

# **Reserve Bank of New Zealand Exchange Settlement Account System (ESAS)**

## **Assessment of Observance of Principles for Financial Market Infrastructures**

Issue [2.0]

[March 2019]

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## **Introduction**

This is the second self-assessment for the ESAS system against the Principles for Financial Market Infrastructures.

This self-assessment has been prepared by the Banking Department of the Reserve Bank of New Zealand. From 1 April 2019, the Banking Department is responsible for the operation of ESAS.

As noted in Key Consideration 2.2, ESAS is subject to regulation by the Supervision Department of the Reserve Bank of New Zealand.

Arrangements are in place to ensure that the Banking Department and the Supervision Department interact with each other on an arm's length basis, including reporting to separate General Managers of the Reserve Bank.

**This self-assessment represents the views of the Banking Department and not the views of the Supervision Department.**

## Document control

### i. Change history

Issue	Date	Description of changes
1.0	March 2016	Publication of inaugural self-assessment
2.0	March 2019	Publication of second self-assessment

### ii. Related documents

Document	Reference
ESAS Terms & Conditions	<a href="http://www.rbnz.govt.nz/markets_and_payment_operations/esas/2781190.pdf">http://www.rbnz.govt.nz/markets_and_payment_operations/esas/2781190.pdf</a>
Overview of ESAS	<a href="http://www.rbnz.govt.nz/markets_and_payment_operations/esas/0085114.html">http://www.rbnz.govt.nz/markets_and_payment_operations/esas/0085114.html</a>
Annual Report for ESAS - 2018	<a href="https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Markets-and-payments/esas/ESAS-Annual-Report-2018.pdf">https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Markets-and-payments/esas/ESAS-Annual-Report-2018.pdf</a>

## Introduction

In April 2012, the Bank for International Settlements (BIS) Committee on Payment and Settlement Systems (CPSS, now the Committee on Payments and Market Infrastructures (CPMI)) and the Technical Committee of the International Organisation of Securities Commissions (IOSCO) published a set of twenty-four principles for financial market infrastructures (FMIs).

CPSS-IOSCO define a FMI as a multilateral system used for the purposes of clearing, settling, or recording payments, securities, derivatives or other financial transactions. FMIs include systemically important payment systems, central securities depositories, securities settlement systems, central counterparties and trade repositories.

CPSS-IOSCO's new principles replaced the existing standards for FMIs published in *Core principles for systemically important payment systems* (CPSS, 2001), *Recommendations for securities settlement systems* (CPSS-IOSCO, 2001) and *Recommendations for central counterparties* (CPSS-IOSCO, 2004). The new principles are wider in scope than the previous standards incorporating lessons learned from the financial crisis and take into account the experience of implementing the previous standards.

CPSS-IOSCO members will strive to adopt the principles by the end of 2012 and put them in to effect as soon as possible. FMIs are expected to observe the standards as soon as possible. CPSS-IOSCO notes that the principles for FMIs are applicable to FMIs operated by central banks as well as those operated by the private sector.

A number of the principles, such as legal and governance issues and operational risk, apply to all types of FMIs, whereas some of the principles only apply to particular types of FMIs. A definition of each type of FMI and a guide to the general applicability of principles to FMIs reproduced from *Principles for financial market infrastructures, CPSS-IOSCO, April 2012* is provided as Attachment A.

## 1. Executive summary

The Reserve Bank of New Zealand (RBNZ) operates the Exchange Settlement Account system (ESAS). The RBNZ has evaluated the observance of ESAS with each of the principles for financial markets infrastructure developed by CPSS-IOSCO. The table below shows a summary of the RBNZ's assessment.

Principles for FMIs	ESAS				
	Observed	Broadly Observed	Partly Observed	Not Observed	Not Applicable
<b>General organisation</b>					
1. Legal basis	√				
2. Governance	√				
3. Framework for the comprehensive management of risks	√				
<b>Credit and liquidity risk management</b>					
4. Credit risk	√				
5. Collateral	√				
6. Margin					x
7. Liquidity risk	√				
<b>Settlement</b>					
8. Settlement finality	√				
9. Money Settlements	√				
10. Physical deliveries					x
<b>Central securities depository &amp; exchange-of-value settlement systems</b>					
11. Central securities depositories					x
12. Exchange-of-value settlement systems					x
<b>Default management</b>					
13. Participant – default rules and procedures	√				
14. Segregation and portability					x
<b>General business and operational risk management</b>					
15. General business risk	√				
16. Custody and investment risks	√				
17. Operational risks	√				
<b>Access</b>					
18. Access and participation requirements		√			
19. Tiered participation requirements		√			
20. FMI links					x
<b>Efficiency</b>					
21. Efficiency and effectiveness	√				
22. Communication procedures and standards	√				
<b>Transparency</b>					
23. Disclosure of rules, key procedures and market data	√				
24. Disclosure of market data by trade repositories					x

Seventeen of the twenty-four principles for FMIs are considered to apply to ESAS. It is RBNZ's assessment that ESAS observes fifteen of these principles, with two principles being broadly observed.

The RBNZ's assessment methodology is explained in Section 3 of this report.

ESAS's approach or method for observing each of the principles is summarized briefly below.

### **General organisation**

- New Zealand law together with the ESAS Terms and Conditions provides an enforceable legal framework for ESAS activities (principle 1).
- RBNZ's governance arrangements with user consultation on major investment matters fulfill public interest requirements and promote the interest of ESAS users (principle 2).
- RBNZ maintains a high level of security and operational reliability and maintains a formal business continuity plan. RBNZ senior management and RBNZ's Board review performance. Internal controls are audited by PwC (as agent for the Auditor-General) and external audit reports are available to accountholders and others on request (principle 3).

### **Credit and liquidity risk management**

- RBNZ is not exposed to credit risk from the settlement of payments between participants in ESAS. These payments are settled using funds in participants' ESAs, which in the normal course of events cannot be overdrawn, and RBNZ does not guarantee that any transaction submitted to ESAS will settle. Accordingly, in the event of a default of a participant RBNZ would not be exposed to a loss in its role as operator of ESAS. RBNZ does, however, incur credit risk through the provision of liquidity to participants (including counterparties which are indirect participants) as part of its monetary policy implementation activities and in support of payments operations, which it manages by taking collateral under repo and foreign exchange swaps (principle 5).
- Since ESAS operates as an RTGS system and does not guarantee that queued payments will settle, RBNZ as operator of the system assumes no liquidity risk. Therefore many of the requirements under Principle 7 – including those around liquidity stress testing, monitoring, and the maintenance of a pool of liquid assets – do not apply. As noted above, however, settling payments on an RTGS basis does impose additional liquidity requirements on participants. RBNZ assists participants in the management of these requirements through the liquidity-efficient design of the system, the provision of liquidity using reverse repurchase agreements, and the provision of real-time information on transactions and balances. RBNZ's operational staff also monitor settlement activity and participant balances in ESAS for evidence of any disruption to the flow of liquidity, which could occur if a participant experienced an operational or financial problem. To mitigate possible disruption under such a scenario, participants are required to inform RBNZ in the event of any operational problem.

## Settlement

- A critical aspect of the legal basis for ESAS's operations is settlement finality. In accordance with Principle 8, the ESAS Terms and Conditions state that settlement is final when the ESAs of the paying and receiving participants in ESAS are simultaneously debited and credited, respectively. The irrevocability of payments settled in ESAS is further protected by ESAS's approval as a designated settlement system.

## Default management

- RBNZ as system operator has the right to suspend or terminate the operation of an account holder's settlement account in ESAS if it is reasonable for RBNZ to do so (principle 13). Account holders are required to advise RBNZ immediately upon the occurrence or threatened occurrence of any Notifiable Event which includes the Account holder being unable to pay its debts as they fall due. In these circumstances account holders are required to also advise the Bank of that Notifiable Event and the steps (if any) the Account holder is taking to ensure that it continues to have authority to issue Payment Instructions.
- ESAS is not a Central Counterparty -CCP<sup>1</sup> (principle 14 applies only to CCPs).

