

Annual review of the system operator's performance

Performance assessment for the period from
1 September 2013 to 31 August 2014
Final report

15 September 2015



Executive summary

The Electricity Authority (Authority) has produced this review in accordance with Part 7 of the Electricity Industry Participation Code 2010 (Code). The review assesses the system operator's performance for the 12-month period ending 31 August 2014.

The scope of the review includes the performance of the system operator under both the Code and the system operator service provider agreement (SOSPA).

The key inputs into the review were the system operator's self-assessment for the same period, feedback from Authority staff, feedback from the Security and Reliability Council, feedback from the System Operations Committee of the Authority Board, and feedback from the system operator on a draft version of this review.

Overall, the conclusion of this review is that the system operator has performed well in the current review period. The system operator has taken significant steps to improve strategic alignment with the Authority and to continually improve its service. The development of the relationship charter is a very important development in the relationship between the Authority and system operator, which the Authority greatly values.

The Authority acknowledges that the review period has been one of significant positive change within the system operator. The system operator has responded to, and acted on, the recommendations the Authority made in the 2012-13 review. The Authority considers that the system operator's performance has improved over the course of the review period. Where aspects of performance require improvement, the Authority is aware that, in many cases, improvements have been identified and are either completed or under way.

Strategic alignment: The Authority considers that the strategic alignment created by the new relationship charter with Transpower establishes an important foundation for a more effective relationship between the two organisations. Other steps the system operator has taken or will take that improve alignment include:

- to better apply the Authority's statutory objective (referred to in this report as the 'joint objective') to both its work programme and its normal operating processes,
- renegotiating the SOSPA having agreed with the Authority that achieving the joint objective is a key principle, and
- reorganising its internal structure.

Quality of electricity supply: The system operator has maintained a good quality of electricity supply to consumers. The lessons learned from a 12 November 2013 system event, in which some North Island load was shed by automatic under-frequency protection relays, included operational improvements for the system operator and Code development opportunities for the Authority.

Complying with obligations: The system operator maintains a high level of commitment to, and professionalism in, ensuring it complies with the Code.

Project planning and communication: During the review period the Authority and the system operator have adopted new processes to improve joint project planning. New systems have also been introduced for managing projects. The Authority expects those processes will help align priorities with the joint objective, and improve project management disciplines and project outcomes. Improvements are already noticeable. Communication has generally been open and proactive, and the Authority has appreciated the steps the system operator has taken to respond to the Authority's need for information in a form that is fit for purpose. During the next review period, those processes and improvements should be further

integrated into the system operator's day-to-day work and applied consistently throughout its dealings with the Authority.

Quality of professional services: The quality of the professional services provided by the system operator to the Authority has been good, particularly towards the end of the review period when improvements were noticeable. The system operator has shown a strong commitment to continuous improvement in this regard. The Authority is pleased that the system operator has undertaken to engage with the Authority on a more in-depth basis at an early stage of the reviews of documents incorporated by reference into the Code. The system operator's relationship with wider industry is positive, and the Authority encourages the system operator to continue building on key areas identified in its annual customer satisfaction survey, particularly "understanding your needs".

The system operator's self-assessment: The self-assessment provides a fair analysis of the system operator's performance with a suitable amount of detail. While the system operator has already made good improvements to its self-assessment compared with previous years, the Authority has identified some further opportunities for improvement.

The Authority has opted not to make any formal recommendations for improvement of performance. However, the Authority has made the following four recommendations to improve the system operator's *reporting of performance*.

- The system operator should consider whether self-breaches can be categorised in more detail and the analysis can be included in future self-assessments.
- Future self-assessments should specify whether requests have been received relating to harmonic levels, voltage flicker levels, and negative sequence voltage and, if so, how they were dealt with.
- Future self-assessments should specify whether frequency time error was eliminated at least once every day and if not, why not.
- The system operator should consider whether the Security and Reliability Council's suggestions (as set out in paragraph 7.8) can be included in future self-assessments.

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1 Introduction

- 1.1 The system operator is a market operation service provider that performs a crucial role for the electricity industry in New Zealand. The system operator must manage the processes required to coordinate resources (mainly dispatchable generation) in order to meet demand at least cost, without overloading grid assets, while employing resources to mitigate specific threats of power supply interruptions.
- 1.2 In recognition of the importance of this service provider role and the relationship between the Authority and the system operator, the Code requires both parties to regularly review how well the system operator is performing its role.
- 1.3 This review relates to the 12-month review period ending 31 August 2014.
- 1.4 The key inputs into this review were:
- (a) the system operator's self-assessment for the same period (self-assessment)¹
 - (b) feedback from Authority staff who have worked with the system operator during the review period
 - (c) feedback from the Security and Reliability Council (SRC)
 - (d) feedback from the System Operations Committee of the Authority Board
 - (e) feedback from the system operator on a draft version of this review.

