

~ Change Upon Change ~ 1986–1996

Interconnection – the bringing of change

In 1986, the various public utilities and supply companies that made up the Australian electricity supply business were really at a significant turning point. In retrospect, it was a time of reckoning.¹ It was as though the industry was perched on top of a dormant volcano – about to be thrust apart by the explosive pressure of social and economic rationalist change.

For many at ETSA, the previous decades had seen the development of an impressive public utility, full of engineering expertise and with a fine track record of achievement. Some contemporary commentators noted



THE BEGINNING OF THE INTERCONNECTION PROJECT – WORKING WITH TRIPLE CONDUCTORS AT THE TAILEM BEND SUBSTATION, 1983
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JOHN WELFORD
ELECTRANET SA

that ETSA was in an extremely good financial state, thanks to its sound management practices and the quality of its infrastructure.² Yet the State Government, at that time, apparently perceived the organisation as uncompromising and inflexible – the relic of an era of unimpeded and unfettered development, that had now passed. There was, moreover, a strong national push for structural reform and even privatisation of the electricity industry, to better utilise the spare electricity resources available to customers from the surpluses in the larger eastern States. This was in part due to the eastern States' excess generating capacity, which had been installed through their zealous over-estimation of the growth of electricity demand expected during the early 1980s.³

This push towards a nation-wide electricity industry, and the creation of a more efficient management and workforce in the public electricity utilities, started the dormant volcano rumbling.⁴

Ex-employee John Welford (previously ElectraNet SA's Project Manager Market Design) had earlier been involved in the planning of ETSA's generating capacity and, during the 1990s, had contributed significantly to the planning for a National Electricity Market. John recalls the impact of this time:

During the 1970s, the Federal Government had been pushing the concept of a resources boom and promoting the development of new aluminium smelters and other energy-intensive industry. Both Victoria and New South Wales had embarked on major programmes of building new power stations. South Australia looked at these, and certainly considered the potential for a new power station in the south-east (and perhaps elsewhere), but really, the State economics for the use of indigenous coal in South Australia's own power stations were not that supportive of such a

massive expansion of the State's power generation capability. Other States however, with their easy access to cheap good quality coal, were building power generating stations like there was no tomorrow.

The Commonwealth Government became concerned about the drain on capital resources in building all this new generating plant, so considered it was desirable to look at whether there was some potential for integrating these efforts and sharing spare generating resources between the States. It set up the Zeidler Committee to investigate the possibility for the greater role of interconnectors between each of the States. Victoria, New South Wales and South Australia agreed to participate, but Queensland did not.

Both Victoria and New South Wales came to that particular Commission in an environment where they were rapidly progressing their own power station developments which they did not wish to jeopardise. Subsequently they were very cautious about the Commission endorsing any project that would interfere with what they considered their potential for more development and employment growth within their own States. It was very much a stand-alone approach. The Zeidler investigation, in which a number of ETSA personnel indirectly participated, finally came to a majority conclusion. In another environment, the conclusion may have differed, but each of the States (and their Governments) satisfied themselves that there was no real case for any more large scale transmission interconnectors – that is, no further opportunity for major power flows between the large States. They did however conclude that there was some potential for a limited electricity interconnector to South Australia, based on so-called opportunity energy transfers, which they suggested deserved to be investigated further. (Opportunity exchange assumes that participants are able to generate their



own electricity independently, but decide to reduce or increase their own output, sharing the saving in fuel costs between the participating States.) In such an arrangement, each of the States could still maintain all the power stations needed to service their own electricity demands, but use any surpluses to generate cheaper electricity for another State, with their agreement to share the savings.

MAJOR SUBSTATIONS ASSOCIATED WITH THE INTERCONNECTION SYSTEM – FROM LEFT TO RIGHT: SOUTH EAST SUBSTATION (SA), HEYWOOD SUBSTATION (VIC) AND KEMPS CREEK SUBSTATION (NSW)
INTERCONNECTION OF SOUTH AUSTRALIA, VICTORIA AND NEW SOUTH WALES

Although this was not a particularly bold outcome, Zeidler had nevertheless, identified the potential for an opportunity energy interchange process, to assist in the reduction of the cost of electricity in South Australia, through a small sized electricity transmission interconnector.⁵

In one sense, ETSA had unwittingly begun the process of providing and satisfying the prerequisites for the establishment of a National Electricity Market. The South Australian–Victorian transmission interconnection project, first spawned from the recommendations of the report from the Zeidler Committee of Inquiry, paved the way for a massive rethinking of power generation and transmission in south-eastern Australia.