## General business and operational risk management

- Since ESAS is a central bank-owned system, it has not been assessed against the requirement to hold ring-fenced liquid net assets funded by equity to cover business risk and support a recovery or wind-down plan (Key Considerations 15.2–15.4). This recognises central banks' inherent ability to supply liquidity to support continuity of operations, should liquidity be required for this purpose. Similarly, ESAS has not been assessed against the requirement to maintain a plan to raise additional equity.
- Management and internal control systems of ESAS are robust and procedures are continuously improved. Internal controls are audited by PwC as agent for the Auditor-General. On-going internal audit reviews of key operational processes, change control processes, network and access control provide assurance that operational risk is being effectively managed (principles 15 to 17). There is also an incident reporting system that is administered by the Bank's Risk and Audit department.
- The RBNZ's risk management practices identify potential vulnerabilities. The ESAS system is designed for high availability and resiliency. The RBNZ maintains two fully equipped computer operations sites and utilises four separate systems (two at each site) with one system being designated "production" (primary) at any time and the other three designated as secondary. All three secondary systems are synchronised in real time to the primary system. The location of the production system is alternated between sites on a regular basis (principle 17).

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<sup>1</sup> A CCP is an entity that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer, and thereby ensuring the performance of every open contract.

## Access and tiered participation

- RBNZ has published on its website its policy on access to ESAS (principle 18). RBNZ recognizes that this policy should be augmented with more specific guidance on access and will update its access policy to incorporate such guidance.
- The RBNZ recognises the potential risk of ESAS accountholders operating on behalf of other entities if indirect participants represent a large proportion of the total system's transactions or a large proportion of a direct participant's activity. Reliance is placed on accountholders having in place effective policies for management of risks (particularly credit risk, liquidity risk and operational risk) which are appropriate to the accountholder's business and which provide assurance that accountholders are able to settle their payment obligations in ESAS when those obligations are due. In the case of accountholders that are registered banks, reliance is placed on directors of accountholders making quarterly attestations in their General Disclosure Statements that the accountholder had systems in place to monitor and control adequately the accountholder's material risks, including credit risk, concentration of credit risk, interest rate risk, currency risk, equity risk, liquidity risk, operational risk and other business risks, and that those systems were being properly applied during the relevant period. Moreover, institutions operating in New Zealand which are considered to be systemically important have their own exchange settlement account. RBNZ intends to review arrangements in order to obtain information from accountholders to confirm that these risks are low and are being proactively managed by them. Given this, ESAS broadly observes principle 19.

## Efficiency

- An objective of RBNZ is to promote the maintenance of a sound and efficient financial system. Accountholders are consulted on proposed major changes and RBNZ works closely participants and with Payments NZ Limited in order to promote improvements to the system. (principle 21).
- RBNZ interacts with accountholders in several ways: a regular newsletter is emailed to accountholders, an annual report on ESAS is published, a customer survey is conducted every year with results reported back to accountholders, and RBNZ management will meet with individual accountholders from time to time.
- ESAS provides for submission of RTGS payment instructions via several channels, thereby providing participants with alternative options and facilitating wider access. In particular, instructions can be delivered via three external feeder systems – ESAS-SWIFT Interface, the NZClear system and SBI (retail payment switch) – or entered into ESAS directly. In the year to end June 2018, instructions sent via SWIFT accounted for 88 per cent of the volume and 80 per cent of the value of transactions settled in ESAS. Instructions sent via SWIFT use internationally accepted communication procedures and message standards set by SWIFT, and are transmitted over the SWIFT communications network. Because NZClear and ESAS reside on the same computer platform, there is no external messaging between these systems. The procedures and standards for participants to send payments via the

SWIFT and SBI feeder systems are determined by RBNZ in conjunction with Payments NZ (principle 22).

### **Transparency**

- ESAS Terms and Conditions are considered to be clear and comprehensive and include: membership requirements, accountholders' rights and obligations and the RBNZ's rights and obligations. The Terms and Conditions together with additional system information are published on the RBNZ's website (principle 23).
- Summary data is published in the ESAS annual report to accountholders which is publicly available on the RBNZ website. This is high level data rather than the data contemplated by principle 24 which is not considered applicable in the context of ESAS.

## 2. The ESAS service

ESAS is New Zealand's RTGS system. It is operated by the Reserve Bank of New Zealand's (RBNZ) Banking Department, providing real-time irrevocable settlements on a gross basis.

In ESAS, final and irrevocable settlement of transactions is achieved in real-time by the simultaneous crediting and debiting of Exchange Settlement Accounts (ESAs) held at RBNZ.

ESAS has been in operation in New Zealand as a real time gross settlement system since March 1998.

ESAS is a designated settlement system under Part 5C of the Reserve Bank Act 1989. Designation also gives legislative backing to the finality of settlements effected in accordance with the rules of the system. The Reserve Bank's Supervision Department is the regulator of the system. Controls are in place to ensure that the Reserve Bank's Banking Department and Supervision Department operate at arm's length.

Each ESAS accountholder has an ESA with the Reserve Bank. The operation of those accounts is governed by the Exchange Settlement Account System Terms and Conditions.

Current ESAS accountholders include several registered banks, the Reserve Bank, CLS Bank and New Zealand Depository Limited. However access rules permit other organisations meeting certain criteria to have accounts as well. Accountholders submit transactions to ESAS through a number of feeder systems (known as "authorised submitting systems").

The feeder systems include:

- NZClear, New Zealand's central securities depository and principal securities settlement platform for the financial services industry. The Reserve Bank is the system operator of NZClear
- the ESAS-SWIFT Interface using the SWIFT Y copy protocol for a closed user group administered by the Reserve Bank
- the Settlement Before Interchange (SBI) interface. This service settles the transactions submitted to ESAS in respect of files containing retail transactions between bilateral pairs of accountholders. Once the transaction is settled in ESAS, the associated file of retail transactions is released to the destination bank. The SBI service involves a closed user group administered by Payments NZ Limited. SBI utilises SWIFT FileAct and SWIFT Y copy.

### **What does ESAS do?**

The main purpose of ESAS is to provide ESAs for the final and irrevocable settlement of all real time payments by accountholders. There are no overdrafts permitted on these accounts. Accountholders include financial institutions and RBNZ.

The settlement request queueing algorithm used within the ESAS system is Next Down Looping, where the settlement process starts at the top of the queue and continues down the queue settling any settlement requests where an Accountholder has sufficient funds. Accountholders also have

access to Auto Offset functionality, which is the process of searching the payment queue for eligible settlement requests that, if settled simultaneously, would allow an initiating settlement request to settle. This test is applied if an Accountholder has insufficient funds to settle an authorised payment instruction. Auto Offset is bilateral – the system will only consider simultaneous settlement of a transaction (the initiating transaction) between two parties, and one or more transactions (the offsetting transaction(s)) between the same two parties. This means that settlement requests may not necessarily settle in the order that they were received by the ESAS system.

The ESAS system also has an operation called Freeze Frame which is run periodically or at the Reserve Bank's instigation. Freeze Frame will settle all settlement requests within the ESAS system if as a result of settlement no accounts will go below their minimum allowed balance. If one account will go below its minimum allowed balance then no settlement requests will be settled. Accountholders also have access to authorisation functionality where they can have all settlement requests either authorised or not authorised or they can set limits for settlement requests that can be settled and settlement requests that require authorisation. Accountholders also have the ability to de-authorise any authorised settlement requests.

The aggregate level of liquidity in the ESAS system is managed by the Reserve Bank. RBNZ injects or withdraws liquidity from the ESAS system by undertaking transactions such as foreign currency swap transactions, reverse repurchase agreements and issuance of Reserve Bank Bills. In addition, NZClear delivers an automated overnight reverse repo facility that gives the ability for authorised institutions to obtain liquidity on a collateralised basis from RBNZ at any time.

ESAS is owned and operated by RBNZ and, since it is not operated as a separate legal entity, the management and operation of ESAS fall under the governance structure of RBNZ, and are therefore subject to its normal oversight, decision-making and audit processes.

From 1 April 2019, day-to-day operations, liaison with participants, and the ongoing development of ESAS are delegated to the RBNZ's Banking Department. The Head of Banking is responsible for overseeing the management of ESAS. The Head of Banking reports to the Assistant Governor and General Manager Economics, Markets and Banking.

The Assistant Governor and Chief Financial Officer retains responsibility for delivery of the payment systems replacement project due to go live in mid-2019.

The RBNZ's Digital Services department (DS) supports the computer and telecommunications network and related security features utilised by the system.