An annual performance review is required under the Code

- 1.5 Under clause 7.11 of the Code, the system operator is required to provide to the Authority, by 30 September each year, a review and assessment of its own performance for the previous 12-month period ending 31 August.
- 1.6 Clauses 7.8 and 7.9 of the Code set out the requirement for the Authority to also review the system operator's performance, and the matters that the Authority must consider in its review. Clause 7.8 requires the Authority to concentrate on the system operator's compliance with:
- (a) its obligations under the Code and the Electricity Industry Act 2010 (Act)
 - (b) the operation of the Code and the Act
 - (c) any performance standards agreed between the system operator and the Authority²
 - (d) the provisions of the system operator's service provider agreement (SOSPA) with the Authority.
- 1.7 Clause 7.9 requires the Authority to take into account the following matters when conducting the review:
- (a) the terms of the SOSPA
 - (b) the reports from the system operator to the Authority

¹ The self-assessment is available from <http://www.ea.govt.nz/industry/pso-cq/system-operations/system-operator-reports/system-operator-annual-self-review-assessment/>

² No performance standards have been agreed, other than those discussed in section 4.9. The Authority and the system operator expect that performance standards will be established as part of the renegotiation of the SOSPA (refer to paragraph 2.8).

- (c) the performance of the system operator over time in relation to parts 7 and 8 of the Code
- (d) the extent to which acts or omissions of other parties have impacted on the system operator's performance and the nature of the task being monitored
- (e) reports or complaints from any person
- (f) the fact that the real time coordination of the power system involves a number of complex judgments and inter-related incidents
- (g) any disparity of information between the Authority and the system operator
- (h) any other matter the Authority considers relevant to assess the system operator's performance.

1.8 Clause 7.11(4) requires the Authority to publish its review and assessment of the system operator no later than 10 business days after the Authority completes the review and assessment.

1.9 The review process aims to cover all aspects, both positive and negative, of the system operator's performance and provide constructive feedback, wherever possible, for the purpose of continuous improvement in performance.

Structure of this document

1.10 This document covers:

Section number	Broad topic	Sub topic
Section 2	Strategic alignment	Strategic alignment with the Authority
Section 3	Maintaining a quality electricity supply to consumers	Principal performance obligations
		Power system events and challenges
Section 4	Complying with obligations	Compliance with the Electricity Industry Participation Code 2010 (Code)
		Performance under the SOSPA
Section 5	Project planning and communication	Joint planning with the Authority
		Project management
		Communication with the Authority
Section 6	Quality of professional services	Quality of written reports
		Technical advisory services
		Documents incorporated by reference into the Code
		Relationship with wider industry
Section 7	The system operator's self-assessment	Commentary and recommendations on the self-assessment
Section 8	Summary	Brief overall assessment

2 The system operator and the Authority will implement a shared objective

2.1 The Authority acknowledges the review period has been one of significant positive change within the system operator. Both the system operator and the Authority have been progressing initiatives that will enhance the value the system operator role can provide to the wider industry, and the long-term benefits it can provide to consumers. There have been a number of developments in this area during the review period, and others are well underway.

Relationship charter sets a joint objective

2.2 On 2 July 2014 the Authority and the system operator agreed a relationship charter. The charter sets a joint objective of delivering long-term benefits to New Zealand consumers in the course of operating and developing the broader electricity market. The joint objective aligns with the Authority's statutory objective.

2.3 The joint objective will be achieved by:

- (a) promoting competition, for example by removing technical barriers to entry and participation in the wholesale market
- (b) ensuring reliable supply, for example by efficiently balancing risk and the costs of risk reduction and by taking advantage of new technologies as they become commercial
- (c) promoting efficient operation of the New Zealand electricity industry, for example by delivering an efficient and effective system operator service and by developing and implementing improvements in the market.

2.4 This is the first relationship charter between the Authority and the system operator. The charter is intended to ensure that the Authority and the system operator effectively deliver together on joint objectives across day-to-day, market design, and compliance work. The charter will help both organisations work effectively and efficiently developing and delivering the system operator service and improvements to the wholesale market over time.

2.5 The Authority highly commends the system operator for its work on agreeing a joint objective and guiding principles for engagement. The Authority considers that the strategic alignment created by the relationship charter establishes an important foundation for an even more effective relationship between the two organisations.

Programme of work to advance greater alignment with the joint objective

2.6 The system operator completed a discussion paper with some initial thinking about how the system operator might better align its activities with the joint objective (CRE discussion paper) and shared this with the Authority during the review period. The CRE discussion paper demonstrated how the system operator intended to better apply the joint objective when providing the system operator service.

