arrangements for the Works and the effect on the remainder of the Project. In any event, it says that the amounts claimed are inflated.

- 113 Infraco says that Clause 80 relates to the evaluation of entitlement for a Notified Departure not whether one had occurred. It denies any breach of Clauses 60.1 and 80 but says that in any event, such a breach would not be the reason for the Change and so is not relevant. It says that the parties have agreed to exclude the delay consequences from any Estimate for the subject matter of this dispute. It also says that **tie** did have sufficient information as it had issued a position paper and proposed a valuation of the Estimate. Finally, it says that the Estimate of the Notified Departure in dispute does not touch on any possible effects of delay of the administration of this Change and so they are not relevant.
- 114 Infraco says that the issue of a Change order by **tie** is acknowledgement that there was a Change.
- 115 **tie** argues that its reference to breaches on Clause 80 is relevant to the valuation of the Change. It says that Infraco failed to provide a competent Estimate and as such the Decision in this reference can only be a '*valuation for adjudication purposes*' based on the information provided and '*a valuation of an alleged Notified Departure*'; a process not recognised in the Contract.
- 116 As I understand the party positions, Infraco says there was an agreement to deal with what I would characterise as a '*part Estimate*' and a dispute arose about the valuation of that '*part Estimate*' which falls to be resolved using the Contract mechanism. It evidences a number of meetings and correspondence in which the parties exchanged views on the valuation of the '*part Estimate*'.
- 117 **tie** denies any agreement to value a '*part Estimate*' and so considers that any valuation arising from this reference would be of no contractual effect as a '*part Estimate*' is a nullity. The second objection by **tie** to '*a valuation of an alleged Notified Departure*' seems to contain two objections. Firstly, to the concept of providing a valuation where there is no competent Estimate and secondly to valuing an '*alleged*' Notified Departure because, presumably, either there is no such event or the procedure has not been followed.
- 118 It seems to me as a starting point, that the Contract does not provide a quality standard for Estimates. If an Estimate falls below what is contractually or reasonably required then the paying party can raise in defence that the Estimate failed to provide certain information and that as a result the entitlement is reduced or, for instance in the case of time, extinguished for lack of evidence. The paying party has available to it any arguments that it may seek to advance concerning a failure to mitigate or obtain competitive prices, if that is the case. However, I do not think it can reject an Estimate simply because it says it is badly executed. The Contract provides at Clause 80.10 that if the parties cannot agree '*on the contents of the Estimate*' that it may be referred to the Dispute Resolution Procedure.
- 119 As to any agreement to deal with a '*part Estimate*', it seems that prior to the issue of the Estimate on 14 May 2009, **tie** was pressing Infraco for a fully compliant Estimate and a programme for doing so in relation to a number of notified Changes. The Estimate submitted expressly excluded delay and disruption due to the Change and certain other matters. It seems that **tie** did not object to this arrangement in subsequent correspondence up to and including the **tie** Change Order of 09 September 2009 which allowed for the Programme effect '*to be determined*'.

Conclusion

- 120 I conclude that **tie** did accept the submission by Infraco of a '*part Estimate*' and was content to deal with it on that basis. That being so, the dispute concerning the '*part Estimate*' is apt to be resolved in this reference. Furthermore, there is no express condition precedent to an Estimate being valued. None of this denies **tie** the right to raise in defence any deficiencies in the Estimate, save the absence of the matters expressly excluded by the implied agreement.
- 121 As to the various contentions concerning the valuation itself, these will be dealt with under the relevant issue, below.

Summary of Main Conclusions

- 122 The fundamental provisions of the Contract are that Infraco delivers the Infraco Works comprised in the Employer's Requirements for the Contract Price including the Construction Works Price being expressly a fixed lump sum save adjustment in accordance with the Contract. I do not agree that on a proper construction the Construction Works Price can be construed as being solely for the Works shown on the BDDI or any similar alternative construction.
- 123 The Pricing Assumptions and Specified Exclusions derogate from the fundamental provisions and operate independently to the effect set out below.
- 124 The Due Diligence Report neither increases or diminishes the obligations of either party in respect of the Works to be completed or the Price; and I agree that the state of knowledge of Infraco is not relevant insofar as the Contract makes express provision for the information and knowledge upon which the Price and other obligations are based.
- 125 The '*facts and circumstances*' to be considered are those comprising the Base Case Assumption documents or subsequently arising related '*actual facts and circumstances*'.
- 126 The Specified Exclusion Section 3.3c) is exclusionary for the protection of Infraco and does not imply the inclusion of matters not otherwise included in the Price; and is to be read independently of other Pricing Assumptions.
- 127 Pricing Assumption Section 3.4.1.1 on a proper construction should read

'Design prepared by the SDS Provider will undergo the normal development and completion of design and will not in terms of design principle, shape, form and/or specification be amended from the drawings forming the BDDI (except in relation to Value Engineering).

Normal development and completion of design means those changes that an experienced contractor and his engineer can expect in providing full construction information.

Normal development of design is the process of analysing a structure and ensuring that, for example, the concrete and reinforcement are adequate to resist the specified forces. Completion of design is the process of finalising designs, receiving comments from relevant approval bodies, checking of design calculations and drawings, completing drawings.

Design principle is a fundamental source in the formulation of an idea and turning it into a

practical reality; Shape is the total effect produced by the outlines of a thing; Form is the external shape or appearance of an object as distinct from the matter of which it is composed; and Specification is that provided in the contract documents specifying the nature and quality of the work.'

- 128 For a Notified Departure, the obligation to satisfy the saving provision is decided on the normal balance of probability and absent *prima facie* evidence that the saving provisions should apply no investigation of the facts and circumstances, design development and ground conditions is required.
- 129 **tie** was content to deal with the '*part Estimate*' by Infraco which is apt to be resolved in this reference. There is no express condition precedent to an Estimate being valued. **tie** may raise any defence concerning deficiencies in the Estimate, save for matters expressly excluded by the implied agreement.