In September 1985, a background paper on the South Australian, Victorian and New South Wales interconnection was issued. Following political agreement, construction began on the project in 1986, with the transmission interconnection between South Australia and Victoria planned to be in use by early 1990. At the beginning of the task, ETSA's main transmission network was made up of 275kV and 132kV



transmission lines servicing the power stations and the main South Australian distribution loads. The 275kV system had also been extended to Tailem Bend and, from there, a 132kV network provided electricity to Mount Gambier. With the interconnection, it was proposed that a second 275kV transmission line would be built from Adelaide to Tailem Bend, with a new 275kV double circuit transmission line to be constructed from there to a new south-east terminal substation near Mount Gambier. Additionally, a double circuit 275kV line was to be constructed from the south-east to meet up with the Victorian 500kV network at Heywood (in western Victoria). Thus a double circuit 275kV transmission line with a capability of 500MW became accepted as the desired outcome of the proposed interconnection project. This expansion would also require other 275kV reinforcement work and additional substation development, including the installation of sophisticated state-of-the-art equipment to help stabilise the power system, known as static var compensators (SVCs).

The benefits of sharing costs and transferring energy were such that South Australia stood to gain a good deal from this arrangement. Even the associated projects – including transmission lines into the Cherry Gardens

substation in the Adelaide Hills from the main south-east line, brought additional benefits. The first interconnection project of its type attempted in Australia, it was a common sense approach to the transmission and sharing of electrical power resources.⁶

Local media greeted news of the planned transmission interconnection with acclaim.⁷ By July 1987, the route of the transmission line network had been approved and survey work started in the following month.⁸ ETSA was careful that every landowner affected by the siting of the new line was visited and there was extensive consultation with public bodies and community groups.⁹ By October 1987, major construction work was under way.¹⁰ A year later, with the south-east stage of the network in progress, tenders were called for the construction of lines nearer Adelaide.¹¹

ETSA and its contractors were under intense pressure to have the transmission interconnection up and running on schedule. Unfortunately, work was affected by the extremely wet winter of 1988. The heavy vehicles used for shifting equipment and materials for the transmission line cut their way across farmers' soggy paddocks, leaving a trail of damage in their wake. However, compensation to these farmers was swift.¹² Ex-employee Peter Bottroff recalls something of ETSA's endeavour at the time:

The new transmission line was constructed in some of the worst conditions ever encountered. It was very wet through the Adelaide Hills, with landslides of black mud, which seriously delayed construction. To meet the deadline, some of the tower steelwork was taken into properties with two or three D8's (large caterpillar tractors) pushing the steel trucks into place. This caused unavoidable damage, which was subsequently rectified through ETSA funding, with a result that generally most of the property owners were very happy with. It was a good example of what could be done, and ultimately saved a lot of money.¹³

On 30 March 1990, the interconnection project was officially opened by the Premier of South Australia, John Bannon, bringing to a



conclusion the \$140 million project that had involved twenty-five ETSA departments.¹⁴ The main south-east newspaper wrote of the project as an enormous achievement in which much of the local community had been involved.¹⁵ More than this, the project actually became an enormous financial benefit to the State. Cost savings on expensive South Australian fuels, and the sharing of generating reserve capacity from the eastern States greatly assisted the cost of electricity to South Australian consumers during the early to mid-nineties.¹⁶

One matter that did not surface in the press, though, was the story about the day on which the first test of the interconnection occurred. John Thomson, who at that time was in charge of System Control, was given the task of closing up the final circuit breaker to connect the power system of South Australia, with that of Victoria, for the first time. At the precise moment that John threw the switch to energise the line, a System Control Officer flicked another switch nearby, that immediately doused the Control Centre lights. One can only imagine the impact that that would have had on John's recollection of the moment. It was a typical example of the light-hearted camaraderie that existed within the ETSA family.¹⁷

*AT THE OFFICIAL
OPENING OF THE
INTERCONNECTION IN
MARCH 1990 – FROM
LEFT TO RIGHT: DON
GELLARD, RON BARNES,
PREMIER'S PRESS
SECRETARY, JOHN
BANNON MP, KYM
TOTHILL, ROBIN
MARRETT, JOHN
KLUNDER MP
ELECTRANetSA*