2.7 The system operator notes that it expects to introduce a programme of work in the next review period to advance greater alignment with the joint objective. The Authority commends the system operator on this work, and looks forward to contributing to that work programme.

SOSPA to be renegotiated in 2014-15

2.8 The Authority and system operator will renegotiate the SOSPA in the next review period. A new SOSPA is expected to reflect the changing nature of the system operator service, the changing

industry context, the nature of the relationship between the two organisations, and to ensure the system operator service is fit-for-purpose and provides a value-for-money service to levy payers.

- 2.9 The Authority looks forward to working with the system operator on this renegotiation, and on implementing a new SOSPA that helps the system operator to better deliver on the joint objective.

Internal system operator restructure has commenced

- 2.10 During the review period there have been a number of changes in key management positions within the system operator, and a restructure of the system operator's internal organisation was initiated (it was completed outside the review period).
- 2.11 The Authority considers the new structure is likely to improve the ability of the system operator to deliver on the joint objective in the relationship charter. The Authority has already observed improvements resulting from the system operator's revised approach to resourcing different aspects of its business. These improvements are discussed later in paragraph 5.10.
- 2.12 The system operator's communication during its reorganisation has been positive. Authority management report they have been kept well-informed, and the reasons for the restructure have been clearly explained. The timely notice of significant announcements has been appreciated.
- 2.13 The Authority looks forward to the continued improvements that the system operator's restructure is expected to bring.

3 The system operator has maintained a good quality of electricity supply to consumers

- 3.1 Clause 7.2 of the Code sets out the system operator's principal performance objectives (PPOs). In summary, the PPOs require the system operator to act as a "reasonable and prudent system operator" with the objective of:
- (a) dispatching assets made available to avoid cascade failure of the power system
 - (b) ensuring frequency remains within prescribed upper and lower limits, that the number and duration of frequency fluctuations (outside the normal band) stay within specified limits
 - (c) if requested, identifying the cause of any problem with standards not being met at any point of connection to the grid for harmonic levels, voltage flicker levels or negative sequence voltage, and take reasonable and practical action as requested to resolve the problem.
- 3.2 *In relation to paragraph 3.1(a):* the Authority acknowledges that the system operator has avoided cascade failure of the power system and has satisfied this requirement.
- 3.3 *In relation to paragraph 3.1(b):* the Authority considers the system operator has achieved its PPO relating to maintaining frequency within prescribed limits. The *number* of frequency excursions has also been within the prescribed limits, with the exception of frequency excursions into the band between 47 and 48 hertz. The significance of, and lessons from, that excursion are discussed further below from paragraph 3.5.
- 3.4 *In relation to paragraph 3.1(c):* no requests from participants relating to harmonic levels, voltage flicker levels, and negative sequence voltage were received in the review period. The Authority is satisfied that the system operator has complied with this requirement, though this conclusion was not apparent from the system operator's annual self-assessment.

Useful lessons were learned from the 12 November 2013 AUFLS event

- 3.5 On 12 November 2013 a system event that occurred during testing of the grid owner's HVDC equipment led to a frequency excursion in the North Island into the 47 to 48 hertz band and triggered some Automatic Under-Frequency Load Shedding (AUFLS) relays in the North Island. Restoration to distributors occurred within 108 minutes from the event commencing.
- 3.6 The following organisations have published reports on the 12 November 2013 event:
- (a) Transpower as the system operator (published 13 December 2013)³
 - (b) Transpower as the grid owner (published during December 2013)⁴
 - (c) the Authority (published 26 May 2015).⁵
- 3.7 The PPOs require the system operator to (among other things) act as a reasonable and prudent system operator with the objective of ensuring that the aggregated rate of occurrence of momentary fluctuations experienced in the North and South Islands of New Zealand does not exceed the statistical equivalent of one in any five year period for momentary fluctuations of frequency into the band between 47 and 48 hertz.
- 3.8 Any excursion of frequency into this band is a concern to the Authority, given that the targeted rate of occurrence is substantially less than one event per year.
- 3.9 A similar North Island frequency excursion into the band between 47 and 48 hertz occurred less than two years earlier. On 13 December 2011, Huntly Power Station tripped resulting in North Island frequency falling as low as 47.63 hertz.⁶
- 3.10 The recent rate of excursions has exceeded the statistical equivalent, though if measured over longer timeframes (10+ years) it is possible to find periods where the excursion rate is within the targets.
- 3.11 However, the system operator's obligation is to "*act as a reasonable and prudent system operator with the objective of*" ensuring the targeted limits are achieved. This means that the actual excursion rate alone is not a valid test of the system operator's compliance with this PPO. The relevant consideration is *whether the system operator acted reasonably and prudently*.
- 3.12 The Authority's enquiry into the AUFLS event used ISO 31000:2009 as a benchmark for measuring the system operator's performance. This risk management standard is in common use within the New Zealand electricity industry, making it a fair indicator of good electricity industry practice.
- 3.13 The Authority's enquiry made many positive remarks about the system operator's preparations for testing and commissioning of HVDC Pole 3. The enquiry noted that the Authority:
- "...is generally satisfied that the management framework implemented for the HVDC Pole 3 testing and commissioning meets the Code requirements."*
- "...found that the framework established by the system operator had been subjected to external independent review and is consistent with what the Authority would expect."*