Other comments

- 130 I do not concur with the **tie** approach to the extent that it takes a broad view of what was known to Infraco. What it says on this topic may or may not be factual, but it was not provided for in the Contract and so it cannot apply.
- 131 I had serious reservations about the concept of '*reasonable*' changes put forward by Infraco. Whilst this concept is used in certain forms of contract in assessing extensions of time or knowledge of ground conditions for instance, it does not sit well with the certainty required in deciding what is included in the contract price. There remains an element of judgement in considering what is an amendment '*design principle, shape, form and/or specification*' or an addition to the BDDI drawings, however, I think the scope for disagreement is considerably less.
- 132 **tie** disputed whether it is possible for Section 3.4.1.1 '*design change*' and Section 3.4.1.3 '*requirement of an approval body*' both to apply to a single change. I agree with Infraco that there is no logical reason why both cannot apply to a single amendment. Infraco says Sections 3.4.1.1 and 3.4.1.3 are not mutually exclusive as one is the *nature* of the change and the other the *reason*. I agree.

ISSUE 1 – WHETHER THE CHANGE TO THE FOUNDATIONS IS A NOTIFIED DEPARTURE UNDER SECTION 3.4.1.1

Introduction

133 The ‘Foundations’ are defined above as *‘the change to foundation design of retaining units section 3 to 11 and 15 to 18 from an L shaped footing foundation to cast in-situ concrete piles and pile cap’*. There is no dispute that such a Change occurred between the BDDI drawings and the IFC drawings.

134 Infraco says that it does not have to prove why the Change occurred but that it understands it resulted from new GI Reports that were not translated into the BDDI drawings but implemented in the IFC drawings.

Infraco Notice of tie Change

135 INTC no. 146 of 14 October 2008 stated

- i) *‘tie Change Notified under Clause 80.1’* which requires Infraco to issue an INTC;
- ii) and is in respect of a *‘Mandatory tie Change under Schedule Part 4 paragraph 3.5’* which provides

‘The Contract Price has been fixed on the basis of ...’ the BCA ... *‘If now or at any time the facts or circumstances differ’* ... from the BCA *‘such Notified Departure will be deemed to be a Mandatory tie Change ...’*

- iii) and that the Change upon which the Estimate is based is *‘Schedule Part 4, Pricing Assumption, paragraph 3.4.1.1 assumes that the issued for Construction Drawings do not differ from Infraco proposals Appendix A 12/05/2008 other than design development as the IFC drawings for Russell Road Retaining Walls differ to a greater extent and complexity than design development the foregoing results in a Notified Departure.’*

136 Schedule Part 4 Section 3.4.1.1 as a sub-section of the Pricing Assumptions Section 3.4.1 which provides in summary that the Design prepared by the SDS Provider will not

1.1 in terms of design principle, shape, form and/or specification be amended from the drawings forming the BDDI ...

1.2 be amended from the scope shown on the BDDI and Infraco Proposals as a consequence of any Third Party Agreement ...; and

1.3 be amended from the drawings forming the BDDI and Infraco Proposals as a consequence of the requirements of any Approval Body.

Saving normal development and completion of designs

137 By letter of 31 October 2008, **tie** refers to an intervening letter of which I do not have a copy, and notes that Infraco referred to

‘differences from ‘base Infraco proposals’ but do not explain what relevance this has in relation to Pricing Assumptions 3.4.1 which relates to Base Date Design Information. Therefore, your

position is entirely unclear but in any event does not demonstrate a Notified Departure.'

138 It is not immediately clear why Section 3.4.1.1 refers only to the BDDI whereas Sections 3.4.1.2 and 3.4.1.3 refer to both the BDDI and Infraco Proposals. The position appears to be as follows.

- i) The Infraco Proposals for Civil Works are at Schedule Part 30 paragraph 1.1 '*the SDS Design, to be developed and finalised to Issued For Construction (IFC) status ...*' . It follows that an amendment from the BDDI, save normal development and completion of designs, would be an amendment of the Infraco Proposals in relation to the Design under 3.4.1.1; whereas
- ii) It is possible that a Third Party Agreement under 3.4.1.2 or requirement of an Approval Body under 3.4.1.3 could require a change to some other aspect of the Infraco Proposals not covered by the BDDI; and hence both are referred to in these Sections.

139 On the face of it, INTC no. 146 refers expressly to Pricing Assumption Section 3.4.1.1 although the wording reflects aspects of Sections 3.4.1.2 and 3.4.1.3, namely the Infraco Proposals. On a proper construction, I consider that INTC no. 146 is restricted to notification of a Change arising under Section 3.4.1.1.

tie Change Order

140 **tie** issued **tie** Change Order no. 101 on 09 September 2009 with reference to INTC no. 146 and the Estimate. It instructed Infraco to proceed with the Works as it considered they were urgent. **tie** accepts that **tie** Change Order no. 101 is effective pending any further procedure or challenge and both parties accept that it is not a matter disputed in this reference.

141 The **tie** Change Order arises from a Notified Departure and resulting Mandatory **tie** Change. It does not state in terms the basis of the Notified Departure upon which it is based and I do not rely upon the qualified '*Position Paper*' for that information. However, **tie** does dispute whether the matters asserted by Infraco constitute a Notified Departure under Section 3.4.1.1.

142 It follows that **tie** accepts that it has issued a Change Order under the Mandatory **tie** Change provisions which, by definition, must be one of the Notified Departures in Schedule Part 4, save that it denies that Section 3.4.1.1 applies and reserves its position on the application of Section 3.4.1.3 which is not here in dispute.

Other relevant communications

143 At the meeting on 26 March 2009, the SDS Provider said that the additional boreholes, known as L2/BH003, 004 and 005, exhibited '*soft material at depth*' and that this was the reason for changing the design. The experts agree that these boreholes do not show '*soft material at depth*' and that if anything, they show denser material that would tend to support the original design. I note there is apparently shallower soft material but have no further information.

