

### **3 Section Three – Factual Background**

- 3.1 The following summary of the factual background is derived from the Statement. Since no objection was taken to it by either Party, we take it to be accurate and adopt it for the purposes of this determination.

#### The initial connection

- 3.2 In 1986, the Quinn Group funded an electrical connection, comprising two separate 33kV lines, between NIE's transmission substation in Enniskillen and its manufacturing facilities in Gortmullan, Derrylin (the maps at Appendix 2 to the Statement show the location of the substation, the facilities and the existing overhead lines). This double supply circuit had a capacity of approximately 17MVA.
- 3.3 The Quinn Group initially discussed connection upgrade options with NIE in 1997, in the context of agreeing terms for connecting the new Quinn Glass plant to the system. However, as part of the Quinn Cement plant was in the process of being mothballed – thus freeing up some existing capacity – the Quinn Group did not proceed with reinforcement work at that time.

#### Discussions commencing in 2002

- 3.4 In 2002, the Quinn Group informed NIE that it wanted to re-energise that part of the Quinn Cement plant which had been mothballed, and also that it wanted to increase electricity demand at the Quinn Glass plant. This required an increase in capacity to 22MVA. The Quinn Group also expressed concerns to NIE regarding the quality of the supply at Derrylin.
- 3.5 With regard to the latter, NIE (REDACTED) wrote to the Quinn Group (REDACTED) on 9 October 2003 regarding supply disturbances at the Quinn Glass plant (Volume B, Tab 27). This letter stated –

"As I said at the meeting, the proposed third 33kV line to increase capacity would not enhance power quality. The only proposal that would make a significant contribution to power quality would be an 110kV solution which would isolate Quinns from faults on the local distribution network. I know you have been talking to our planners about increased capacity and I have asked [REDACTED], our Network Planning Manager, to contact you to discuss this further.

As promised at the meeting I have sent [REDACTED] some information on equipment which can improve power quality. I would be more than happy to assist in any discussions that you may wish to have with suppliers of such equipment and to provide any information they may require.”

3.6 Graphs and input data showing recorded voltage dips at the Quinn Cement plant between January 2002 and October 2003 are also included in the Bundle (Volume B, Tab 28).

3.7 On 22 April 2004, NIE met with the Quinn Group to discuss connection upgrade options. Follow-up correspondence from NIE dated 13 May 2004 makes clear that, during this meeting, the Quinn Group indicated its intention to increase its wind farm generation at Slieve Rushen to a significant degree (i.e. by 60+MW) (Volume B, Tab 29). The letter from NIE goes on to state –

“You will appreciate that this level of future generation adds a significant extra dimension to your connection requirements. ...

Initial investigations have indicated that the minimum development that could accommodate both your demand and generation is the complete upgrading of at least one of the 33kV circuits between Enniskillen and Gortmullan to 110kV.”

3.8 Discussions continued between the Parties. On 25 June 2004, the Quinn Group (REDACTED) sent an email to NIE (REDACTED and REDACTED) summarising the status of those discussions (Volume B, Tab 30). It states –

“Below is a summary of the current ongoing discussions between the Quinn Group and NIE. I have summarised them in one e-mail as they are ultimately part of the requirement for the new connection to the Quinn Group. ...

#### QUINN GROUP NEW CONNECTION

Following an internal meeting our preferences on the new connection can be detailed as follows:

##### Option 1: Upgrade of existing 33kV Lines

We feel that this option has no long-term benefit as the 22MVA available from this option will only satisfy the Quinn Group present requirements and will have no future spare capacity. This will ultimately curtail any Quinn Group expansion in the Derrylin area.

##### Option 2: Upgrade/replace two 33kV lines with 110kV lines

This is the best and most preferred option as it provides the Quinn Group with a large enough supply for any possible future expansion. It also has the benefit of providing a more stable and secure supply which is a requirement of Quinn Glass.

However the cost of this option is deemed to be excessive and a more detailed cost breakdown of this option is required prior to any decision being made.

Option 3/3a: Upgrade/replace a single 33kV line to a 110kV line

Option 3 while being an interesting alternative to option 2 has a number of operational and technical issues associated with it, namely:

It only provides for 22MVA of secure supply which is essentially the same as option 1.

In times of 110kV maintenance or outage the Quinn Group would have to load manage and curtail production in some of their operations.

It is a more complex system and will require a great deal of monitoring and control, which will need to be fully proven before being put into operation.