The control of power flow across the interconnection was critical for economic performance and power system security. The responsibility for implementation of systems for the management of power flows nested in System Control. During preparations for the interconnection with Victoria, the System Control Centre was enlarged and refitted to accommodate computer-based control facilities, and a project was commenced to interface all main and sub-transmission substations, at a total cost of about \$10 million. Software applications were developed in-house to facilitate interstate and intrastate energy production, trading and settlement processes, linking data for the first time, from the real time control, business systems and operational planning computer systems. The installation of the leading edge computerised Supervisory Control and Data Acquisition System (SCADA), replacing the hard-wired systems of the 1950s and 1960s, and 1980s generation control, was to provide the basis for unlimited expansion and real-time network analysis tools, maintaining the business' previously attained reputation for innovative power system control capabilities. It was a time of considerable duress for System Control Officers, who were required to undertake extensive training in the technical features of interconnected system operations and the commercial aspects of interstate energy trading. As well, System Control Officers were also managing ongoing power system control operations and network switching, at times surrounded in plastic sheeting to reduce construction noise and dust levels, in the period leading up to the commissioning of the interconnector.

Commencement of ETSA restructuring

While the commissioning of the interconnection marked an important phase in the growth of ETSA's skills in the delivery of transmission services, there were enormous changes occurring behind the scenes. In May 1988, Leon Sykes retired as ETSA's General Manager and in his place was appointed Robin Marrett. For the first time, a person with no history in either ETSA or the electricity supply business became the Electricity Trust's Chief Executive. Marrett, whose own managerial experience had

taken him around the globe with a major oil company, had a fervent belief that public utilities had to walk in step with their customers and to constantly monitor the demands of their market.¹⁸ To achieve these aims, Marrett instigated a major reform programme designed to increase efficiency within the business and reduce costs. Marrett found at ETSA 'a typical public sector, technical product oriented organisation'.¹⁹ Although ETSA carried little debt, Marrett perceived other problems: a lack of forward planning; high electricity tariffs; financial returns on assets were low; the organisation was highly centralised, and management performance was never adequately assessed.²⁰ He, therefore, saw his task as guiding the organisation into a new, vibrant era of reform, with a focus on the 'light on the hill'.²¹

Part of this reform of ETSA involved a change in the manner of organising the activities of the enterprise, as well as achieving a significant reduction in staff numbers. The latter caused consternation to many long-term employees; but the re-arrangement of activities really assisted in preparing ETSA for a changing world. Ex-employee John Burgess believes that:

... with the introduction of this new culture, one really had no choice but to change, especially as our business process knowledge was ageing. I mean, I know that's a very negative way of looking at the reforms, but for many, the old ETSA culture was so deeply ingrained, it was difficult to move ahead and push into new unexplored realms.

Robin Marrett was the first 'imported' General Manager that we had and many found this hard to accept, as all our General Managers had grown up in the organisation. It didn't matter whether one was a junior power station engineer or the General Manager, there was always a common bond in



JOHN BURGESS
ELECTRANET SA

completing a job well. I never found it difficult to talk to the General Manager or any of our senior managers, because we had shared parallel paths, and often worked in the same areas together. But when the reforms came, it was really unsettling to some of us.²²

Despite the difficulties with acceptance by some of ETSA's older staff, Marrett's job was to prepare the Electricity Trust for the obvious changing nature of the Australian electricity supply environment.

By 1989, after an extensive business effectiveness study by external consultants, the first phase of the reorganisation was completed and the notion of a 'supply' section of the business incorporating transmission, interconnection and power system development was put into practice.²³ It was merely one small step. By 1991, the emphasis had changed and customer services and supply (retail and wires) were bundled together.²⁴ Then, during 1992, a 'generation and transmission' division was established under Don Gellard, and Kym Tohill was appointed to manage the power grid, the System Control Centre and the 275kV transmission network assets. Marrett termed this a simplification of the organisation, as it was the initial attempt to create a separation between components of the electricity industry that were being identified as the major business units, or building blocks, of the future electricity supply activity.²⁵ Two years later, the transmission business had been established as a separate division, which was responsible for the 275kV and 132kV network, in addition to electricity production planning and System Control.²⁶

As Barry Foster (previously Executive Manager Transmission Operations) recalls:

The fire at Torrens Island in 1985 and commissioning of the Northern Power Station in the mid-1980s, followed by the development and implementation of the interconnection operation and trading arrangements with the eastern States, was an extensive period of challenge and change for System



BARRY FOSTER
ELECTRANET SA

Control. No sooner had we made the transition, than here we were totally reorganising the place, and really changing the values and direction of our business and the industry.²⁷

Barry Foster and Phillip Webb (Executive Manager Operations) agree that through 1989 and 1990, a significant amount of restructuring of ETSA occurred, which laid the foundation for reform of the electricity supply industry in South Australia. Phillip Webb continues:

The main change was the pursuit of self-contained business units, purchasing and selling services to achieve a viable commercial financial outcome for each entity. With this concept of asset ownership being introduced, each part of the business required an owner whether it was a power station, a transmission line, or part of the distribution system. Up until that time, we were all operating the electricity supply business together.²⁸

Bob Stam (ElectraNet SA's Executive Manager Customer Development and Regulation) notes that it was the interconnection with the transmission system of the eastern states, that drew ETSA into the concept of a National Electricity Market. By 1992, he states, ETSA's power system operations and planning people were heavily involved with equivalent groups from New South Wales and Victoria, as part of the combined management of the interconnectors and energy transfers between each of those States. It was from this base that the national grid management strategy was developed. 'As soon as they started developing the Code of Practice', says Stam:

... the electricity industry structures were being formulated. In 1992 four basic building blocks were clearly identified – there would be a generator, a transmitter, a distributor and a retailer ... perhaps ETSA may have been slower than those in the eastern States to completely understand the speed that the industry was being re-shaped within Australia.²⁹



BOB STAM
ELECTRANET SA





PAGES 68,69 AND 70: TRANSMISSION CREWS AT WORK – THEIR SKILLS ENTAIL USING STATE-OF-THE-ART EQUIPMENT AND TECHNIQUES
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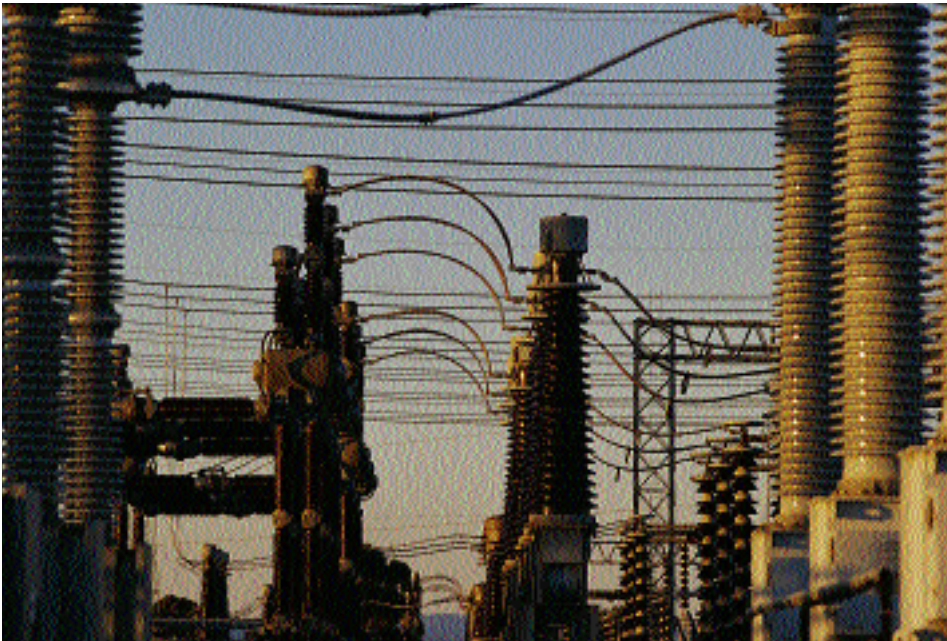
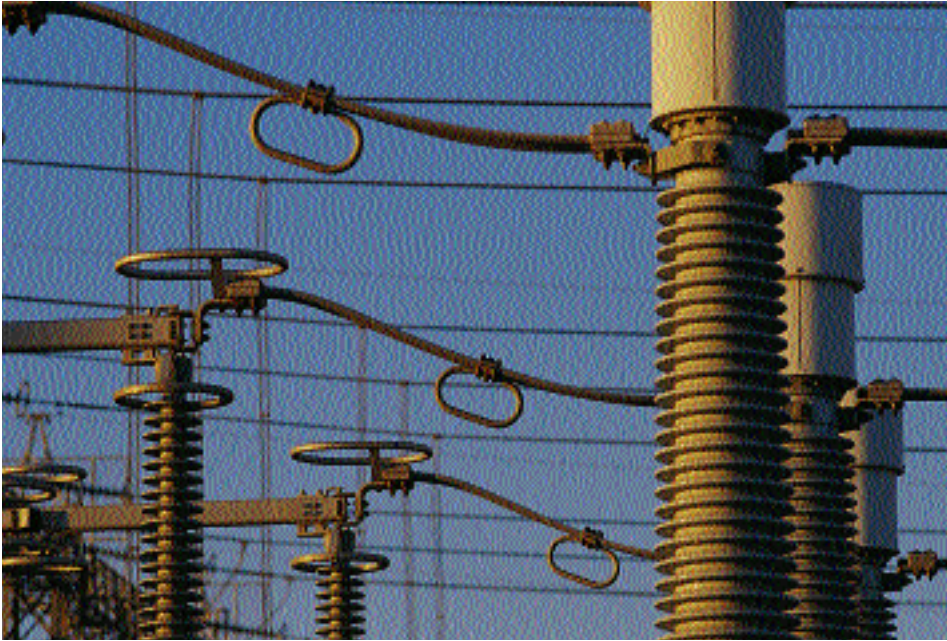
It was really not until after the corporatisation of ETSA in 1995 – following the arrival of a new external ETSA General Manager appointment (Clive Armour) – that a clearer picture of the impact of the proposed National Electricity Market emerged.