144 **tie** carried out an audit of the SDS Provider in September 2009 and provided summary minutes on 25 September 2009. The most pertinent comment appears to be

‘Drawings were issued at Revision 1 on 19/11/07, based on a ‘best guess’ regarding ground conditions. Draft GI logs (which identified soft ground) were only reviewed after the issue of Rev 1.’

145 No evidence was put forward in this reference to support the view that either the original BDDI design or the new IFC design were technically incorrect on the basis of the information current at the relevant time.

Change

146 The Change between the BDDI and IFC is significant. Applying the definitions adopted above

- i) *‘Design prepared by the SDS Provider will undergo the normal development and completion of design and will not in terms of design principle, shape, form and/or specification be amended from the drawings forming the BDDI (except in relation to Value Engineering).’*
- ii) *‘Normal development and completion of design means those changes that an experienced contractor and his engineer can expect in providing full construction information.’*

I do not consider that a Change from an L shaped wall to a piled cantilever wall is what an experienced contractor would expect in providing full construction information. It is clearly an *amendment* of what is shown on the BDDI drawings. On this analysis, it follows that the Change is outwith Pricing Assumption Section 3.4.1.1.

147 In the alternative, applying the definitions of the exclusionary words adopted above

- i) The *design principle* has changed fundamentally from an L shaped gravity wall to a cantilever wall on piled footings
- ii) The *shape*, being the total effect produced by the outline has changed from L shaped to vertical
- iii) The *form*, being the external appearance has changed, including the below ground ‘*appearance*’
- iv) The *specification*, being the nature and quality of the work has changed insofar as piles are added.

On this analysis also, it follows that the Change is outwith Pricing Assumption Section 3.4.1.1.

148 By definition at Section 2.8 a Notified Departure is qualified ‘*save to the extent caused by a breach of contract by the Infraco, an Infraco Change or a Change in law.*’ No evidence has been advanced to suggest that any of these savings apply and I conclude that they do not.

Conclusion

149 I conclude that the Change to the Foundations being outwith Pricing Assumption Section 3.4.1.1 and not being the subject of any of the saving provisions is a Notified Departure properly notified by INTC no. 146. For reasons explained under Issue 2, I do not consider that the Notified Departure should be construed as including 1050mmØ but 1000mmØ piles. The precise scope of the applicable Change is addressed as Issue 3.

ISSUE 2 – WHETHER THE CHANGES TO THE FOUNDATIONS AND PILING ARE NOTIFIED DEPARTURES AND MANDATORY tie CHANGES

Introduction

150 I repeat the Introduction to Issue 1, amended as necessary. In particular, no evidence was put forward in this reference to support the view that either the original BDDI design or the new IFC design were technically incorrect on the basis of the information current at the relevant time.

151 The ‘Foundations’ are defined above as *‘the change to foundation design of retaining units section 3 to 11 and 15 to 18 from an L shaped footing foundation to cast in-situ concrete piles and pile cap’*; and

The ‘Piling’ is defined as being the change to *‘the diameter, length and number of piles’* to retaining units section 12 to 14 and 19 to 29.

152 There is no dispute that such changes occurred between the BDDI drawings and the IFC drawings.

Change

153 For the reasons set out under Issue 1, I conclude that the Foundations comprise a Notified Departure.

154 As to the Piling in terms of the *‘Normal development and completion of design means those changes that an experienced contractor and his engineer can expect in providing full construction information.’* I consider that it is within the expectations of the experienced contractor that the numbers, diameter and depth of piles would be amended in completing full design information.

155 There is convincing evidence from the meeting on 26 March 2009 that the pile diameter was changed for convenience in construction from 1000mm to 1050mm. For this reason, I do not consider that a change in diameter is part of any potential Notified Change.

156 I apply the reformulated Section 3.4.1.1 to the Changes *‘Design prepared by the SDS Provider will undergo the normal development and completion of design and will not in terms of design principle, shape, form and/or specification be amended from the drawings forming the BDDI (except in relation to Value Engineering).’*

- i) The *design principle* fundamentally remains that of a piled cantilevered wall and so I consider it is unchanged
- ii) The *shape*, being the total effect produced by the outline has changed insofar as the piles are of a greater number and length
- iii) The *form*, being the external *‘appearance’* has changed insofar as the piles are of greater number and length
- iv) The *specification* being the nature and quality of the work remains that of a concrete piled cantilevered wall and I consider it is unchanged

157 The shape and form have been amended significantly from the BDDI drawings and I conclude that the Piling constitutes a Notified Departure.

- 158 I apply Section 3.5 *'If now or at any time the facts or circumstances differ in any way from the Base Case Assumptions (or any part of them) such Notified Departure will be deemed to be a Mandatory **tie** Change'*
- 159 The *facts and circumstances* include the Pricing Assumption Section 3.4.1.1, which in turn relies upon the BDDI drawings. These drawings having been amended in a relevant manner, the Change constitutes a Notified Departure. The actual facts and circumstances, namely the IFC drawings, differ from the BDDI drawings and consequently, the Notified Departure is deemed to be a Mandatory **tie** Change and I so conclude.

Conclusion

- 160 I conclude that the Changes to the Foundations and Piling being outwith Pricing Assumption Section 3.4.1.1 and not being the subject of any of the saving provisions are Notified Departures properly notified by INTC no. 146 and Mandatory **tie** Changes. The precise scope of the applicable Changes is addressed as Issue 3.

ISSUE 3 – VALUE OF CHANGES**Introduction**

161 I have concluded that the Foundations and Piling both constitute Notified Departures but that the change from 1000mmØ to 1050mmØ piles is not part of that Notified Departure. I will comment on other details of the Changes as applicable.

162 The experts did not address the valuation in terms. I was assisted in the meeting on 15 December 2009 by quantity surveyors Graham Angus of Infraco and Donny MacKinnon of **tie**.

163 The Estimate by Infraco of 14 May 2009 as corrected at the meeting on 15 December 2009 is summarised below. The corrections tabled comprise an arithmetic correction of page 2 that previously totalled £77,659.68 and a reduction of Preliminaries from 38.30% to 24.90% being a rate agreed in mediation between the parties.