³ Available from <http://www.systemoperator.co.nz/documents/reports>

⁴ Available from <http://www.systemoperator.co.nz/documents/reports>

⁵ Available from <http://www.ea.govt.nz/monitoring/enquiries-reviews-and-investigations/2014/aufis/>

⁶ The system operator has published a report on the 13 December 2011 event, available at <http://www.systemoperator.co.nz/documents/reports>.

“...acknowledges the preparation and planning that the system operator undertook for the testing and commissioning of Pole 3. The 12 November 2013 event and AUFLS activation were extremely unfortunate, considering the diligence that had been applied to planning for the tests.”

3.14 However, the Authority’s enquiry also states that the Authority:

“...considers that when assessing the risks of a proposed test plan, the system operator would have been expected to have questioned the grid owner’s assumptions that the high power tests were similar to the low power tests and through this challenge may have identified, eliminated or mitigated the risk that led to the event of 12 November 2013.”

“...remains of the view that the system operator could have taken a more proactive role in questioning the assumptions on which the grid owner and Siemen’s positions were based.”

3.15 The system operator’s self-assessment notes (section 4.6.1):

“While the Authority is yet to publish its review of [the 12 November 2013] event the System Operator believes it was not reasonably foreseeable. To a reasonable degree the System Operator must rely on asset owner expertise when assessing commissioning plans. Given the nature of the New Zealand power system there is always a risk that asset settings and control system assumptions valid in larger power systems can result in events. This has occurred previously when a large generator twice tripped during under frequency events due to key control system assumptions that were not valid in a New Zealand context.”

3.16 The Security and Reliability Council considered a draft version of the Authority’s enquiry at its 20 March 2015 meeting. It noted that “valuable lessons had been learned in terms of risk management and the documentation of processes.”

3.17 The Authority’s enquiry concluded that “the Code is not sufficiently clear on the standard that should be applied when agreeing to test and commissioning plans.” The corresponding recommendation from the enquiry was that “an appropriate standard should be required for the system operator’s agreement to test and commissioning plans. Amending the Code and Technical Code to apply the [reasonable and prudent operator] obligation to the system operator when agreeing to test plans would achieve this objective.”

3.18 The Authority and the system operator’s renegotiation of the SOSPA has included discussion of how broadly the reasonable and prudent operator obligation should apply to the system operator’s activities. Once negotiations are concluded, the Authority will consider whether Code development to broaden the scope of the reasonable and prudent operator standard is appropriate.

3.19 The Authority also has concerns about whether the targets for frequency excursions specified in clause 7.2(1)(b)(ii) of the Code are the most appropriate mechanism to promote an efficient level of reliability.⁷ The number of excursions is largely out of the control of the system operator, whereas the system response to an excursion is a direct consequence of the system operator’s procurement of reserves. The system operator’s performance may be better measured by the reserve management objective set out in Schedule 8.4 of the Code.

⁷ The Authority has a pending project on its Work Programme to address this concern. It is item 3.32 in the 2014-15 Work Programme available from <http://www.ea.govt.nz/about-us/strategic-planning-and-reporting/our-work-programme/>

- 3.20 The Authority looks forward to the development and establishment of robust performance metrics through the SOSPA renegotiation.

Time error requirements have been met

- 3.21 The management of time error is an additional aspect of the management of frequency.
- 3.22 The self-assessment reports that there were no instances where time error exceeded the ± 5 second limit during the review period. The system operator is required to eliminate the time error at least once a day and it did not report any breach of this Code obligation.⁸ It has separately confirmed to the Authority that time error was eliminated at least once every day. Therefore, the system operator achieved the requirements for management of time error.