National Electricity Market

The move towards a stand-alone division of ETSA devoted only to transmission was directly linked to the evolution of a National Electricity Market (NEM). First, as has been described, came the Zeidler Report and its recommendations. Then, in 1983, Australian Premiers had discussed the notion of a national electricity grid.³⁰

While most of these discussions were overridden by the politics of the time, the one sustainable project that eventuated was the interconnector between South Australia and Victoria.

In 1991, a National Industry Commission Report proposed the reformation of the State-based electricity industry to a competitive National Electricity Market. It recommended that the Government-owned electricity industry be made more commercially focused and that it take on a corporate structure with the view to eventually being privatised – a notion that had been anathema to the industry and the incumbent State Government for years. Other sweeping reforms (such as corporatisation) – in line with those adopted by former Government agencies such as Qantas, Australia Post and



PAGES 71 AND 72: THE FUTURISTIC SHAPES OF HIGH VOLTAGE TRANSFORMER BUSHINGS AND CIRCUIT BREAKERS – PART OF THE SUBSTATION NETWORK THAT ‘STEPS DOWN’ VOLTAGE FOR DISTRIBUTION TO CUSTOMERS
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Telstra – were also mooted. A wide ranging report, it pushed the concept of a privately owned electricity market to new limits.³¹

At a Premiers' Conference in July 1991, this reformist agenda was taken one step further. At that meeting, two crucial issues were decided – the reform of the electricity industry and the introduction of national performance monitoring of Government Trading Enterprises, of which ETSA was one. Also, it was agreed that a National Grid Management Council (NGMC) be created to 'encourage and co-ordinate the most efficient, economic and environmentally sound development of the electricity industry in eastern and southern Australia'.³²

Step by step, the reformation of the electricity industry proceeded. Pushed by Prime Minister Paul Keating's desire to achieve significant industry reform, 'the restructuring continued', as one commentator put it. It was certainly a time of upheaval and uncertainty.³³ By 1993, consultative public forums were being held to inform electricity consumers and businesses of the industry reform progress and to gauge responses.³⁴ In June of that year, the States agreed to support the Federal Government's acceleration of the reform process.³⁵ There was now no doubting the impetus for the move towards a competitive National Electricity Market. John Welford, an active participant in ETSA's planning for the proposed market, along with the likes of Don Gellard, Colin Taylor (Power System Planning) and Kym Tohill, described the development path:

The National Grid Management Council was subsequently established to oversee the development of a process for a more co-ordinated electricity reform approach between States. The Commonwealth had always been keen on actually promoting a market-driven approach, and they increasingly successfully managed to influence this agenda. A national working party was convened to investigate the arrangements for transmission and whether there should be independently owned transmission systems or whether there should be a single national grid and how it should function. The eventual report made clear that the owners of the grids

should be required to operate in a manner which made it, effectively, a single grid, but with a range of separate owners. The National Grid Management Council then decided that the use of the grid, and the pricing for the use of the grid, was a fundamental component of any competitive electricity market arrangement. There was another national working party set up to look at how the costs for using the actual transmission system should be developed. A range of possibilities were considered and a solution reflecting a user pays system was endorsed.