The RBNZ's Risk and Audit department provides on-going review of ESAS's risk management framework. The RBNZ Board and its Audit Committee also contribute to the regular review of risk management practices.

Software support, software development and operational support services are provided by a third party service provider - Datacom Systems Limited (Datacom).

The internal controls of ESAS are audited each year by PricewaterhouseCoopers (“PwC”), as required by the ESAS Terms and Conditions, who act on behalf of the RBNZ’s external auditor, the Auditor-General. The scope of this audit includes the controls performed by Datacom.

As ESAS is run on a cost recovery basis with transaction fees charged to accountholders. Accountholders are consulted on all proposed major development and investment decisions.

### **ESAS system operating times – An ESAS day**

The ESAS system is available to process settlement requests for approximately 23 hours and 30 minutes per business day and all day on weekends. Because a banking day concludes at 8.30 a.m. the following business day, transactions processed on a weekend will be for value the preceding business day (i.e. generally the preceding Friday).

9.00am	<p>Start of day – ESAS open to accept settlement requests.</p> <p>NZClear, ESAS/SWIFT Interface and SBI Interface open to send and receive settlement requests.</p>
4.45pm	<p>Last time that ESAS will accept cash transactions submitted from NZClear for NZClear members who are not ESAS accountholders.</p> <p>ESAS/SWIFT interface continues to operate until End of Day.</p>
5.00pm	<p>ESAS will again start accepting transactions submitted from NZClear (only NZClear Members who are ESAS accountholders).</p> <p>ESAS continues to be available for transactions submitted via the ESAS-SWIFT and SBI Interfaces.</p> <p>Note: while ESAS continues to operate continuously, RTGS Helpdesk support ceases from the scheduled end of processing for SBI transactions (12.15 am).</p>
7:30am	RTGS Helpdesk support commences.
8.30am	<p>End of day processing for ESAS and NZClear. ESAS Systems closed for 30 minutes.</p> <p>The ESAS/SWIFT Interface stops receiving settlement requests.</p>

## Key ESAS statistics:

	<b>Year ended 30 June 2018</b>
Average daily transaction volumes	13,118
Average daily transaction values	NZ\$ 30.6 billion
Number of accountholders (at 30 June 2018 )	18

### 3. Assessment methodology

The assessment of ESAS's observance with the principles for FMIs contained in this report is based on the assessment methodology published by CPSS-IOSCO<sup>2</sup>.

This assessment methodology is built on the gravity and urgency to remedy any "issues of concern" such as a risk management flaw, a deficiency or a lack of transparency or effectiveness that needs to be addressed. An explanation for the ratings applied in the assessment is shown in the table below.

Rating	Definition
<b>Observed</b>	The FMI observes the principle. Any identified gaps and shortcomings are not issues of concern and are minor, manageable, and of a nature that the FMI could consider taking up in the normal course of its business.
<b>Broadly observed</b>	The FMI broadly observes the principle. One or more issues of concern have been identified that the FMI is encouraged to address and follow up to better manage risks or improve operations. The FMI should pursue such improvements in a defined timeline.
<b>Partly observed</b>	The FMI partly observes the principle. The assessment has identified one or more issues of concern that could become serious if not addressed in a timely manner. The FMI should accord a high priority to address these issues.
<b>Not observed</b>	The FMI does not observe the principle. The assessment has identified one or more serious issues of concern that warrant immediate action. Therefore, the FMI must accord the highest priority to address these issues in a timely manner.
<b>Not applicable</b>	The principle does not pertain to the type of FMI being assessed because of the particular legal, institutional, structural, or other characteristics of the FMI.

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<sup>2</sup> *Assessment methodology for the principles for FMIs and the responsibilities of authorities*, Consultative report, April 2012

For the purpose of assessing ESAS's observance of the principles for FMIs, ESAS is considered to provide the function of the following types of FMIs:

- payment systems (PSs).

A definition of each type of FMI and a guide to the general applicability of each principle to each type of FMI is provided as Attachment A.

Seventeen of the twenty-four principles for FMIs apply to ESAS. The seven principles not applicable to ESAS are:

- *Principle 6: Margin*  
ESAS is not a CCP and does not require a margin system to cover its credit exposure
- *Principle 10: Physical Deliveries*  
ESAS does not deliver physical securities
- *Principle 11: Central Securities Depositories –*  
ESAS is not a CSD
- *Principle 12: Exchange of Value settlements*  
ESAS is not an exchange of value settlement system
- *Principle 14: Segregation and portability*  
ESAS is not a central counterparty to securities transactions between members
- *Principle 20: FMI Links*  
No link arrangements exist between ESAS and other FMIs
- *Principle 24: Disclosure of market data by trade repositories*  
ESAS is not a trade repository

#### **4. Summary of major changes since last update**

This is the RBNZ's second self-assessment of ESAS's observance of the principles for FMIs.

Since completing its initial assessment in March 2016 the RBNZ has:

- Progressed a significant programme which encompasses replacement of both the ESAS and NZClear systems as well as the establishment of new infrastructure and support services. The programme is due to go live mid-2019.
- Completed an upgrade to SWIFT version 7.2 and enhanced security in line with SWIFT's Customer Security programme.

A feature of the replacement ESAS application will be the RTGS Extreme Contingency System which will allow a back-up version of the software and a backup network to be used should an extreme event occur such as a software or database corruption, a cyber-attack or a major network outage.

## 5. Principle-by-principle narrative disclosures

This section of the report contains detailed narrative disclosure for each principle for FMIs. The disclosure for each principle is intended to provide a narrative response for each applicable key consideration in sufficient detail and context to enable the reader to understand ESAS's approach or method for observing the principles.

<b>Principle 1:</b>	<b>Legal basis</b>
<p><i>An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.</i></p> <p><b>Assessment:</b></p> <p>ESAS <b>observes</b> principle 1.</p>	

### **Key Considerations**

#### ***KC1.1: The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.***

ESAS is an RTGS payment system, owned and operated by the Reserve Bank of New Zealand (RBNZ).

The key legal basis for the ESAS system is provided by the ESAS Terms and Conditions, which establish a complete, reliable and enforceable contract governed by New Zealand law. The rights and interests of ESAS, its accountholders and the system operator are defined in the Terms and Conditions. Changes to the Terms and Conditions require the consent of both parties. It is unusual for payment system rules to be based on mutual contract without giving the system operator the right to unilaterally change the relevant rules. The Bank intends to investigate whether there is merit in promoting a change to the contract to allow the system operator such rights.

Under ESAS Terms and Conditions (clause 5.1) settlements are final and irrevocable. Legal certainty of the settlement and finality arrangements is reinforced by the status of ESAS as a designated settlement system under part 5C of the Reserve Bank of New Zealand Act.

Similarly, the irrevocability of settled transactions originating from NZClear as a feeder system is supported by NZClear's status as a designated settlement system also.

Each ESAS accountholder is bound by the ESAS Terms and Conditions regardless of whether the accountholder is incorporated in New Zealand or another jurisdiction. ESAS Terms and Conditions

are governed by the laws of New Zealand and subject to the jurisdiction of the Courts of New Zealand. The system operates in New Zealand and all settlements take place in New Zealand.

***KC1.2: An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.***

The key legal basis for the ESAS system is provided by the ESAS Terms and Conditions, which establish a complete, reliable and enforceable contract governed by New Zealand law.

The ESAS Terms and Conditions are clear and comprehensive, and include:

- ESAS account operation,
- arrangements for facilitating settlement,
- clarity around irrevocability of settlement,
- accountholders' rights and obligations,
- the system operator's rights and obligations.

The Terms and Conditions and additional system information are available on the RBNZ website<sup>3</sup>. The Terms and Conditions were last updated in May 2017.

ESAS is a Designated Settlement System under the Reserve Bank of New Zealand Act.

Designation gives legislative backing to the finality of settlements effected in accordance with the rules of the system.

***KC1.3: An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.***

ESAS is operated in New Zealand by the Reserve Bank of New Zealand. The rights and obligations of accountholders to each other and the rights and obligations of the RBNZ as operator of the system are governed by a contract entered into by all accountholders.

The ESAS Terms and Conditions are supplemented with explanatory material which is published on RBNZ's website to facilitate understanding by accountholders and prospective accountholders of the risks they face through participation in the system. Publicly available material includes high-level descriptions of ESAS operations and settlement process, the ESAS system (including test system), business continuity arrangements and technical documentation.