Page	BDDI	IFC	Change
	£	£	£
1	1,314,679.12	2,690,089.89	1,375,410.77
2	337,493.91	419,489.07	81,995.16
3	705,335.07	721,434.13	16,099.06
	2,357,508.10	3,831,013.09	1,473,504.99
Preliminaries 24.90%			366,902.74
Estimate			1,840,407.73

164 The Estimate by Infraco was not separated as between ‘Foundations’ and ‘Piling’.

165 **tie** takes exception to the adjustments made at the meeting on 15 December 2009 as these were not part of any Estimate submitted under Clause 80.4. As the reference to adjudication includes a request that the Adjudicator decides the proper value of the Estimate, I think it is axiomatic that he would correct any arithmetic errors that became evident in the submissions, provided it did not cause any unfairness to the other party. In this case the corrections are obvious on their face or are agreements; and **tie** had the opportunity to respond if any other issues arose from the corrections. I consider that these corrections are within jurisdiction.

166 The commercial proposal by **tie** on 15 June 2009 comprised

Description	Foundations	Piling
	£	£
Work	559,650.44	311,969.28
Prelims 1 7.40%	41,414.13	23,085.73
Prelims 2 17.50%	97,938.83	54,594.62
	699,003.40	389,649.63
tie allows	100%	75%
Proposal	699,003.40	292,237.22

167 The qualified position paper by **tie** of 15 September 2009 provided an Estimate being in summary

Description		Foundations £	Piling £
Work		561,623.66	-
Prelims 1	7.40%	41,560.15	-
Prelims 2	17.50%	98,284.14	-
Estimate		701,467.95	-

168 The **tie** case is that there are no Notified Departures but that in any event, the Estimate is overvalued. I have used the **tie** response of 15 September 2009 to the Estimate and the build up for the Foundations only submitted with it, to assist in understanding the **tie** objections to the valuation. I do not treat this as an admission of liability. There are some minor arithmetical errors of changes in position in the submissions upon which the decision does not turn.

169 For convenience, I have subdivided the Estimate into elements of ‘Piles’, ‘Earthworks and Drainage’ and ‘Structures’. The Infraco Estimate includes values for all items on an ‘adds and deducts’ basis including those which have not changed; I have omitted the unchanged items from the following tables.

170 The following tables are net of Preliminary costs except as stated.

Method of Valuation

171 The Contract provides

Clause 80.6 The valuation of any tie Changes made in compliance with this Clause 80 (tie Changes) shall be carried out as follows:

80.6.1 by measurement and valuation at the rates and prices for similar work in Appendix F to Schedule Part 4 ... in so far as such rates and prices apply;

80.6.2 or ... at rates and prices deduced therefrom ... ;

80.6.3 or ... fair rates and prices in accordance with Appendix G Schedule Part 4 ... ;

80.6.4 ... the value of the resources and labour employed thereon ... ;

provided that where [timing makes Clauses 80.6.1 or 80.6.2] unreasonable .. fair rates and prices

172 Appendix F includes ‘unit rates’ for various activities on the different structures. The parties agree that these rates are not intended to add up to the Contract Price but are for the valuation of Changes.

173 Appendix G provides for an ‘actual cost plus overhead’ valuation method. Neither party relied expressly upon this provision.

Piles

174 This comprises the ‘Piles’ for both the ‘Foundations’ and ‘Piling’ parts of the Estimate.

175 The Infraco Estimate is as follows

item	Piles description	BDDI qty	BDDI £/unit	IFC qty	IFC £/unit	BDDI £	IFC £	Infraco £
001	est 600 rig	1.00	9,714.99			9,714.99	-	9,714.99
001b	est 1050 rig			1.00	17,001.23	-	17,001.23	17,001.23
002a	move 1000 rig	112.00	196.26			21,981.12	-	21,981.12
002b	move 1050 rig			245.00	206.07	-	50,487.15	50,487.15
003	pile 1000 dia	739.00	274.76			203,047.64	-	203,047.64
003a	pile 1050 dia			2,670.00	288.50	-	770,295.00	770,295.00
003b	pile 1050 restrict			351.00	432.75	-	151,895.25	151,895.25
004a	rebar 1000 dia	231.00	1,045.19			241,438.89	-	241,438.89
004b	rebar 1050 dia			683.65	1,045.19	-	714,544.14	714,544.14
005	proof load 1000	10.00	5,551.42			55,514.20	-	55,514.20
005a	proof load 1050			29.00	5,551.42	-	160,991.18	160,991.18
Total								1,333,517.11

176 The **tie** Estimate for the ‘Foundations’ only shows as follows.

item	Piles description	tie qty	tie £/unit	tie £
002b	move 1050 rig	117.00	34.69	4,058.73
003a	pile 1050 dia	1,404.00	406.21	570,318.84
004a	rebar 1000 dia			inc
005	proof load 1000			inc
Total				574,377.57

177 Where piles are shown on the BDDI drawings they are 1000mmØ and on the IFC drawings 1050mmØ.

Establish rig

178 Appendix F provides rates for establishing piling plant for 600mmØ piles at Russell Road of £9,714.99; and for establishing piling plant for 900mmØ piles at Water of Leith of £70,959.87. It appears to be common ground that Water of Leith involved substantial temporary works and I conclude that the rate can be discounted.

179 Infraco says that it has prorated $£9,714.99 \times 1050 / 600 = £17,001.23$. **tie** says the rate should not increase. As the IFC drawings show 1000mmØ piles that size is deemed to be included in the Contract Price. I have concluded already that the 1050mmØ piles are not a Notified Departure from the 1000mmØ piles. For the avoidance of doubt, the establishment charge applies once to the whole of the Russell Road Wall irrespective of the amount of piling required. It follows that the original establishment charge applies and the value of the Change is **NIL**.