The system operator had to manage a number of challenging situations

- 3.23 The self-assessment notes that the review period was characterised by continuing high levels of asset commissioning, including new Pole 2 controls, new cross-Auckland cables, Taupo region geothermal stations and further Wellington area wind generation.
- 3.24 A significant loss of supply event occurred on 12 November 2013 when Pole 3 tripped during a commissioning test, resulting in some North Island AUFLS feeders tripping (a partial triggering of AUFLS Block 1). This event has been discussed above from paragraph 3.5.
- 3.25 There were six under-frequency events (where frequency fell below 49.25 hertz) during the review period, four in the North Island and two in the South Island. This compares to nine events in the previous year. Four of those events were caused by HVDC issues, all before HVDC commissioning was completed in December 2013. Between the start of December 2013 and the end of August 2014 there were only two under-frequency events.
- 3.26 The system operator identified performance issues with some interruptible load (instantaneous reserve) providers in relation to two of the six under-frequency events. These issues were reported to the Authority as alleged breaches of the Code.
- 3.27 Other significant events for the system operator during the review period included the following.
- (a) On 27 May 2014, the power system experienced a generation shortfall during very cold weather across much of the country and a grid emergency was declared. Deficit reserves dispatch commenced shortly after 07:30.
 - (b) On 24 July 2014 a double HAY 220 kV bus fault occurred at 07:10. This resulted in the tripping of a number of transmission assets, and a need to re-establish N-1 security to the Wellington region. The system operator has published a report on this event.⁹
 - (c) On 19 August 2014 a shortage of energy and reserve offers resulted in a reserve deficit in real time. The system operator has published a report on this event.⁹
- 3.28 The event reporting that the system operator has published is a new initiative that commenced during the review period. The Authority welcomes this approach and the benefits it will bring in terms of industry education and information transparency for effective market functioning.
- 3.29 The Authority is conducting enquiries into the 27 May and 19 August events.¹⁰ The system operator's performance is not a focus of those enquiries, though the effectiveness of the system operator's load forecasting is within the scope of one of them.

⁸ As required by clause 7.2(1)(b)(vi) of the Code.

⁹ Available at <http://www.systemoperator.co.nz/documents/reports>.

¹⁰ Refer to <http://www.ea.govt.nz/monitoring/enquiries-reviews-and-investigations/2014/>

A Rulings Panel decision raised concerns about the system operator's performance

- 3.30 An under-frequency event that occurred on 1 May 2013, prior to the beginning of the review period. While the event itself was outside the review period, the Rulings Panel's decision relating to the event is dated 6 June 2014 and is within the review period.¹¹
- 3.31 The decision provided clarity on the facts of the event and its consequences. The event occurred during a series of planned drop load tests on Meridian's "G5" generator at the Manapouri power station.
- 3.32 The Rulings Panel identified some shortcomings in the system operator's approval process for the drop load tests. The system operator updated and improved its processes immediately after the event, which is to be commended. The system operator worked with the Authority to assess and report on the lessons from the Rulings Panel's decision, such as processes for future determinations of under-frequency event causer, and Code redevelopment.

The system operator's market systems performed well

- 3.33 There were no unplanned outages of the system operator's market systems that lasted longer than two hours. This means there was little to no market impact on industry participants from the system operator's maintenance and operation of these systems.
- 3.34 The system operator successfully coordinated a major planned outage of its market systems to facilitate a substantial upgrade to its Oracle database.
- 3.35 The system operator's performance appears to have been highly effective, though the system operator's acknowledgement in its self-assessment to "areas that will be improved" suggests that efficiency gains can be made.

The system operator has successfully exercised its security of supply role

- 3.36 The system operator completed its regular security of supply reporting on-time and to a high quality. A sequence of low hydro inflows at the start of 2014 was countered by significant rainfall in April. As such, the system operator's emergency management procedures were unused during the period.

4 The system operator has reliably met its obligations

The system operator's compliance with the Code has been satisfactory

- 4.1 The Authority considers that the system operator has demonstrated a strong commitment to compliance. The system operator deals with compliance very professionally and has a good working relationship with the Authority.
- 4.2 The system operator self-reported 18 Code breaches during the review period,¹² compared with 37 during the previous year. No other parties made allegations of Code breaches by the system operator during the review period.

¹¹ The decision is available at <http://www.ea.govt.nz/dmsdocument/18153>.

¹² A breach is included in this figure if it was *reported* during the review period, although the breach may not have occurred during the review period.

- 4.3 It is difficult to gauge whether there has been any long-term trend in the number or severity of breaches, as many in the previous period were the result of a large number of transient issues, such as asset commissioning and changes made to the system operator's market systems.
- 4.4 The Authority notes that a number of the breaches in the review period relate to a manual process used to calculate a 'risk subtractor' for the HVDC. These breaches are recorded against different clauses, such as relating to the preparation of various schedules. The Authority suggests these breaches may be better recorded against the policy statement (e.g. over/under procurement of reserves) in a way that is more aligned to the risk created by the error. Regardless, consistent reporting of these breaches would also improve the Authority's ability to monitor trends in those breaches over time rather than having those breaches allocated across a number of different Code provisions. The Authority understands that this particular problem with the 'risk subtractor' will be resolved within the 2015 calendar year. However, the issue may have broader application to other kinds of breaches.
- 4.5 With one exception, the Authority considers that the system operator has performed its review and audit obligations under the Code. The exception relates to the use of unaudited RMT software on 4 October 2013. The system operator unintentionally mismatched a completed RMT audit opinion against another version of the RMT software. That version of RMT was subsequently deployed and used for one day, as the system operator's records incorrectly showed it as having been audited. A subsequent audit found the deployed software was compliant; no market impact was identified. The system operator has reviewed and amended its auditing and deployment processes to reduce the likelihood of this error reoccurring.