There is a clear process for changing ESAS Terms and Conditions. Legal advice is sought in respect of all rule changes. Proposed rule changes are subject to a consultation with accountholders and are submitted informally to the regulator for advice of any regulatory concerns. Formal submission of a proposed rule change is made to the regulator which triggers a 21-working day period which provides the regulator with the opportunity to decline the proposed rule change.

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<sup>3</sup> See [www.rbnz.govt.nz](http://www.rbnz.govt.nz)

***KC1.4: An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.***

Although accountholders in ESAS include entities which are incorporated in foreign countries, the rules are governed by New Zealand law and require that all participants submit to the exclusive jurisdiction of New Zealand courts.

RBNZ seeks legal advice on any material amendments to these documents. There have been no legal disputes or challenges to any aspect of the contract.

***KC1.5: An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.***

The ESAS system operates in New Zealand and all settlements take place in New Zealand. Although accountholders in ESAS include entities which are incorporated in foreign countries, ESAS activity takes place in New Zealand. The rules are governed by New Zealand law and require that all participants submit to the exclusive jurisdiction of New Zealand courts.

## **Principle 2: Governance**

*An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.*

### **Assessment:**

ESAS **observes** principle 2.

### **Key Considerations**

*Note: Paragraph 3.2.7 of the Principles states that '[c]entral bank-operated systems may need to tailor the application of [the governance] principle in light of the central bank's own governance requirements and specific policy mandates'. RBNZ's view is that since ESAS is owned and operated by RBNZ as an internal function, rather than a separate legal entity, Key Considerations 3 and 4 of this Principle should not constrain the composition of RBNZ's governing body or that body's roles and responsibilities.*

**KC2.1: An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.**

ESAS is operated by the RBNZ. The RBNZ has a statutory responsibility to promote the maintenance of a sound and efficient financial system and RBNZ's objective is to operate ESAS to achieve outcomes which are consistent with that statutory responsibility. The RBNZ's high level objective in providing the ESAS service is to ensure that payments system infrastructure supports the smooth functioning of the economy, by being designed and operated so that domestic and international standards of resilience and reliability are met, users' needs are met and services are delivered efficiently and priced appropriately, the business structure and technology enable delivery of innovation and growth, and governance arrangements are consistent with the regulatory framework, stakeholder needs and the public interest.

The design of ESAS is intended to ensure that there is no build-up of settlement exposures associated with high-value transactions, which in turn promotes the stability of New Zealand's financial system.

RBNZ aims to operate ESAS at an extremely high standard of availability and resilience, and to ensure that its settlement services continue to evolve to meet the changing needs of the broader payments system.

The Bank conducts an annual survey of ESAS users and asks users to rate the services provided and to make suggestions for change. The survey is published on the Bank's website. Also, users are consulted on major system changes and have the opportunity to suggest system changes.

For each year ended 30 June, RBNZ prepares an Annual Report for the RBNZ as a whole including an assessment of its performance as operator of ESAS. Additionally, an annual report is prepared for the ESAS system which reports on performance and development objectives that had been set for that year. The annual reports for RBNZ and ESAS are available on the RBNZ website.

***KC2.2: An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.***

ESAS is owned and operated by RBNZ and, since it is not operated as a separate legal entity, the management and operation of ESAS fall under the governance structure of RBNZ, and are therefore subject to its normal oversight, decision-making and audit processes.

As an independent central bank and statutory body, RBNZ is ultimately accountable to Parliament. The Governor and senior officials of the RBNZ appear before Parliament's Finance and Expenditure Select Committee to report on matters under RBNZ's responsibility.

The RBNZ's Board's primary function is to monitor the performance of the Governor and the RBNZ on behalf of the Minister of Finance. The RBNZ Board has delegated oversight of internal and external audit responsibilities to the Board Audit Committee. The Board Audit Committee reviews external audit reports on ESAS's operations and monitors progress in implementing recommendations made as a result of internal and external audits. In accordance with the provisions of the Reserve Bank of New Zealand Act 1989, the Governor is responsible for the management of the RBNZ, and is therefore ultimately responsible for the operation of ESAS.

From 1 April 2019, day-to-day operations, liaison with participants, and the ongoing development of ESAS are delegated to the RBNZ's Banking Department.

The Head of Banking is responsible for overseeing the management of ESAS. The Head of Banking reports to the Assistant Governor and General Manager Economics, Markets and Banking who in turn reports to the Governor. The Governor's performance is monitored by the RBNZ's Board of Directors.

The Assistant Governor and Chief Financial Officer retains responsibility for delivery of the payment systems replacement project due to go live mid-2019.

ESAS is a designated settlement system under part 5C of the Reserve Bank of New Zealand Act 1989. As a designated settlement system, ESAS is subject to conditions of designation outlined in the *Reserve Bank of New Zealand (Designated Settlement Systems) Order 2004* and ESAS is subject to regulation by the RBNZ's Supervision Department (SD). Arrangements are in place to ensure that SD and Banking Department interact with each other on an arm's length basis, including reporting to separate deputy governors of RBNZ.

The RBNZ publishes an annual Statement of Intent (SOI) and an Annual Report, which report on the RBNZ's governance, objectives, strategies key performance indicators and performance.

The RBNZ also publishes an ESAS annual report which reports on governance, risk management and performance of RBNZ with respect to the operation of ESAS.

The RBNZ's SOI and Annual Report and the ESAS annual report are published on the RBNZ website. These documents include clear explanations of the governance arrangements for RBNZ.

***KC2.3: The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.***

The RBNZ has a board of directors. The Board's primary function is to monitor the performance of the Governor and the RBNZ on behalf of the Minister of Finance. It has no executive authority, but is a review and advisory body.

As described in Key Consideration 2.2, the Governor is solely responsible for management of the RBNZ, including the operation of ESAS. From 1 April 2019, responsibility for day-to-day operation of ESAS is delegated to the Head of Banking who reports to the Assistant Governor and General Manager Economics, Markets and Banking. Staff roles and responsibilities are set out in position descriptions.

The RBNZ has a performance assessment process for all staff and management. For ESAS management, annual objectives and goals are established for ESAS's performance and development. Performance against these objectives and goals is monitored throughout the year.

All staff are subject to a RBNZ Code of Conduct which requires all employees to carry out their duties with integrity and in a non-partisan manner. All employees must also comply with RBNZ's conflicts of interest policy. As described in Key Consideration 2.2, arrangements are in place to ensure that the Supervision Department and Banking Department interact with each other on an arm's length basis.

***KC2.4: The board should contain suitable members with the appropriate skills and incentives to fulfill its multiple roles. This typically requires the inclusion of non-executive board member(s).***

In accordance with the provisions of the Reserve Bank of New Zealand Act, the Governor is appointed by the Minister of Finance on the recommendation of the RBNZ's Board. From 1 April 2019, the Deputy Governor will also be appointed by the Minister on the recommendation of the Board. Assistant Governors are appointed by the Governor. The Board has no role in their appointment. Since ESAS is owned by the RBNZ, and is not operated as a separate legal entity, the skills and qualifications of the Governor are determined in accordance with the RBNZ's broader responsibilities.

***KC2.5: The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity***

***necessary to discharge their responsibilities for the operation and risk management of the FMI.***

From 1 April 2019, RBNZ's Banking Department (BD) is responsible for the administration of the "business" aspects of the system. BD is headed by the RBNZ's Head of Banking and day-to-day business operations are undertaken by the Payment and Settlement Services Team within BD.

RBNZ staff and management are appointed with regard to their skills to manage the development and operation of ESAS. The roles and responsibilities of management and staff responsible for day-to-day operation of ESAS are clearly documented in position descriptions.

RBNZ's senior management responsible for the operation and oversight of ESAS system have significant experience within the financial services industry.

RBNZ has human resources policies in place to ensure that management positions are filled by employees with the appropriate skills, incentives, experience and integrity to perform their duties. RBNZ has a formal performance management programme, which sets out the expectations of employees, and ensures that timely feedback is provided. Recruitment and selection by RBNZ is based on the suitability of an applicant to carry out the specific requirements of the position to be filled, having regard to the applicant's: ability to perform the duties; relevant experience; relevant training and qualifications; and willingness to meet any particular requirement specified in the job description. RBNZ staff are subject to the Code of Conduct and Conflict of Interest policies.