Move rig

- 180 The number of piles in Sections W4B and W4D, the ‘Piling’ increased from BDDI drawings at 112no. to IFC drawings at 126 no. The number of piles in Sections W4A and W4C introduced in the IFC drawings was 117 no.
- 181 It follows that the Contract Price includes for 111 no. moves of the rig for piles of the size shown on the IFC drawings, namely 1000mmØ. I have concluded already that the Notified Departure only applies to a ‘Change’ to 1000mmØ. It follows that the additional rig moves should be valued for that size.
- 182 Notwithstanding that the Contract Price includes for 1000mmØ piles, Appendix F gives a price for rig moves for a 600mmØ pile at Russell Road of £34.69 each. **tie** says this is the rate that should apply. Infraco says that the rate that should apply is to be based on prorating the rate for moving the rig for a 900mmØ pile at Water of Leith; it allows an addition of £206.07 each for 1050mmØ shown at IFC and deducts £196.26 each for 1000mmØ shown at BDDI.
- 183 I agree with Infraco that the rate for the additional rig moves should be increased but say that it should be appropriate to a 1000mmØ pile, not 1050mmØ. I agree that amendments to the Contract Price are on the basis of the prices and descriptions in Appendix F not the BDDI drawings, which may differ; although for reasons explained below, this must be looked at in context.
- 184 **tie** says that the starting point must be the rates for Russell Road and these should only be departed from if there are no relevant rates. It says the rates for Water of Leith do not apply because
- iii) It is for a different type of cased pile
 - iv) The environmental conditions are completely different; it being over water
 - v) The number of piles is different, there being only 4 no.
- 185 Infraco says that the rate for Water of Leith more accurately reflects the work involved as it is for piles exceeding 15m; the environmental point is fair comment but that the method of working would be to create a platform so that the work was effectively in the dry; and there were in fact 12no. piles at BDDI.
- 186 It is clear from the price for establishment at Water of Leith that a substantial amount of temporary works was allowed. I was told this included access roadways as well as a platform. I agree this would tend to negate the environmental issues. The number of piles shown on IFC drawing is 4 no.; I have not seen the BDDI drawings.
- 187 The rate for moving rig location will be a function of diameter of pile, the amount of ancillary equipment and the ease of access. The number of piles is not a significant consideration for moving the rig.
- 188 I accept that the rate for moving a 1000mmØ rig should prorate from the rate for the 600mmØ rig; and that the approximate doubling in depth will result in a further increase for ancillary equipment, which I assess at 25%. The resulting rate is rate is $£34.69 \times 1000 / 600 \times 1.25 = \mathbf{£72.27 \text{ each}}$ for 126 plus 117 less 112 being 131 no. additional moves.
- 189 The rate is some 35% of the rate claimed by Infraco, based on the Water of Leith prices. I do not consider that surprising taking into account the differences in conditions and the nature of the work at that location.

Pile

- 190 **tie** shows an increased quantity of 117 no. piles 12m long being 1,404m for the ‘Foundations’ only.
- 191 Infraco shows total lengths at IFC of 2,670m plus 351m with restricted access being 3,021m; less 739m at BDDI; being a net increase of 2,282m.
- 192 IFC drawing 00030 provides a table of piles from which I calculate the ‘Foundation’ length of 1,436.50m and the ‘Piling’ length of 1,638m being in total 3,074.50m at IFC; and the BDDI drawings 0041, 42, 51, 52 and 53 provide the lengths of ‘Piling’ piles of 739.20m, all as follows

unit no.	IFC	IFC	IFC	IFC	BDDI	BDDI	BDDI
	length m	pile nos.	W4A / W4C total m	W4B / W4D total m	length m	pile nos.	W4B / W4D total m
3	9.50	10	95.00				
4	11.50	10	115.00				
5	11.50	10	115.00				
6	11.50	10	115.00				
7	11.50	10	115.00				
8	11.50	10	115.00				
9	11.50	9	103.50				
10	13.00	8	104.00				
11	13.00	7	91.00				
12	13.00	9		117.00	6.6	8	52.80
13	13.00	9		117.00	6.6	8	52.80
14	13.00	9		117.00	6.6	8	52.80
15	13.00	9	117.00				
16	13.00	9	117.00				
17	13.00	9	117.00				
18	13.00	9	117.00				
19	13.00	9		117.00	6.6	8	52.80
20	13.00	9		117.00	6.6	8	52.80
21	13.00	9		117.00	6.6	8	52.80
22	13.00	9		117.00	6.6	8	52.80
23	13.00	9		117.00	6.6	8	52.80
24	13.00	9		117.00	6.6	8	52.80
25	13.00	9		117.00	6.6	8	52.80
26	13.00	9		117.00	6.6	8	52.80
27	13.00	9		117.00	6.6	8	52.80
28	13.00	9		117.00	6.6	8	52.80
29	13.00	9		117.00	6.6	8	52.80
Total		246	1,436.50	1,638.00		112	739.20

- 193 Appendix F provides a rate for 600mmØ piles inclusive of reinforcement of £232.12/m length. **tie** proposes to prorate this as $£232.12 \times 1050 / 600 = £406.21/m$. I consider this is incorrect in principle. Some costs will increase proportionately with size but others such as the volume of concrete increase as the square as identified by Mr Hunt. I average these effects and increase by the 3/2 power of the change in size. For a 1000mmØ pile the rate becomes $£232.12 \times (1000 / 600)^{1.5} = £499.44/m$. Having regard to the extent of this extrapolation, I wish to corroborate this rate.

194 Infraco proposes prorating using the piling rate from Water of Leith of £247.29/m for a 900mmØ pile; plus £1,045.19/t for reinforcement as for walls. There appears to be no logical reason for using the wall reinforcement rate as opposed to the rate for reinforcement in piles at Water of Leith of £918.49/t. As in the calculation, above, I use the 3/2 power of the change in size to adjust the piling rate. The quantity of reinforcement appears to be of the correct order and I do not adjust it. Ignoring for the moment the increased rate claimed by Infraco for restricted access and the deduction for original piles I calculate

- i) Piles $3,074.50\text{m} \times (\text{£}247.29/\text{m} \times (1000 / 900))^{1.5}$ being £289.63/m) = £890,467.44
- ii) Reinforcement $683.65\text{t} \times \text{£}918.49/\text{t} = \text{£}627,925.69$

Being in total £1,518,393.13 for 3,074.50m; being **£493.87/m**

195 In response to the original proposal by Infraco, **tie** says that the rates are inappropriate because the Water of Leith piles are encased and there will be a significant difference in the economies of scale between Water of Leith with 4 no. piles and Russell Road with some 246 no. It says there is no ‘*economy of scale*’ as matters such as establishment and moving between piles are separately rated. Infraco also says that at BDDI there was no information concerning the reinforcement and so it should be measured. In response to my question as to the measure of the ‘*economy of scale*’, Donny MacKinnon of **tie** was unable to provide a figure.