The system operator has considered opportunities to reduce manual errors

- 4.6 The Authority's review of the system operator's performance for 2012-13 included a recommendation that the system operator "consider whether practical opportunities are available to reduce the number of manual errors where there is a potential market impact, such as implementation of new or changed procedures".
- 4.7 The system operator's self-assessment notes:¹³
- "The recent introduction of new grid assets and connected equipment (such as Pole 2 and Pole 3 control systems and various protection schemes) and operational systems (such as [Multiple Frequency Keeper] and [Frequency Keeping Control]) as well as parallel operation with Vector has changed the nature of the operational management of some aspects the power system. While automated systems manage some of the changes and added complexity, this is not always the case. There is some relearning required following the recent changes and potential for manual errors to increase in the interim... While there may be increased opportunities for error in the short term, over time, as the System Operator's knowledge and competency expands error rates should decline."*
- 4.8 The Authority agrees that automated systems will not be capable of cost-effectively preventing all manual errors. The system operator has a comprehensive event review process that assesses, amongst other things, the market impact of each event. The Authority encourages the system operator to further develop the existing trend analysis associated with its event review process, to ensure that opportunities to mitigate market impact are identified.

¹³ Refer to section 4.1.1 of the self-assessment

The system operator has performed well under the terms of the SOSPA

- 4.9 Although there are no formal performance standards agreed between the system operator and the Authority to be assessed during the review period, the SOSPA provides for a component of the annual fee payable to the system operator to be dependent on the system operator's performance, as measured against criteria established by the Authority, in consultation with the system operator.
- 4.10 The purpose of this is to:
- (a) incentivise acceptable performance by the system operator across all of its contractual responsibilities including the core functions, and the areas the Authority wishes the system operator to particularly focus on when carrying out its duties under the SOSPA over the 12 month assessment period
 - (b) define a standard for what constitutes good performance in those areas
 - (c) incentivise the system operator to perform to that standard.
- 4.11 The assessment of the system operator's performance under the SOSPA in the year to 30 June 2014 was based on three key areas:
- (a) Part 7 of Code joint planning requirements including capex and business planning (SOSPA schedule 4 and clause 2.7, respectively)
 - (b) service delivery (in general across the contract, and particularly in relation to provision of data and the additional services under clause 14 of the SOSPA)
 - (c) meeting agreed project deliverables for selected items on the Authority and system operator's Joint Development Programme.
- 4.12 The amount of the system operator's payment that is at risk each year ending 30 June is \$250,000 plus adjustments for inflation.
- 4.13 The Authority's assessment of the system operator's performance against these criteria resulted in the system operator retaining 91% of the at-risk amount.

5 The system operator has continued to improve its project planning and communication

The system operator is committed to joint planning

- 5.1 Clause 7.7 of the Code requires the system operator and the Authority to agree and publish a joint development programme (JDP) that coordinates and prioritises:
- (a) the items on the Authority's industry development work plan on which the Authority intends to liaise with the system operator
 - (b) the system operator's capital expenditure plan (capex plan) provided to the Authority under the SOSPA.
- 5.2 The Authority has found the system operator to be very engaged on and committed to joint project planning, and its attitude very positive. In particular:
- (a) the system operator has been engaged on the agreed integrated project life cycle (IPLC) for managing joint projects, and contributed strongly to the development of the associated processes. These processes are now in place, and appear to be flowing through into improved project management disciplines

- (b) the system operator's engagement on developing processes for budgetary cost estimates has been positive. The Authority is also pleased with the progress that has been made on the process for prioritising projects within the JDP
 - (c) timely advice is being received on capital project activity through the capex plan, and the system operator has been very helpful in answering questions on that material. Presentations on planning and strategy regarding specific projects have been well received
 - (d) the system operator has collaborated well on project summary documentation, and is helping to improve the Authority's understanding of the details of the capex plan by presenting good supporting detail in an easily-digestible manner.
- 5.3 The Authority considers joint planning has significantly improved transparency in relation to project issues, and improved the timeliness with which project issues are raised and resolved.
- 5.4 The Authority has communicated some specific areas for improvement around these activities to the system operator, via the at-risk assessment under the SOSPA. Several of those areas for improvement related to matters in the July-August 2013 period so are outside of the period being assessed by this annual review.
- 5.5 The Authority looks forward to the joint planning processes becoming more strongly embedded into the system operator's day-to-day activities (as well as its own) during the next review period.