RBNZ aims to offer remuneration packages that attract employees able to perform their duties to a high standard. External advice is obtained to ensure that remuneration policies are consistent with market practice.

***KC2.6: The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.***

The RBNZ views risk management as an integral part of the general management task and the responsibility of day-to-day management, which in the case of ESAS rests with the Banking Department. The RBNZ's Risk and Audit department (R&A) is responsible for providing advice on and monitoring of the RBNZ's risk management frameworks. The internal audit role also resides in this department. The Head of R&A reports to the Assistant Governor and General Manager of Governance, Strategy and Corporate Relations, and also has direct access to both the Governor and Chair of the Board Audit Committee. The Board and its Audit Committee also contribute to the review of the RBNZ's risk management processes and oversight of its internal and external audit functions.

The RBNZ operates an Enterprise-wide Risk Management framework and this applies to all RBNZ risks including those which arise in operating ESAS.

The Enterprise-wide Risk Management Framework identifies the existence of risks, controls which mitigate the risks and defines the extent of residual risk. Each risk is classified depending on the RBNZ's assessment of its potential severity and the probability that the relevant risk event will occur. The combined assessment of severity and probability results in risks being classified as "high", "medium" or "low".

The Enterprise-wide Risk Management framework is updated each quarter and discussed by the RBNZ's Senior Leadership Team. It is reviewed by the RBNZ's Board twice yearly.

Individual departments within RBNZ are responsible for: identifying business-specific risks; applying controls; maintaining risk-management systems; reporting on the effectiveness of risk controls; and implementing enhancements and taking remedial action as appropriate.

Given ESAS is a systemically important payment system RBNZ has a low appetite for risks related to operation of the system and has a risk management framework in place which is designed to ensure that risks are identified, reported, managed and mitigated. ESAS is primarily exposed to operational risks. These risks are identified by assessing the system and processes using risk matrices to identify potential vulnerabilities. To minimise risks, appropriate internal controls systems and procedures are developed and continuously improved on. The assessment is an on-going ESAS management responsibility.

In addition, a comprehensive business continuity plan is maintained and key elements are either invoked (for example swapping production sites) or are regularly tested. This plan includes decision making authority and processes related to emergencies.

The internal controls of ESAS are audited by PricewaterhouseCoopers (PwC) who act on behalf of the RBNZ's external auditor, the Auditor-General. PwC's audit reports are addressed to the Governor and reports are reviewed by the Audit Committee of the Board with external auditors, RBNZ governors and management in attendance. The PwC audit opinion is provided to accountholders and is made available on request.

The RBNZ's internal audit team also performs an annual audit of the system including an annual review of the relevant information technology environment.

The Bank operates a rigorous incident reporting regime which is administered and monitored by its Risk and Audit department.

***KC2.7: The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.***

RBNZ's governance arrangements ensure accountability and transparency to ESAS participants and other relevant parties.

The ESAS Terms and Conditions require that before a rule change is promulgated by the RBNZ as system operator, accountholders must be provided a reasonable opportunity to comment in respect of a proposed rule change. RBNZ determines the period and process for such consultation. Also, regulators have a 21-working day period to disallow rule changes proposed by the RBNZ.

If there are any material changes proposed to ESAS, or if there are any emerging industry issues or developments which impact or potentially impact RBNZ's ability to meet the high level objectives for ESAS, these matters will be discussed with RBNZ payments policy personnel, regulators and industry stakeholders including direct and indirect participants in ESAS. The ESAS Terms and Conditions set out a process for change control that must be followed for system changes or enhancements (Schedule E of the Terms and Conditions).

Key system information including legal, operational access and annual reports are publically disclosed on the RBNZ website.

**Principle 3: Framework for the comprehensive management of risks**

*An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.*

**Assessment:**

ESAS **observes** principle 3.

**Key considerations**

***KC3.1: An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.***

RBNZ's risk management framework is set out under Key Consideration 2.6. Key elements include both an Enterprise-wide Risk Management framework as well as a specific risk management framework for the ESAS service. Under this framework, Banking Department is required to identify all risks that might impact its ability to operate ESAS in a safe and efficient manner.

Risks are classified by high level categories including strategic, legal, credit, financial and operational risks. Operational risk is further subcategorised for example into processing risk, technology risks, security risk and business continuity planning risks.

For each risk that has been identified, Banking Department sets out the potential impact and probability of the risk occurring, and also identifies existing controls and mitigation strategies to reduce the likelihood and/or impact of the risk crystallising.

RBNZ's Enterprise-wide Risk Management framework requires that the risks register be updated and be reviewed by the Senior Leadership Team each quarter. The Board reviews this framework twice yearly.

***KC3.2: An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.***

The design of ESAS means that participants do not pose liquidity or credit risks to RBNZ as operator of ESAS (see Principle 4 and 7). ESAS participation requirements are designed to reduce the likelihood that an individual participant would disrupt the operation of ESAS. If a participant does not meet these participation requirements, RBNZ may apply sanctions such as suspension or termination of operation of the accountholder's account.

RBNZ's Banking Department does not undertake proactive monitoring of participants' financial condition or their risk management frameworks.

Reliance is placed upon accountholders complying with their obligation under the ESAS Terms and Conditions to report any material issues to the RBNZ. RBNZ does monitor any operational incidents that participants have which RBNZ become aware of and will follow up with participants as required. Any non-compliance with the ESAS Terms and Conditions, either by RBNZ or participants is required to be reported to the regulators. Additionally, RBNZ must report to the regulators an event that materially increases risk to the ESAS system; or an outage or a material incident immediately upon becoming aware of the event or incident.

***KC3.3: An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.***

RBNZ, in operating ESAS, reviews the material risks that it bears from or poses to other entities. This is done in the context of its ongoing review of risks (such as the quarterly update of the Enterprise-wide Risk Management framework), and its processes for identifying risks associated with major changes to its environment, such as new activities or system changes. (Refer to Key Consideration 17.1 for details of the RBNZ's operational risk framework). The tools used to manage risk from other entities include service level agreements, review of service provider performance, and documented operational and contingency arrangements. (Refer to Key Consideration 17.7 for more detail).

***KC3.4: An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.***

RBNZ's view is that expectations around recovery planning and the organisation of operational arrangements to support resolution actions will not typically apply in the case of central bank-owned systems. Accordingly, RBNZ has not assessed ESAS against this Key Consideration 3.4 of this principle.

Note, this is to be distinguished from planning for operational incidents and business continuity planning which is considered under principle 17.

**Principle 4: Credit risk**

*An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.*

**Assessment:**

ESAS **observes** principle 4.

**Key considerations**

***KC4.1: An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.***

In the normal course of events RBNZ does not grant overdrafts to ESAS accountholders and therefore in the normal course of events RBNZ is not exposed to credit risk in its role as operator of ESAS. It is possible that the Bank could use its discretion to provide overdrafts in extreme situations in response to an emergency if the Bank felt that that was the best way of resolving the particular issue. Payments in ESAS are settled in participants' ES accounts held at RBNZ which cannot be overdrawn, and RBNZ does not guarantee any transaction submitted for settlement in ESAS. Accordingly, in the event of a participant default RBNZ would not be exposed to a loss in its role as operator of ESAS.

The RBNZ does make credit available to institutions who are ESAS participants (as well as to institutions which do not have ESAS accounts) as part of its monetary policy and financial stability functions. For example, it enters FX swap and repurchase transactions, including an overnight automated reverse repo facility for emergency liquidity. These operations are effected through dealing arrangements such as GMRA and ISDA and not through membership of ESAS and the associated ESAS Terms and Conditions. Membership of ESAS does not of itself give an accountholder access to any liquidity facilities provided by the RBNZ. Because ESAS accounts are not allowed to go into overdraft ESAS itself does not give rise to credit risk.

The RTGS mode of settlement in ESAS is designed also to ensure that unintended credit risks do not accumulate between participants during the settlement process: Payment messages are exchanged between participants simultaneously with the transfer of funds across accounts.

***KC4.2: An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.***

See response to KC 4.1 above.

***KC4.3: A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.***

See response to KC 4.1 above.