While not being the favoured option, the obvious cost savings offered by option 3 when compared to option 2 deem it necessary to further investigate option 3.

To move the connection of [sic] to the next stage I would be grateful if you could provide us with the following

- (1) A more detailed cost breakdown on the option 2 and option 3.
- (2) A proposal on how to progress the technical feasibility study of option 3.

#### QUINN CEMENT START-UP

...

#### QUINN GROUP NEW WINDFARM

The Quinn Group intend to progress the application for a connection agreement for the new windfarm. ...

I would be grateful if you could inform me of the best route to take to get the application started and in particular if you could advise me of any feasibility studies that may need to be carried out to progress the application.

Obviously the connection to the windfarm will need to be considered in the context of the above issues."

3.9 This correspondence was deemed by NIE to be a combined connection application in respect of increased demand at the Quinn Glass and Quinn Cement plants and the wind farm generation connection at Slieve Rushen (Volume C, Tab 79).

3.10 NIE held a series of project meetings with the Quinn Group in order to confirm its precise requirements. The minutes of a project meeting between NIE and the Quinn Group on 30 July 2004 (Volume B, Tab 31) state –

“Sean Quinn have no interest in the uprated 33kV lines proposal (Option 1). Sean Quinn prefer the 2 x 110kV line option (Option 2) and want better costs. They recognise that it is expensive, but NIE are challenged to minimise cable route costs in the estimate. An estimate which gives a range of cost depending on cable route out-turn is acceptable.

Option 3 line costs are also to be appraised. E-Connect will review the cost estimates for realism of other cost elements.”

3.11 Copies of correspondence and other exchanges between the Parties, dating from 26 August 2004 to 20 September 2004, are included in the Bundle (Volume B, Tabs 32-34). They relate to the connection upgrade options and, specifically, to scoping and investigating Options 2 and 3.

3.12 In October 2004, the mothballed part of the Quinn Cement plant was re-energised, and an automatic load shedding scheme was implemented on the Quinn Group’s double supply circuit in order to provide approximately 7MVA of additional non-firm load capacity.

3.13 The minutes of a project meeting between NIE and the Quinn Group on 25 October 2004 (Volume B, Tab 35) state –

“[REDACTED] stated that the primary purpose of the meeting was to ensure that Quinn’s and Bullen’s were agreed on the way forward in the desktop study/EIA. ...

EIA

Prior to Bullen’s presentation [REDACTED] stated that the case of need would have to be clearly established for any public forum or planning application. Quinn’s are best placed to identify the need for increased demand and generation exit capability.

NIE are currently examining line ratings and [REDACTED] suggested that because this portion of the 33kV system is operated in a similar way to transmission the rating may be close to 30MW for

a day. Voltage issues are nonetheless a problem. [REDACTED] suggested that newer technology VSC devices either single or multiple may resolve the issue, allowing close to the full thermal capacity to be gained. For this reason there may be some difficulty looking at load growth alone as the case for need. Taking the growth in wind generation into account would allow need for 110kV to be unambiguously stated.”

3.14 On 31 October 2004, the Quinn Group (REDACTED) sent an email to NIE (REDACTED) (Volume B, Tab 36). This email stated as follows –

“Identifying the Need.

In the discussions with NIE over the past number of years, the upgraded 33kV line option has always been presented by NIE as having a capacity of approximately 22MVA. During our last meeting it was suggested that the 33kV upgrade has the capability to provide the Quinn Group with possibly up to 30MVA. It was also suggested that since the 33kV upgrade could provide the Quinn Group with a supply in excess of its present needs, that the current shortfall in supply capacity to the Quinn Group could not be used as the prime reason for the use of a 110kV supply to the Quinn Group.

This apparent change in the capabilities of a 33kV upgrade is of great concern to the Quinn Group. [REDACTED] and the Board of Directors, based on information provided by NIE, have been briefed over the past number of years that the capability of an upgraded 33kV supply would be limited to 22MVA and therefore have based some important strategic and financial decisions on this information.

We would therefore ask you to clarify the following:

- (1) What is the exact capacity of a 33kV upgrade.
- (2) What power quality improvements could we expect from a 33kV upgrade.
- (3) If a 33kV supply upgrade can provide in excess of 22MVA, why has this not been communicated to the Quinn Group prior to this.”