The system operator is generally managing projects well

- 5.6 The system operator has shown strong commitment to project deliverables and timelines. The system operator was observed to have put in a lot of work to meet deadlines, and deliverables have generally been of high quality. System operator staff have proved to be innovative and are achieving good results.
- 5.7 The Authority has been pleased with the management and results of projects during the review period, including the National Markets for Instantaneous Reserve, Dispatchable Demand and Multiple Frequency Keeper projects. The system operator also did a very good job in establishing the Planned Outage Coordination Protocol Technical Advisory Group, which performed very effectively. All current projects are going well to date, though there have been some changes in direction and timeframes driven by the Authority.
- 5.8 While the IPLC process appears to be resulting in better-understood cost estimates, it remains to be seen if that will flow through to better management of project spending. The Authority encourages the system operator to maintain a focus on this on this important aspect of project management.
- 5.9 The Authority also considers there is room to improve the consistency of project management performance across all projects and staff. While performance on some projects has been excellent, there can be significant variation, often depending on whether there are dedicated project managers involved, and the availability of certain key staff members.
- 5.10 The system operator's structural changes announced in August 2014 include setting up a new project management and reporting team. The Authority supports the stronger focus on further improving project management and will assess the results in the next review period.
- 5.11 The Authority is looking forward to implementing this new team structure across all projects during the next reporting period.

System operator's communication with the Authority is generally good

- 5.12 The Authority considers that the relationship charter is a very important development, and establishes a basis for good communication.
- 5.13 System operator staff generally communicate well with the Authority, and the two organisations are building good working relationships. Authority staff have commented that communication is proactive, timely, cooperative, friendly, and on a no-surprises basis.
- 5.14 While communication has generally been very good, two minor inconsistencies were observed:
- (a) there were delays in response and delivery to the Authority since the system operator began its restructure planning. Managers appeared quite busy and struggled to respond to queries and requests in a timely manner (although responses were usually prioritised appropriately)
 - (b) there were some pockets within the system operator that struggled to provide a timely and adequate response to the Authority's requests throughout the year.
- 5.15 However, the Authority recognises that of these minor inconsistencies, the former is a transient issue caused by the restructure and the latter was resolved by the restructure. Accordingly, the Authority looks forward to communication reverting to the previously-observed high standards once the restructure is complete.

6 The system operator provided good quality professional services

Quality of written reports has improved

- 6.1 The system operator has actively improved its reporting in a manner reflecting the Authority's requirements and has shown a strong commitment to continue that evolution.
- 6.2 The Authority's review of the system operator's performance for 2012-13 included a recommendation that the system operator "ensure that reports are appropriately detailed for their purpose and audience, and have been subject to peer review".
- 6.3 Early in the 2013-14 review period a number of documents (such as the security of supply forecasting and information policy, the procurement plan and monthly ancillary service cost reporting) lacked effective peer-review, required rework, and were not sufficiently detailed or were not fit for purpose. However, as the review period progressed, the system operator began working more closely with the Authority on some papers, to good effect. The introduction of "walkthroughs" of draft papers has had positive results.
- 6.4 The system operator updated its monthly Technical Advisory Services Contract (TASC) report format in May 2014. This will be further refined in the 2014-15 review period by providing forecast hours and completion dates for assignments. Improvements in May 2014 aimed to make the report more reader-friendly and concise, as well as providing additional metrics such as TASC status against the agreed schedule and budget, and reasons for any deviations. In addition, many TASC reports are now published on the websites of either the system operator or the Authority, which the Authority expects will be of value to some industry participants.
- 6.5 The system operator has made changes to the review process for project reporting and plans to include more action-based report commentary. The Authority appreciates and supports these developments.

Technical advisory services generally on time and up to standard

6.6 TASC projects were generally delivered on time and up to standard. The Authority considers the quality of TASC reports has improved during the review period. The Authority also notes that the implementation of IPLC (refer to paragraph 5.2(a)) has improved management of TASC projects.

6.7 Areas where the system operator could improve its service are:

- (a) consistency across projects. For instance, the review of gate closure (TASC 42) was not completed in a timely manner, and did not follow the IPLC process
- (b) project briefs should be written with publication in mind. The Authority notes that the system operator began to do this toward the end of the review period
- (c) the Authority encourages more use of project walkthroughs.

Scope to improve processes for changing Code documents

6.8 The Authority's review of the system operator's performance for 2012-13 included three recommendations related to documents incorporated by reference into the Code:

- (a) that the system operator "work with the Authority to develop better processes around making changes to documents incorporated by reference"
- (b) that the system operator should consider whether it could adopt a more formal approach to consultation
- (c) that these documents are assessed for consistency against the Authority's statutory objective.