***KC4.4: A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.***

Not applicable – ESAS is not a CCP

***KC4.5: A CCP should determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and***

***thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for determining the CCP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a CCP's participants increases significantly. A full validation of a CCP's risk-management model should be performed at least annually.***

Not applicable – ESAS is not a CCP.

***KC4.6: In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.***

Not applicable – ESAS is not a CCP.

***KC4.7: An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.***

As explained under Key Consideration 4.1, in the event of a participant default RBNZ would not be exposed to a loss in its role as operator of ESAS. As explained above, RBNZ does make credit available in to order to implement monetary policy and to ensure smooth operation of the payment system.

RBNZ could be exposed to uncovered credit losses in the event that credit made available by RBNZ is not repaid and the value realised on disposal of collateral is less than the amount lent. As a central bank RBNZ is able to generate New Zealand dollar liquidity. Any such credit losses would not be allocated to ESAS participants and RBNZ has no contractual recourse to any party for such losses other than the counterparty to whom credit was advanced. RBNZ maintains internal procedures that set out the course of action it would take after a participant default (see Principle 13 for further details).

**Principle 5: Collateral**

*An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.*

**Assessment:**

Principle 5 is observed by ESAS

**Key considerations**

***KC5.1: An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.***

As noted under KC4.1, RBNZ does make credit available to institutions who are ESAS participants as part of its monetary policy and financial stability functions. In providing credit the Bank does so not in its capacity as operator of ESAS but rather as part its monetary policy implementation and financial stability functions. When providing credit the Bank does so on a collateralised basis, generally either by entering into reverse repurchase transactions or FX swaps.

***KC5.2: An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.***

The RBNZ values securities held as collateral using available market pricing and formulae published on its website. Haircuts are applied to broad groups of securities based on their credit rating. The RBNZ also reserves the right to add an additional haircut if it has concerns with liquidity. Haircuts are set to cover modelled anticipated decline in market price over a conservative liquidation horizon. Key inputs are market prices, the maturity of the securities and their credit rating. The standard haircuts are also publically available on the RBNZ's website.

RBNZ also collects mark to market margin to cover changes in the values of the securities it holds. This margining is conducted on a daily basis and in line with the relevant documentation (e.g. GMRA, CSA).

***KC5.3: In order to reduce the need for procyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.***

The haircuts for all repo eligible securities are set and calibrated to ensure the RBNZ minimizes the loss in value of the security should the RBNZ be required to sell either in normal or stressed market conditions.

***KC5.4: An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.***

The RBNZ constantly monitors its holdings of securities to highlight any concentration issues. RBNZ specifically monitors its holding of the security versus the total amount on issue.

***KC5.5: An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.***

The RBNZ currently accepts NZ dollar denominated securities either issued or guaranteed by foreign governments. These securities must not have a subsidiary or related party within NZ, have an appropriate rating, be plain vanilla, follow the RBNZ's pricing convention and be lodged in NZClear.

***KC5.6: An FMI should use a collateral management system that is well-designed and operationally flexible.***

The RBNZ uses a treasury system that is widely used by central banks to manage its credit exposures and related collateral. The system covers front, middle and back office and records all security transactions, carries out daily revaluations and provides reporting for margining and concentration purposes.

**Principle 6: Margin**

*A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.*

**Assessment:**

Principle 6 is **not applicable** to ESAS.

**Key considerations**

***KC6.1: A CCP should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.***

ESAS is not a CCP.

***KC6.2: A CCP should have a reliable source of timely price data for its margin system. A CCP should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.***

Not applicable.

***KC6.3: CCP should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. For a CCP that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a CCP that calculates margin at more-granular levels, such as at the subportfolio level or by product, the requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the CCP (including in stressed market conditions), (b) have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.***

Not applicable.

***KC6.4: A CCP should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A CCP should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.***

Not applicable

***KC6.5: In calculating margin requirements, a CCP may allow offsets or reductions in required margin across products that it clears or between products that it and another CCP clear, if the risk of one product is significantly and reliably correlated with the risk of the other product. Where two or more CCPs are authorised to offer cross-margining, they must have appropriate safeguards and harmonised overall risk-management systems.***

Not applicable.

***KC6.6: A CCP should analyse and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting and at least monthly, and more-frequent where appropriate, sensitivity analysis. A CCP should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a CCP should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.***

Not applicable.

***KC6.7: CCP should regularly review and validate its margin system.***

Not applicable.

**Principle 7: Liquidity risk**

*An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.*

**Assessment:**

ESAS **observes** Principle 7

**Key considerations**

***KC7.1: An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.***

ESAS conducts its settlements on an RTGS basis and does not guarantee settlement. RBNZ, as operator of ESAS, does not therefore assume liquidity risk in its operations. Since participants face liquidity risks, however, ESAS assists participants in their liquidity management through its liquidity-efficient design, incentives for redistribution of account balances, the provision of liquidity using automated reverse repo for eligible securities through NZ Clear, and the provision of real-time information on transactions and ESA balances.

***KC7.2: An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.***

Since ESAS does not assume liquidity risk, there are no relevant funding flows for ESAS to measure and monitor. ESAS provides tools for participants to manage their liquidity. In managing operational risk RBNZ's operational staff also monitor the flow of liquidity and payments at both a system and participant level for evidence of any disruption to the flow of liquidity, which could occur if a participant experienced an operational or financial problem (see Principle 17). If such a disruption were observed, RBNZ would liaise with participants to mitigate the impact. To further mitigate possible disruption under such a scenario, participants are required to inform RBNZ in the event of any operational problem.

***KC7.3: A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the***

**largest aggregate payment obligation in extreme but plausible market conditions.**

As ESAS does not assume liquidity risk as principal, RBNZ, in its capacity as system operator, does not need to maintain liquid resources to cover payment obligations.

**KC7.4: A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.**

Not applicable.

**KC7.5: For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.**

As ESAS does not assume liquidity risk as principal RBNZ, in its capacity as system operator, does not maintain liquid resources to cover payment obligations in stressed scenarios.

**KC7.6: An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.**

As ESAS does not assume liquidity risk as principal, RBNZ, as system operator, does not maintain liquid resources to cover payment obligations in stressed scenarios.

**KC7.7: An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.**

As ESAS does not assume liquidity risk as principal, RBNZ, as system operator, does not maintain liquid resources to cover payment obligations in stressed scenarios.

**KC7.8: An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.**

RBNZ, in its capacity as system operator, does not assume liquidity risk and is not a principal in the settlement of ESAS transactions. The requirement to maintain access to central bank accounts is not applicable.

**KC7.9 An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.**

As ESAS does not assume liquidity risk as principal, RBNZ, as system operator, does not maintain liquid resources to cover payment obligations in stressed scenarios. Accordingly, there is no need for ESAS to test the sufficiency of its liquidity resources.

**KC7.10: An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish**

***any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.***

RBNZ, in its capacity as ESAS's system operator, does not assume liquidity risk as principal. Therefore ESAS does not require rules regarding a liquidity shortfall.

**Principle 8: Settlement finality**

*An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.*

**Assessment:**

ESAS **observes** principle 8.

**Key considerations**

***KC8.1: An FMI's rules and procedures should clearly define the point at which settlement is final.***

ESAS Terms and Conditions (Section 4) clearly define the timing of settlement finality for transactions. The settlement of a payment in ESAS is final and irrevocable when the ESAs of the paying and receiving ESAS participants are simultaneously debited and credited, respectively.

The payments between participants are also protected by virtue of the approval of ESAS as a designated settlement system Part 5C of the Reserve Bank of New Zealand Act. This approval protects payments from being voided in the case of an account holder entering statutory management or a similar form of administration.

***KC8.2: An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.***

ESAS is an RTGS system. Payments are therefore settled individually on a real-time basis. Although settlements occur in real time, a payment submitted to the ESAS queue may remain there if the payer chooses not to settle the transaction (e.g. if the payer has set the status of the transaction to 'unauthorised') or has insufficient funds. Any payments that are not settled at the end of the relevant session are automatically removed from ESAS and must therefore be resubmitted for settlement when the system reopens.

***KC8.3: An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.***

Under the ESAS Terms and Conditions, a participant can unilaterally revoke its outgoing RTGS payments at any time prior to settlement. ESAS cash transfers and payments sent via a feeder system can be revoked prior to settlement via the ESAS User Interface.