3.15 On 2 November 2004, NIE (REDACTED) responded to the Quinn Group (REDACTED) (Volume B, Tab 37). Among other things, this letter stated –

“At the meeting with [REDACTED], [REDACTED] and [REDACTED] on 22<sup>nd</sup> of April, SQG’s connection requirements were significantly altered in that the need to accommodate over 80MW of wind generation was introduced. Also, at our subsequent meeting on the 28<sup>th</sup> of May we discussed various options to provide for this. At that meeting, [REDACTED] also suggested that, rather than limiting your demand requirement to 22MVA some additional demand should be catered for. A figure of 25MVA was discussed at that meeting. Clearly, if this is considered

alongside a supply arrangement that is required to support 80MW of wind an increase from 22MW to 25MW is of limited consequence. On its own however, there could be a 33kV solution based upon a probabilistic circuit rating and a guaranteed response time. This response time would be necessary because the rating is only allowable for a defined period. This logic resulted in the 30MW figure being tabled at our last meeting.

You are concerned that this information was not provided previously. The reason that it was not previously tabled was –

- (a) that until recently it was outside the scope of your 22MVA demand requirements;
- (b) the industry, in general, is only now considering probabilistic circuit rating models.

Offering a supply capability of up to 30MVA is also problematic in terms of voltage performance.

The thermal capacity of lines leading to Sean Quinn is presently 16MVA. Subject to the caveat above, it may be possible to increase the thermal capacity to about 30MW by uprating the first sections out of Enniskillen. However, to do so would worsen the voltage step at Gortmullan because under circuit outage conditions more current would immediately be travelling on a single long route leading to a sudden voltage drip. I suggested, at our last meeting that with modern Flexible A.C. Transmission Systems Technology (FACT's) it may be possible to correct the step change. It may not be economic to do so; that would need to be investigated. ...

#### Sustaining the need for a 110kV Supply arrangement

At the meeting last Monday, my concern, which I staged clearly, is that we (Quinns and NIE) must be able to demonstrate in a public forum the need for a 110kV solution. I am not trying to depreciate the case for 110kV, merely to challenge it robustly so that we are all confident that, as we go forward, the public case has a high degree of certainty. This co-operative working will save both time and money. The principle [sic] issue is, "Will the 110kV option stand up against the 33kV uprating?" The case is obvious when the wind farm is included. Newer FACT's devices may call this into question if the wind farm is not constructed and the Quinn load + Derrylin is less than the thermal rating of the circuits. I will restate that the FACT's solution may not be optimal, but if it avoids a 110kV circuit being built through the landscape it may be an impediment to the desired result."

- 3.16 A copy of a NIE report entitled 'Quinn Group Supply' is included in the Bundle (Volume B, Tab 38). This report sets out the project objectives and assesses the available connection upgrade options by reference to various network studies completed.
- 3.17 A copy of a report prepared for NIE by Econnect entitled 'Quinn Group Wind Farm Network Solution Study' dated 17 December 2004 is also included in the Bundle (Volume B, Tab 39).

### The development of the SEM

- 3.18 On 31 March 2005, the Authority and the Commission for Energy Regulation (together, the **Regulatory Authorities**) published a Proposed High Level Design Paper for the Single Electricity Market (the **SEM**) (Volume A, Tab 11) (the **High Level Design Paper**). This Paper stated (at paragraph 4.5) –

“The Regulatory Authorities have also considered connection policy and have concluded that a shallow connection policy for generator [sic] will be adopted in conjunction with SEM.”

- 3.19 The consultation period on the High Level Design Paper expired on 27 May 2005. The Regulatory Authorities subsequently published a High Level Design Decision Paper dated 10 June 2005 (Volume A, Tab 12) (the **High Level Design Decision Paper**) which stated (in the Executive Summary) –

“A shallow connection policy will be applied in the SEM.”

And (at paragraph 3.13) –

“In Northern Ireland, generators currently pay for the deep costs of new connections. In the Republic of Ireland connection charges are currently based on the costs of a shallow connection, with a “deemed date” for deep connection. It is proposed that a shallow policy is adopted in the SEM, with a “deep” reinforcement” timeframe made known to the generator as part of the connection offer.

As a corollary of shallow connection charges, generators should pay a locational charge as part of their TUoS – i.e. they should pay more to contribute to the cost of the deep reinforcement which their shallow connection has caused.”

### The planning application

- 3.20 On 4 November 2005, NIE made a planning application for the proposed 110kV network extension (Volume B, Tab 40). The letter from NIE (REDACTED) to the Divisional Planning Officer (REDACTED) stated –

“This project necessitates the construction of a single 110kV overhead line...