Similar consultation resulted in the endorsement of a real-time pricing market for electrical energy, and the unique concept of a National Electricity Market Management Company (NEMMCO), to act as both the electricity market manager, and also, to be the independent system operator to manage both the energy trading and the security of the power system. As soon as NEMMCO was in position to take over the co-ordination of the preparations for the National Electricity Market, the National Grid Management Council was to be phased out.³⁶

However, in South Australia in 1995, there was still a degree of uncertainty about how far ETSA should be divided up, so the Industry Commission was invited by the State Government to conduct a full review of the future directions for South Australian electricity industry. The Review concluded that there was a clear need to establish a completely disaggregated transmission and distribution business, and have at least two or three generators in this State promote supply-side competition. The State Government at that time was not fully convinced, and decided not to immediately adopt fully the recommendations of that Review. A minor restructuring to promote a more efficient and competitive environment in South Australia was implemented nevertheless. As a further compromise, from 1 January 1997, the generation entities were totally separated out from ETSA and placed into one company – the South

Australian Generation Corporation. As time progressed, even that was not seen by customers outside ETSA to be adequate for the promotion of effective competition in the South Australian electricity sector. In order to satisfy the National Competition Commission framework for the impending National Electricity Market, a structure providing for the clear definition of three separate generators, a separate transmission entity, separate distribution entity with a potentially separate electricity retail entity, and a separate gas trading business was eventually proposed by the South Australian State Government.³⁷

By early 1997, a critical phase of the National Electricity Market was implemented with limited electricity trading between Victoria and New South Wales, which saw the entire Australian electricity industry positioning and restructuring to ensure their place in this new national electricity marketplace.

Transmission and independence

On reflection, ETSA had effectively been undergoing preparation for the proposed new national competitive market for some years. Robin Marrett's emphasis on a customer-oriented organisation with a commercial outlook was very much in keeping with the reforms envisaged by the Commonwealth Government. As Marrett was fond of stating, 'If you don't do it yourself [change into a more efficient organisation] you'll have it done to you'.³⁸ A change of Government in South Australia in 1993, an Audit Commission Report, and the passing of the Electricity Corporations Act in 1994 began the next move towards the establishment of the ETSA Corporation, which was, itself, to be broken down into a number of business units, one of which was the Transmission business.³⁹

At the time of its fiftieth anniversary in 1996, ETSA was still at a stage of responding to the forces of change, along with the rest of the Australian electricity supply system, pushed along by Governments and the major electricity consumers who had expectations of significant price reductions arising from the structural changes. Already, ETSA had passed through the refiner's fire, had witnessed massive reductions in staff



TRANSMISSION CORPORATION MANAGEMENT TEAM, 3 JULY 1995: KYM TOTHILL (GENERAL MANAGER TRANSMISSION); JOE JUCHNIEWICZ (TRANSMISSION ASSETS MANAGER); BARRY FOSTER (MANAGER MARKET OPERATIONS); PAUL MULLER (MANAGER BUSINESS SERVICES); GREG RICE (MANAGER TRANSMISSION SERVICE); GRAHAM VINCENT (MANAGER SPECIAL PROJECTS); PHILLIP WEBB (MANAGER SYSTEM OPERATIONS); BOB STAM [NOT IN PICTURE] (MANAGER TRANSMISSION PLANNING)
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numbers, the complete breaking up of the old organisation, and the establishment of a new corporate identity.

Bob Stam looks back at the break-up of ETSA from 1995 and the move towards separate business corporations and notes:

The transmission business was basically set up during 1995 and we all started working towards what it was going to be: an independent transmission authority in accord with the National Electricity Code requirements. In 1995 Kym Tothill had selected a core group of people, with very similar views. Their central objective was to create a responsive and cohesive transmission authority capable of operating successfully in the impending National Electricity Market.⁴⁰

From 1 July 1996, ETSA Transmission Corporation, as a separate subsidiary of ETSA Corporation, stood at the verge of yet another new era of challenge.