**Principle 9: Money settlements**

*An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.*

**Assessment:**

ESAS **observes** principle 9.

**Key considerations**

***KC9.1: An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.***

Money settlements in ESAS are conducted in central bank money. Payment obligations in ESAS are settled on an RTGS basis across ESAs at RBNZ.

***KC9.2: If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.***

Transactions are effected using central bank money.

***KC9.3: If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.***

Money settlements in ESAS are conducted using central bank money.

***KC9.4: If an FMI conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.***

Money settlements in ESAS are conducted using central bank money across the books of RBNZ. RBNZ's credit and liquidity risks from the operation and provision of liquidity in ESAS are strictly controlled, as described in Principles 4 and 7.

***KC9.5: An FMI's legal agreements with any settlement banks should state clearly when***

***transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.***

RBNZ does not use commercial bank money settlement agents in the operation of ESAS.

**Principle 10: Physical deliveries**

*An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.*

**Assessment:**

Principle 10 is not applicable to ESAS

**Key considerations**

***KC10.1: An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.***

Not applicable.

***KC10.2: An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.***

Not applicable.

**Principle 11: Central securities depositories**

*A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimise and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry.*

**Assessment:**

Principle 11 is not applicable to ESAS

**Key considerations**

***KC11.1: A CSD should have appropriate rules, procedures, and controls, including robust accounting practices, to safeguard the rights of securities issuers and holders, prevent the unauthorised creation or deletion of securities, and conduct periodic and at least daily reconciliation of securities issues it maintains.***

ESAS is not a CSD.

***KC11.2: A CSD should prohibit overdrafts and debit balances in securities accounts.***

Not applicable.

***KC11.3: A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry. Where appropriate, a CSD should provide incentives to immobilise or dematerialise securities.***

Not applicable.

***KC11.4: A CSD should protect assets against custody risk through appropriate rules and procedures consistent with its legal framework.***

Not applicable.

***KC11.5: A CSD should employ a robust system that ensures segregation between the CSD's own assets and the securities of its participants and segregation among the securities of participants. Where supported by the legal framework, the CSD should also support operationally the segregation of securities belonging to a participant's customers on the participant's books and facilitate the transfer of customer holdings.***

Not applicable.

***KC11.6: A CSD should identify, measure, monitor, and manage its risks from other activities that it may perform; additional tools may be necessary in order to address these risks.***

Not applicable.

**Principle 12: Exchange of value settlement systems**

*If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.*

**Assessment:**

Principle 12 is not applicable to ESAS

**Key considerations**

***KC12.1: An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis and when finality occurs.***

ESAS is not an exchange-of value settlement system. It does not perform the settlement of foreign exchange transactions or securities transactions. ESAS does, however, facilitate the settlement of linked securities and foreign exchange transactions in other systems, assisting to eliminate principal risk in those systems. In particular, ESAS settles the interbank obligations arising from the cash leg of delivery-versus-payment debt and equity security transactions in NZClear. ESAS is also used to fund the NZ dollar leg of foreign exchange transactions settled on a payment-versus-payment basis in the CLS settlement system.

**Principle 13: Participant – default rules and procedures**

*An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations*

**Assessment:**

ESAS **observes** principle 13.

**Key considerations**

***KC13.1: An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.***

RBNZ has the right, acting reasonably, to suspend or terminate the operation of the Accountholder's Settlement Account at any time, on notification to the Accountholder or as soon as practicable following such suspension or termination.

Additionally, accountholders are obligated to notify the system operator in the instance of certain specified notifiable events such as an inability to pay its debts or appointment of receiver or liquidator. In those circumstances accountholders are required to notify the Reserve Bank of the occurrence, or threatened occurrence, of that Notifiable Event and the steps (if any) the Accountholder is taking to ensure that it continues to have authority to issue Payment Instructions.

The default of a participant in ESAS does not require RBNZ to meet obligations on its behalf; nor does it create additional obligations for non-defaulting participants. Steps taken by ESAS to manage a participant default are therefore largely procedural in nature. Participant defaults may result from insolvency events or a failure to comply with the requirements of the ESAS Terms and Conditions. RBNZ has a documented process that sets out actions to be taken in managing a participant default. The actions taken in a default scenario depend on the circumstances. RBNZ would liaise very closely with relevant regulators before taking action.

Taking swift and decisive action in this way allows RBNZ to minimise the potential for a participant default to disrupt settlement in the system more widely.

***KC13.2: An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.***

RBNZ has the ability to cancel or suspend the participation of an accountholder at any time providing RBNZ is acting reasonably. Accountholders must immediately notify RBNZ upon the occurrence or threatened occurrence of a Notifiable Event or if the accountholder has good reason to doubt it has the authority to make payments. In those circumstances accountholders are required to notify the

Reserve Bank of the occurrence, or threatened occurrence, of that Notifiable Event and the steps (if any) the Accountholder is taking to ensure that it continues to have authority to issue Payment Instructions.

The RBNZ is prepared to exercise its powers under ESAS Terms and Conditions. RBNZ has a documented process that sets out actions to be taken in managing a participant default.

ESAS would work with the Supervision Department of the RBNZ to understand any systemic issues arising as a result of the likely failure or default of a major participant in ESAS.

***KC13.3: An FMI should publicly disclose key aspects of its default rules and procedures.***

ESAS Terms and Conditions are published on RBNZ's public website. These include requirements for participants to give notice of Notifiable Events and the rights of RBNZ to suspend or terminate an accountholder's participation in ESAS.

***KC13.4: An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.***

As ESAS does not require any accountholder actions in the event of default, accountholders are not involved in any testing or review of the procedures.

RBNZ's Banking Department has been involved in periodic RBNZ crisis management exercises including scenarios involving ESAS accountholders experiencing financial difficulty. RBNZ has committed to testing managing default of a participant each year.

ESAS would work with the Supervision Department of the RBNZ to understand any systemic issues arising as a result of the likely failure or default of a major participant in ESAS.

**Principle 14: Segregation and portability**

*A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.*

**Assessment:**

Principle 14 is **not applicable** to ESAS

**Key considerations**

***KC14.1: A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.***

ESAS is not a central counterparty to securities transactions between accountholders.

***KC14.2: A CCP should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A CCP should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.***

Not applicable.

***KC14.3: A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.***

Not applicable.

***KC14.4: A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a CCP should disclose any constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.***

Not applicable.

**Principle 15: General business risk**

*An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services*

**Assessment:**

ESAS **observes** principle 15.

**Key considerations**

***KC15.1: An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.***

As set out under Key Consideration 2.6, RBNZ takes a coordinated approach to identifying, assessing and managing risk at both an enterprise and business level. A key component of the RBNZ's framework for managing general business risk is its budgeting and accounting processes, which allow it to monitor, manage and control its operating expenses, including those arising from the operation of ESAS. The RBNZ's financial accounting processes are also subject to audit by both internal and external auditors. Income and operating expenditure is reported in the annual report for ESAS.

ESAS is operated on a cost recovery basis, with a 6 monthly review of its charges. All operating costs are recovered including systems maintenance, staffing, relevant overheads and amortisation of development costs which have been capitalised. RBNZ consults with the accountholders on material capital expenditure proposals.

The RBNZ recognises the risks which arise from ESAS and is continuously making improvements to reduce risk. Management and control systems are robust and procedures are developed and continuously improved on.

**Note in respect of key considerations 15.2 to 15.5**

Since ESAS is a central bank owned system, it has not been assessed against the requirement to hold ring-fenced liquid net assets funded by equity to cover business risk and support a recovery or wind-down plan (Key Considerations 15.2–15.4). This recognises central banks' inherent ability to supply liquidity to support continuity of operations, should liquidity be required for this purpose. Similarly, ESAS has not been assessed against the requirement to maintain a plan to raise additional equity (Key Consideration 15.5).

**KC15.2 An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.**

See note regarding operation of FMIs by central banks immediately before Key Consideration 15.2.

**KC15.3: An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.**

See note regarding operation of FMIs by central banks immediately before Key Consideration 15.2.

**KC15.4: Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.**

See note regarding operation of FMIs by central banks immediately before Key Consideration 15.2.

**KC15.5: An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.**

See note regarding operation of FMIs by central banks immediately before Key Consideration 15.2.

**Principle 16: Custody and investment risks**

*An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.*

**Assessment:**

ESAS **observes** principle 16.