196 As I have arrived at a very similar rate using an adjusted prorating of the Russell Road rate and of the Water of Leith rates, I consider that the latter is apt to be used, as set out above.

Restricted Access

197 Infraco claims an additional rate of £144.25/m for 351m of pile being £50,631.75 for piling with restricted access. I have no details or explanation as to why this applies and value as **NIL**.

Proof Loading

198 Appendix F provides an ‘Item’ rate of £5,551.42 for Proof Loading. **tie** says there are no further requirements. Infraco says that the original allowance was 10 no. and the new requirement is 29 no., being one per section, albeit correctly only 27 no. are piled.

199 I consider that the ‘Item’ for Proof Loading is a one off charge and there is no evidence that it would be charged per section. I value this item as **NIL**.

Conclusion

200 The piling values are as follows

item	Piles description	Foundations			Piling			Total
		Adj qty	Adj £/unit	Adj £	Adj qty	Adj £/unit	Adj £	
002a	move 1000 rig	117.00	72.27	8,455.59	14.00	72.27	1,011.78	9,467.37
003	pile 1000 dia	1,436.50	493.87	709,444.26	898.50	493.87	443,742.20	1,153,186.46
004	rebar 1000 dia	inc		-	inc		-	-
005	proof load 1000	inc		-	inc		-	-
Total				717,899.85			444,753.98	1,162,653.83

Earthworks and Drainage

201 The Infraco Estimate is as follows

item	Ewks/drains description	BDDI qty	BDDI rate	IFC qty	IFC rate	BDDI amount	IFC amount	Infraco amount
006	exc acceptable	4215.00	7.58			31,949.70	- -	31,949.70
006a	exc unacceptable			4462.00	6.07	-	27,084.34	27,084.34
006b	exc unacc ddt			-845.00	6.07	- -	5,129.15 -	5,129.15
007	deposit in tip	4215.00	7.58			31,949.70	- -	31,949.70
007a	deposit off site			4462.00	17.07	-	76,166.34	76,166.34
007b	deposit tip ddt			-845.00	17.07	- -	14,424.15 -	14,424.15
008	import 6N	8153.00	37.50	8396.00	37.50	305,737.50	314,850.00	9,112.50
009	compact 6N	8153.00	0.51	8396.00	0.51	4,158.03	4,281.96	123.93
010	vertical drain	855.00	13.23	913.00	13.23	11,311.65	12,078.99	767.34
Total								29,801.75

202 **tie** says that the changes in the Earthworks are not significant but that any amendment is to the advantage of Infraco; and the Drainage would have been required in any event. Infraco has not provided calculations and **tie** merely values as nil.

Excavate and dispose

203 Infraco apparently says that at BDDI it was to excavate acceptable material and place in a tip on site 4,215m³; and that at IFC it was to excavate 4,462m³ of unacceptable material and dispose off-site of which 845m³ is temporary works allowed elsewhere; at an additional cost of £19,797.98.

204 I conclude that the issue of unacceptable material concerns the contamination that the parties have agreed to measure separately as it arises and I leave it to be so valued, as it is outside the present dispute. The overall increase in excavation of 247m³ is a function of the increased depth to bottom of the pile cap as compared to the L shaped base; see also the comments below. I allow this at the rate for excavate acceptable and stockpile in tip on site of £7.58 plus £7.58; being in total **£3,744.52**.

Import and Compact

205 Infraco apparently says that the importation and compaction of 6N fill has increased from 8,153m³ to 8,396m³ at an additional cost of £9,236.43.

206 The 6N material is placed as an approximate wedge behind the Retaining Wall to make up levels for the tram line.

- i) In Sections W4B and W4D where there were always piles, an additional quantity arises as a result of applying a minimum depth of 6N fill of 1000mm underneath the tram line where it would otherwise taper to zero.
- ii) In Sections W4A and W4C where piles have been introduced, the wedge follows the same sloping profile but goes deeper to reach the underside of the pile cap. Allowing for the absence of the L shaped base, the net effect is an increase in the quantity of 6N fill.

207 It appears that the first increase has nothing to do with the Notified Departure but, in all probability,

constitutes compliance with part of the Employer’s Requirements for settlement. The second increase is a direct consequence of the introduction of piles, the ‘Foundation’ claim. I calculate as follows

- i) Units 3 to 11 - calculated from the area of blinding, the total area under the L shaped bases is 347.80m². The additional excavation to the side of the base scales 500mm wide over a length of 100.96m being 50.48m². The total area at base level is thus 398.28m². The area to the side of the base of the pile cap scales 1.250m over a similar length being 126.20m². The average area is thus 262.24m² and the additional depth is 0.650m giving a volume of 170.46m³.
- ii) Units 15 to 18 calculated from the area of blinding, the total area under the L shaped bases is 208.60m². The additional excavation to the side of the base scales 500mm wide over a length of 44.92m being 22.46m². The total area at base level is thus 231.06m². The area to the side of the base of the pile cap scales 1.250m over a similar length being 56.15m². The average area is thus 143.61m² and the additional depth is 0.500m giving a volume of 71.80m³.

208 The total additional volume is thus 242.26m³ which compares to the 243m³ claimed by Infraco. I conclude it has not included the additional quantity under the tram line as suggested above and allow as claimed **£9,236.43**.