6.9 Since those recommendations were made in December 2013, there have been no documents incorporated by reference into the Code that have been changed. It follows that there has been no opportunity for the system operator to directly put these recommendations into practice. Nonetheless, the Authority is pleased to be able to make the following observations:

- (a) that the system operator has undertaken to engage with the Authority on a more in-depth basis at an early stage of the reviews of these documents and has demonstrated early engagement with the updates to the system security forecast and the RMT software functional specification
- (b) assessment against the Authority's statutory objective is something that will become more embedded within everything the system operator does, in order to achieve strategic alignment
- (c) that the system operator demonstrated an innovative and highly effective approach to consultation on the extended reserve project by producing a set of animations that illustrated the material in a highly accessible way.

The system operator's relationship with wider industry is positive

6.10 In general, the system operator's relationship with the wider industry appears to be positive. The system operator has held several useful industry workshops and meetings to share knowledge and perspectives. The system operator customer satisfaction survey for 2013 showed a significant improvement in customer perceptions, with an overall 'good and excellent' total of 94%. The Authority considers this is a very good outcome.

6.11 Authority staff consider that the three projects dealing with reserves, frequency management, and frequency keeping control have shown that communication with industry is improving.

- 6.12 The system operator's new website, launched on 28 November 2013, is a further step to make system operator information more easily accessible to industry.
- 6.13 The Authority encourages the system operator to continue building on the service factors for which it regularly receives low scores in the customer satisfaction survey, particularly in the area of "understanding your needs".

7 The system operator's self-assessment is fair and well-focused

- 7.1 The Authority noted in its 2012-13 annual review of system operator performance that it would prefer the system operator's self-assessment to better analyse *how* the system operator performed rather than *what* it performed. The system operator responded with changes in the 2013-14 self-assessment that have greatly improved the insight provided by the report.
- 7.2 The self-assessment focuses on providing a performance assessment of key areas, without getting distracted by the detail of the appendices.
- 7.3 While the Authority is impressed with the improvements made, it considers there are some further areas for improvement. One of these relates to the self-reported compliance breaches. Currently the self-assessment shows the number of self-reported breaches:¹⁴
- (a) in each month of the review period
 - (b) over each of the last three years ending 31 August, for each Code provision not complied with
 - (c) over each of the last two years ending 31 August by "error source". There are three error sources: process, manual error and IT issues.
- 7.4 Another useful analysis of breach statistics over each of the last several years might be to group the breaches into categories to reveal the number of breaches associated with "transient factors" and those associated with business-as-usual activities. This would help inform any trend in "underlying" breaches. Identification of any trends would enable the system operator to address each trend and give insight for Code development.
- 7.5 For example, many of the breaches in the year ended 31 August 2013 related to implementing market systems. It could be useful to compare the number of breaches between 2013 and 2014 excluding those breaches. Ideally this would include a retrospective categorisation of breaches, though there will be limitations to this approach.

Recommendation 1: The system operator should consider whether self-breaches can be categorised in more detail and the analysis can be included in future self-assessments.

- 7.6 As mentioned in paragraph 3.4, the self-assessment did not state whether compliance with clause 7.2(1)(c) of the Code had been achieved.

Recommendation 2: Future self-assessments should specify whether requests have been received relating to harmonic levels, voltage flicker levels, and negative sequence voltage and, if so, how they were dealt with.

¹⁴ Refer to Appendix 4 of the self-assessment

7.7 As mentioned in paragraph 3.22, it would be useful for the self-assessment to also indicate whether frequency time error was eliminated at least once every day.

Recommendation 3: Future self-assessments should specify whether frequency time error was eliminated at least once every day and if not, why not.

7.8 The SRC, at its 21 October 2014 meeting, discussed the following areas as possible areas for inclusion in future self-assessments by the system operator:

- (a) identification of international trends and best practice, and how this influences the system operator's future direction
- (b) demonstrating the efficiency of the system operator (including the system operator's interactions with asset owners) and, if possible, how this compares internationally
- (c) identification of any actual or projected staffing shortfalls (such as an aging workforce, or the availability of suitably qualified personnel).

7.9 The SRC and the Authority agree that comparing system operators across jurisdictions is difficult and generally offers no insight on relative performance. The Authority recommends that the system operator consider including the areas identified by the SRC in future self-assessments.

Recommendation 4: The system operator should consider whether the Security and Reliability Council's suggestions (as set out in paragraph 7.8) can be included in future self-assessments.

8 Overall the system operator has performed well

8.1 The system operator has performed well in the current review period. The system operator has taken significant steps during the period to improve strategic alignment with the Authority and to continually improve all facets of its service.

8.2 Where this report identifies areas for further improvement, the Authority is aware that in many cases those improvements are either complete or under way. The Authority considers that the system operator's performance has improved over the course of the review period.