...The Quinn Group demand has grown steadily over the years and its forecast demand will shortly exceed 26MW's. The existing network would be unable to cope with this demand hence the need to reinforce the network with the next voltage level of 110kV.

This connection will also provide benefit for the town of Derrylin and the surrounding area as connection will be made from this new scheme into the existing infrastructure.”

3.21 The planning application included a NIE/Quinn Group Environmental Statement entitled ‘Proposed 110kV Network Extension – Enniskillen to Derrylin’ (the **Environmental Statement**). Relevant extracts of the Environmental Statement are included in the Bundle (Volume B, Tab 41).

3.22 In particular, the Environmental Summary stated as follows –

(i) Non-Technical Summary, Section 2 –

“The Quinn Group’s demand has grown steadily over the years and is now approximately 20MW with a forecast demand of 26MW. ...

The Quinn Group manufactures cement, cement products and glass products at Gortmullan. The glass production plant requires a high quality of electricity supply. Being at one of the most remote parts of NIE’s network, any disturbance leads to transitory voltage depressions which can cause parts of the plant to trip. In addition, the Group has large motors, which could not be started unless both existing 33kV circuits are in service. As other Quinn Group load increases, the motor start position will worsen.

The preferred solution requires the existing two 33kV circuits from Enniskillen to Derrylin and a new 110kV circuit from Enniskillen Main to a new substation at Quinn Glass plant. It will offer a reduced incidence of nuisance tripping at the glass plant, cater for the plant load development and make provision for wind farm development. It will also secure supply to customers in the wider Derrylin area.

The need to carry out this project results from NIE’s obligations under a range of legislation. ...

The electricity supply to Quinn Group glass plant, to the south of Derrylin in the townlands of Tonymore and Aghyoule, is currently at maximum capacity with future load growth planned.

The reinforcement of the electricity transmission network from Enniskillen Main will provide a reliable and secure supply which fulfils statutory responsibilities and will cater for industrial, commercial and residential development for the next ten to fifteen years.”

(ii) Volume 1, Section 1 –

“The need for this scheme is driven by the requirement to secure supply for all operations at the Quinn Plant. ...



The need for the project was outlined. NIE explained that the existing infrastructure is at maximum capacity, and that this will be further exasperated [sic] with plans to connect additional load within the Quinn Group.”

(iii) Volume 1, Section 2 –

“NIE and the Quinn Group have carried out joint studies to determine the best way forward in improving the capacity and quality of supply.

NIE has considered several possibilities.

- (1) The first is to uprate the existing 33kV lines from Enniskillen. This together with additional reactive support may make provision for a firm supply of 22MVA to Quinn’s but does not address the issue of the number of network disturbances experienced at Quinn plant. Nor could the Quinn Group start large motors if one of the circuits was out of service.

The Quinn Group and NIE have agreed that uprating the existing 33kV overhead lines would not constitute a solution option.

- (2) Power electronic devices and energy storage can be used to inject power during transient disturbances and may assist in allowing the plant to ride through the disturbances, but the devices do not extend the capacity of the network to deal with load growth.
- (3) For these reasons realistic options to solve the combined load and quality issues involve the extension of the 110kV network close to the Quinn Group manufacturing plants.

Two options have been considered:

Option 1

A new single circuit 110kV supply with re-supply being by the existing two 33kV arrangements or a reduced form of the arrangements.

Option 2

Two new 110kV circuits with no need for 33kV re-supply.

Either option would also support the development of the renewable energy plans expressed by the Quinn Group and therefore would be sustainable.

### Option 1

This option requires the construction of a new 110kV circuit... This option fulfils the objectives of the reinforcement as follows:

- The transient voltage depression at Gortmullan is no longer a problem for distribution network disturbances in the Enniskillen area.
- Load development well in excess of foreseen requirements can be facilitated.
- There is capacity available in the reverse direction to exit the proposed wind farm output.

Within the option it has been considered whether or not both existing 33kV circuits need to be retained. It is concluded that:

Security and quality of supply could not be maintained to Quinn Group during construction phase without the second circuit in that a prolonged failure of the remaining 33kV circuit would remove all supplies to both Quinn & Derrylin. Quinn motors could not be started during the construction phase.

In the post construction period the outage of the 110kV line would leave the Quinn Group and Derrylin supplied on one 33kV circuit which would result in a forced load shed at Quinn's and the inability to start large motors.

For these reasons it is considered necessary to retain both existing 33kV circuits.

### Option 2

Under this option a full 110kV supply/re-supply would be created...