Vertical Drain

209 I agree with **tie** that this is not associated with the Notified Departure and allow **NIL**.

Conclusion

210 The Earthworks and Drainage items are in summary

item	Ewks/drains Description	adj qty	adj £/unit	adj £
006	exc acceptable	247.00	7.58	1,872.26
007	deposit in tip	247.00	7.58	1,872.26
006a	exc unacceptable			nil
008	import 6N	243.00	37.50	9,112.50
009	compact 6N	243.00	0.51	123.93
010	vertical drain			nil
Total				12,980.95

Structures

211 The Infraco Estimate is as follows

item	Structures description	BDDI qty	BDDI rate	IFC qty	IFC rate	BDDI £	IFC £	Infraco Change £
012	concrete 32/40	1243.00	141.77	1240.00	141.77	176,220.11	175,794.80	- 425.31
013	blinding	70.00	142.95	44.00	142.95	10,006.50	6,289.80	- 3,716.70
014	fwk f1 > 300	3002.00	55.51	3280.00	55.51	166,641.02	182,072.80	15,431.78
015	2 coats bitumen	2609.00	6.89	2667.00	6.89	17,976.01	18,375.63	399.62
016	surface impreg'	1268.00	6.94	1326.00	6.94	8,799.92	9,202.44	402.52
018	rebar wall	248.60	1,045.19			259,834.23	-	- 259,834.23
018a	rebar wall and pile caps	0.00		327.05	1,045.19	-	341,829.39	341,829.39
029a	fwk f8	1269.00	277.57	1327.00	277.57	352,236.33	368,335.39	16,099.06
Total								110,186.13

212 **tie** calculates as follows for the Foundations alone

item	Structures description	tie qty	tie rate	tie £
012	concrete 32/40	7.33	141.77	1,039.17
013	blinding	-	27.82	142.95
014	fwk f1 > 300	30.29	55.51	1,681.40
015	2 coats bitumen	58.00	6.89	399.62
016	surface impreg'			-
018	rebar wall			-
018a	rebar wall and pile caps	-	11.38	1,045.19
029a	fwk f8			-
Total				- 12,750.94

General

213 The main differences arise in Sections W4A and W4C in which L shaped wall units are replaced by vertical cantilever walls on pile caps. The wall stems, down to either top of base or top of pile cap whichever applies, are not amended. The starter bars below this level change slightly to lap into the lower element. The height of the wall stem remains the same.

Concrete and blinding

214 The net difference between the parties is not significant and I allow a reduction of £3,500.00.

Reinforcement

215 I have general arrangement and reinforcement drawings for all the units and some reinforcement schedules. Infraco has not provided calculations to support the Estimate increase in reinforcement. **tie** has provided tabulated re-measurements of the BDDI and IFC reinforcement for the bases but not the wall stems to Sections W4A and W4C. I concluded above that the wall stems are sensibly unchanged.

216 I have checked at random two bases scheduled by **tie** and inspected the remainder. Subject to the occasional typo, I am satisfied that they are correct and correspond with the drawings and schedules provided by Infraco. It follows that I accept the reinforcement weights provided by **tie** for Sections W4A

and W4C being at BDDI 75.65t and at IFC 64.27t; being a reduction of 11.38t.

- 217 In the other Sections W4B and W4D there are amendments between BDDI and IFC. As far as I can see these amount to changing the position of laps between bars and similar rationalisation to assist in construction rather than changes in the weight of reinforcement.

Formwork

- 218 Infraco shows a net increase of formwork of 278m² of f1 and 58m² of f8; **tie** shows an extra 30m² of f1 and provides a schedule of areas for the bases only to Sections W4A and W4C.

- 219 The f8 is a feature finish to the outward face of the wall stem. It is not apparent that the controlling dimensions have changed between BDDI and IFC. The lower edge of the detail is related to finished ground level and I have no evidence that these have changed; and the horizontal extent appears unchanged.

- 220 It is not apparent that there is any increase in formwork to Sections W4B and W4D. The increase in f1 formwork to Section W4A and W4C reflects the depth of the pile cap of 1000mm compared to the L shaped base of 350mm for units 3 to 11 and 500mm for units 15 to 18. It appears that the **tie** schedule only includes for a single face at IFC, whereas two are required; the corrected difference being.

i)	Units 3 to 11 total length 101.00m x (1.000 – 0.350) x 2 =	131.30m ²
ii)	Units 15 to 18 total length 44.92m x (1.000 – 0.500) x 2 =	44.92m ²
	Total difference	176.22m ²

- 221 I conclude that the f1 formwork has increased by 176.22m² at a rate of £55.51/m² being £9,781.97; and that there is no increase in f8 formwork.

Waterproofing and Surface Treatment

- 222 The parties differ only on the additional area of surface impregnation, which **tie** does not allow.
- 223 There is a note on both the IFC and BDDI drawings requiring 'All exposed concrete surfaces shall be impregnated with pavix.' Infraco shows an increase of 58m² of surface impregnation, which appears to correspond with the stated change in area of f8 formwork. For the reasons stated above, I cannot find any increase in f8 formwork and consequently no increase in surface impregnation.

Conclusion

- 224 The Structures items are in summary

item	Structures description	adj qty	adj £/unit	adj £
012	concrete 32/40			inc
013	blinding			- 3,500.00
014	fwk f1 > 300	176.22	55.51	9,781.97
015	2 coats bitumen	58.00	6.89	399.62
016	surface impreg'			nil
018a	rebar wall and pile caps	- 11.38	1,045.19	- 11,894.26
029a	fwk f8			nil
Total	deduction			- 5,212.67

Summary

225 The value of the Estimate as adjusted above is as follows

description	Foundations £	Piling £	Total £
Piles	717,899.85	444,753.98	1,162,653.83
Earthworks and Drainage Structures	12,980.95		12,980.95
	- 5,212.67		- 5,212.67
Subtotal	725,668.13	444,753.98	1,170,422.11
Preliminaries	24.90% 180,691.36	110,743.74	291,435.10
Total	906,359.49	555,497.72	1,461,857.21

Jurisdiction

226 Infraco says that it understood from a ‘*Position Paper*’ provided by **tie** as part of the internal dispute resolution procedure that **tie** accepted that the Change to the Foundations was an amendment ‘*from the drawings forming the Base Date Design Information and Infraco proposals as a consequence of the requirements of any Approval Body*’ under Schedule Part 4 – Pricing – Section 3.4.1.3. Infraco says that I do not have jurisdiction to decide whether or not the Foundations were the subject of a Change under Section 3.4.1.3 as it is not disputed in this reference. Furthermore, Infraco says that the Change took place when the SDS Provider was contracted to **tie**; as **tie** said it was the result of the requirement of an Approval Body, Infraco accepted that view.