This option involves introducing a significant amount of 110kV infrastructure and also facilitates 33kV overhead line recovery. NIE cannot demonstrate that it offers significantly increased benefit to the Quinn Group over Option 1 either in capacity or quality terms. It better firms the output of renewable energy, but this benefit is not thought to be commercially significant.

### Preferred Alternative

Option 1 is therefore the preferred solution. To re-iterate, this requires the existing two 33kV circuits from Enniskillen to Derrylin and a new 110kV circuit from Enniskillen to a new substation at the Quinn Glass Plant. It will offer a reduced incidence of nuisance tripping at the glass plant, cater for plant load development and make provision for wind farm development. It will also have the knock-on effect of improving supply to customers in the wider Derrylin area. ...”

- 3.23 Volume 2 of the Environmental Statement includes a number of maps, some of which were included at Appendix 2 of the Statement. These show, among other things, the proposed location and route of the new 110kV line and substation.
- 3.24 A copy of a NIE report entitled 'Dynamic Studies Report for Slieve Rushen PH2 60MW Windfarm' dated 29 November 2005 is included in the Bundle (Volume B, Tab 42).
- 3.25 A project meeting between NIE and the Quinn Group was held on 8 March 2006. The minutes of this meeting are included in the Bundle (Volume B, Tab 43).

#### Correspondence in 2006

- 3.26 In April 2006, the Quinn Group, having applied to Invest NI for funding for the capital investment involved in the project, was informed that its funding application was being refused. The Quinn Group (REDACTED) wrote to Invest NI (REDACTED) on 25 April 2006 (Volume B, Tab 22). This letter stated –

“...the current capacity and reliability of the electricity grid in South West Fermanagh is a deterrent to future investments. I am certain that any inward applicant would make the grid upgrade a necessary condition. We however have been prepared to fund a substantial proportion of this asset, which aside from servicing our own business would provide clear additional benefits to the region.”

- 3.27 The Authority (REDACTED) wrote to the Quinn Group (REDACTED) on 13 June 2006 (Volume B, Tab 23). This letter stated -

“The current proposal is that the SEM will use a shallow charging mechanism, and thus the scheme applying in Northern Ireland will alter post-SEM.

The Authority appreciates that any move from deep connection to shallow connection charging has the potential to disadvantage persons who have recently paid for upgrade works to the electricity network by way of connection charges which they would otherwise not have to pay under a shallow charging scheme. The experience in both Great Britain and the Republic of Ireland shows that this can be dealt with, for example by providing that either: (i) persons who had paid deep connection charges prior to the date of conversion were eligible for a rebate on those connection charges where they met certain criteria; or (ii) such persons would be relieved from the obligation to pay the increased use of system charges for a certain period dependent upon the relevant criteria. In each case the criteria would cover a number of issues including the time of connection.

....

Whilst plans are far from being finalised at present, on the basis of the latest discussions at the time of writing, it is expected that there will be a provision for a rebate or relief scheme to cover those who have paid deep connection charges prior to the conversion. This scheme is likely to require any person seeking to claim a rebate or relief to meet certain criteria, and these criteria are far from being fixed at present. Therefore unfortunately it is not possible for me to offer any more specific comfort to you at this stage.”

#### The connection charging statement in 2006

3.28 On 16 June 2006, the Authority approved NIE’s Statement of Charges for Connection to the NIE Electricity Transmission and Distribution System (Volume A, Tab 6) (the **Transmission and Distribution Connection Charging Statement**).

3.29 Key extracts from the Transmission and Distribution Connection Charging Statement are as follows –

“2. The connection charge will be based on the total costs to NIE of the work to be done and the assets to be installed for the specific benefit of the party seeking the connection. (NIE Connection Assets).

(a) ...

(b) For authorised generators and for over 1MW customers the connection charge payable will be 100% of the relevant costs. These costs may include amounts for the installation of the appropriate additional metering and for the costs of operation and maintenance of the NIE Connection Assets. In certain cases, it may be possible to agree an annual service charge for the anticipated costs for operation, repair and maintenance. For over 1MW customers the necessary replacement of assets which have been provided since vesting for the specific benefit of the connected party will be at the expense of that party.

...

4. The costs to be recovered in the connection charge will be determined from the estimated costs of the minimum scheme which would be designed to meet the requirements of the connection and for the sole benefit of the party being connected, consistent with sound engineering practices. The minimum scheme must not result in a deterioration, of supply for existing customers.

...