227 **tie** says that I do not have jurisdiction to value any **tie** Change arising under Section 3.4.1.3 being ‘*as a consequence of the requirements of any Approval Body*’. It says this was not a matter referred to Adjudication. **tie** notes that the ‘*Position Paper*’ includes an express reservation of the **tie** position. Neither party suggested any privilege attached to the document.

228 As noted above, the **tie** Change Order no. 101 includes changes to the Foundations and Piling. It does not state a reason for the changes.

The Dispute

229 The Dispute in this reference set out earlier can be characterised as follows

- i) Infraco seeks a declaration that a Change in the Foundations is a Notified Departure under Section 3.4.1.1. Infraco contends in its Referral that this is in addition to this Change being a Notified Departure under Section 3.4.1.3 as required by an Approval Body.
- ii) Infraco seeks a declaration that Changes to the Foundations and Piles are Notified Departures and Mandatory **tie** Changes. Infraco contends in its Referral that the Change to the Piling is a Notified Departure under Section 3.4.1.1 although it also argues that the Changes to the Foundations and Piling were required to deal with ‘*soft material*’ which is a Specified Exclusion under Section 3.3c)
- iii) Infraco seeks a declaration as to the value of each Change.

- 230 The **tie** position is that I have jurisdiction to value a Change only if I decide that it arises for the reason contended for by Infraco. It denies that the Changes arise from an amendment of the BDDI drawings under Section 3.4.1.1 or from the discovery of soft material under Section 3.3c) or from the requirement of an Approval Body under Section 3.4.1.3. It says that if I find against Infraco on the first two issues being the matters in dispute, I cannot value a Change arising from the requirement of an Approval Body merely because tie issued a Change Order, as it is not a matter disputed in this reference.
- 231 **tie** relies on the judgment in *Quartzelec Ltd v Honeywell Control Systems Ltd* [2008] EWHC 3315 (TCC) to say that it can rely on any defence in this reference.
- 232 Infraco says that this is mistaken as the authority relates only to a defence to a matter in dispute and, on its case, there is no dispute that the Change to the Foundations is the result of the requirement of an Approval Body. Infraco says that the tie caveat in the ‘*Position Paper*’ cannot change what it says is the fundamental dispute being that tie had instructed Infraco to proceed with the Changes and only the value was to be agreed.

Discussion

- 233 The operative documents are the Infraco Notice of Change no. 146, the Estimate and the Change Order. INTC no. 146 is expressly in terms of Section 3.4.1.1 being an amendment in Design between the BDDI drawings and IFC drawings. The Estimate is silent as to cause but relates directly to the INTC. The Change Order is also silent as to cause but refers to both the INTC and Estimate.
- 234 Infraco says in effect that it was misled by the ‘*Position Paper*’, which post-dated the INTC and the Estimate. In any event, I see no reason why **tie** should not rely upon its reservation of position in the ‘*Position Paper*’ and argue that it did not accept that the Change arose as a result of the requirement of an Approval Body.
- 235 Taken at its simplest, the third element of the dispute merely asks the value of the Changes. However, on a proper reading the Infraco Notice of Change no. 146, the Estimate and the Change Order no. 101 expressly relate to changes under Pricing Assumption Section 3.4.1.1. It follows that I would not have jurisdiction to find that the Changes were as a result of an Approval Body under Pricing Assumption Section 3.4.1.3. It further follows that the Changes for which values are sought in the third element of the dispute can only refer to Changes arising under Pricing Assumption 3.4.1.1.

Conclusion

- 236 I do not have jurisdiction and do not value Changes, if any, resulting from approval of an Approval Body under Pricing Assumption Section 3.4.1.3.

DECISION

237 In reaching my Decision, I have taken account of all other matters in the submissions made by the parties and for the reasons set out above,

238 **I DECLARE**

ISSUE 1

The Change to the Russell Road Retaining Wall Two sections W4A and W4C, namely from 'L' shaped gravity structure to a cantilever wall on piles, constitutes a Notified Departure in terms of Schedule Part 4, Section 3.4.1.1.

ISSUE 2

The Changes to the Russell Road Retaining Wall Two

- i) at sections W4A and W4C, namely from 'L' shaped gravity structure to a cantilever wall on piles; and
 - ii) at sections W4B and W4D, namely changes in the number, size and length of piles
- constitute Notified Departures and deemed Mandatory **tie** Changes

ISSUE 3

The value of the Changes inclusive of Preliminary costs but excluding VAT are

- i) sections W4A and W4C £906,359.49
- ii) sections W4B and W4D £555,497.72

NOTES

- i) The parties did not ask me to direct payment of the sums stated above. However, I consider that it is axiomatic that the parties are obliged to implement the Decision under the terms of the Contract forthwith pending final resolution or agreement; and I so direct.
- ii) As a matter of jurisdiction, I was asked whether my Decision on Issue 3 applied in the event that the Notified Change was not under Section 3.4.1.1 but Section 3.4.1.3. I conclude that I do not have jurisdiction to value a Notified Change under Section 3.4.1.3.

I DIRECT

239 Without prejudice to the joint and several liability, Infraco having been largely successful in this reference, on the basis of costs following the event, **tie** shall pay my fees and expenses of £12,850.00 plus VAT in accordance with HM Revenue and Customs Regulations on or before 18th January 2010.

Signed

Alan E Wilson
04 January 2010