**Key considerations**

***KC16.1: An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.***

Securities provided to RBNZ as collateral under repo are held by RBNZ in the in the NZClear system.

NZClear (including New Zealand Central Securities Depository Limited) is a designated settlement system under part 5C of the Reserve Bank of New Zealand Act and is regulated jointly by the RBNZ and the Financial Markets Authority (FMA).

Note in respect of key considerations 16.2 and 16.4

Note: Paragraph 1.23 of the Principles acknowledges that 'central banks may have separate public policy objectives and responsibilities for monetary and liquidity policies that take precedence'. Accordingly, it is the RBNZ's view that nothing in this Principle should constrain central bank policies on its investment strategy (including that for reserve management) or the disclosure of that strategy.

***KC16.2: An FMI should have prompt access to its assets and the assets provided by participants, when required.***

See note regarding operation of FMIs by central banks immediately before Key Consideration 16.2.

***KC16.3: An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.***

RBNZ does not use custodian banks to hold the collateral it receives in providing liquidity to ESAS accountholders. Generally collateral takes the form of NZ dollar denominated securities that are held in the NZClear system (in the case of reverse repos) and US dollar cash which is initially credited to a US dollar bank account (and those US dollars may be subsequently invested by RBNZ in US dollar denominated securities).

***KC16.4: An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.***

See note regarding operation of FMIs by central banks immediately before Key Consideration 16.2.

**Principle 17: Operational risks**

*An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.*

**Assessment:**

ESAS **observes** principle 17.

**Key considerations**

***KC17.1: An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.***

RBNZ's operational risk policies and the risk management framework for ESAS have been developed in accordance with the RBNZ's Enterprise-wide Risk Management framework (see Key Considerations 2.6 and 3.1 above).

The RBNZ sees risk management as an integral part of the general management task and the responsibility of day-to-day management. ESAS is primarily exposed to operational risks. The Banking Department, as business owner, is responsible for the identification of risks which may threaten the operation of the system and designs controls objectives and internal controls and policies which are designed to mitigate the probability of a risk manifesting itself and to also minimise the impact of risk so it manifest itself.

The Bank's control objectives for ESAS are reviewed at least annually; compliance with those control objectives is subject to internal and external audit. Operational controls are documented in procedures manuals, policies, and checklists.

Controls are continuously improved upon, with improvements generally effected either in response to a system change, audit observations or as a result of continuous monitoring or when events or incidents occur.

The Bank employs a structured change management policy, supported by detailed procedures and processes to safeguard the integrity of ESAS. Systems changes are subject to extensive testing in separate test environments before senior management approval is given to promote the change to live operation. Significant changes require back-out plans to be developed and tested prior to go live, which allows a change to be reversed should the need arise. Systems changes are also subject to the Bank's Project Management Methodology which requires that more complex changes be subject to project management disciplines including the project being governed by a steering committee representing a range of stakeholders.

The Bank relies upon Datacom Systems Limited (Datacom) to provide software support and development services. The Bank's contract with Datacom requires Datacom to adhere to change control and security policies. Datacom requires Bank approval to make changes to live systems. The Bank meets regularly with Datacom to review Datacom's performance, including quality of its work, adherence to contractual service services, system reliability, system capacity, incidents, alerts, audit matters and plans for future systems changes. Transaction volumes and resources used by the system by the system are continuously monitored and current systems volumes would have to grow very significantly before system capacity would need to be enhanced.

Access to the system is subject to authorisation with access privileges allocated consistent with users' responsibilities. Cyber security threats are continuously evolving and the Bank is constantly making systems changes designed to improve system security. Risks are generally assessed as a result of regular penetration testing or in response to notification of vulnerabilities advised by system vendors. While ESAS has developed an extensive range of security measures, the security structures used have been developed within the Bank rather than relying on a third party security framework. The Bank assesses its security practices for ESAS and NZClear against the NZISM framework and prioritises areas for improving security practices to achieve greater alignment with those standards. The Bank also undertakes a self-assessment against the SWIFT Customer Security Programme.

In addition to specific policies for ESAS relating to matters such as change control, procedures, back-ups, the Bank has a number of corporate policies which staff must adhere to and which assist in mitigating risks. Policies include conflict of interest, use of information technology, use of information, leave policies, whistle-blower policy, provision of attestations, etc. Payments operations is a specialist area requiring staff who are highly skilled and trained. When recruiting staff care is taken to ensure that new staff are subject to background and integrity checks and that they have appropriate skills.

The main element of risk management for ESAS is the daily completion and review of reconciliations, adherence to RBNZ policies and procedures such as those governing segregation of duties, security and technology risk (e.g. change control), service level agreements and maintenance and testing of business continuity plans. A range of systems diagnostics are performed, many of which are automated and occur in real-time. Real-time alerts often generate alerts via texts or email messages to support staff who can then investigate and follow up unusual, unexpected or problem conditions which have been reported. The RBNZ has a Post-incident Process Improvement reporting process which requires that incidents and "near misses" are escalated, analysed and remedial actions undertaken to prevent reoccurrence.

Specific controls are designed and implemented around control objectives in the following areas:

#### Security

- ESAS security management procedures and application controls are adequate
- The RBNZ's internal and external network is adequately secured
- Access to system privileges within the underlying operating system is adequately secured
- ESAS functionality is only available to appropriate users at appropriate levels
- Access to the underlying database is adequately secured
- Adequate environmental and physical security controls are in place over computing equipment

#### Accountholder Detail Administration

- Authorisation is obtained for all additions, changes and deletions to accountholder details
- Additions, changes and deletions to accountholder details are correctly input into the system

#### Change Control

- Changes migrated into production are appropriate and reliable
- Emergency changes migrated into production are appropriate and authorised

#### Problem Management

- Problems are identified and resolved in a timely manner

#### Backup and Recovery

- Adequate processes are in place for data recovery
- Timely recovery of business operations is possible
- System issues for the ESAS system are identified and resolved in a timely manner

#### SLA Monitoring

- Third party service level agreements are monitored to ensure compliance with agreed contractual requirements

#### Period End Processing

- End of day processing is complete, accurate and timely

The RBNZ maintains multiple instances of the ESAS application and associated infrastructure. These are maintained and data is synchronised in real time to ensure continuous service in the event of system failure, natural disaster or other event. A comprehensive business continuity plan is maintained. Live production of ESAS is regularly alternated between computers located in Auckland and Wellington and this acts as an effective test to ensure that back-up computers will work when required. Failover tests to back-up facilities are conducted immediately after all major systems changes are promoted to live production. RBNZ has staff located in both Auckland and Wellington offices who provide business support in the event that one or other offices are not able to operate e.g. because of an earthquake.

The Bank does not require accountholders to submit their own business continuity plans or confirm those plans have been tested. The major ESAS accountholders are registered banks which are required to provide a quarterly directors' attestation to the Reserve Bank regarding the suitability of their own business continuity plans. As part of the transition to the new payments platform, the Bank intends to require members to self-attest to the adequacy of their BCP plans for operation of ESAS including providing the results of testing. When outages occur, involving either the Bank's systems or accountholder's systems, an incident report is prepared and reviewed. Accountholders are required to notify the Bank of all processing issues which impact ESAS and equally the Bank advises accountholders immediately if Bank systems are not operating as required. The incident reports endeavour to identify the root cause of disruptions and require appropriate follow up actions are taken to minimise the chance of recurrence.

In addition to multiple instances of ESAS, an earlier version of the system (known as “ESAS Back-up”) is available to be used in case of a software or database corruption. Balances in the production system would be uploaded to ESAS Back Up if the latter is invoked. It should be noted that ESAS Back-up would be invoked as a last resort and this is because NZClear processing would be halted in that scenario (there is no equivalent of ESAS Backup for NZClear).

The RBNZ is progressing a significant programme which encompasses replacement of both the ESAS and NZClear systems as well as the establishment of new infrastructure and support services. The programme is due to go live in mid-2019. A feature of the replacement ESAS application will be the RTGS Extreme Contingency system which will allow a back-up version of the software and a backup network to be used should an extreme event occur such as a software or database corruption, a cyber-attack or a major network outage.

RBNZ’s Risk and Audit department is responsible for providing advice on and monitoring of the RBNZ’s risk management frameworks. The internal audit role also resides with this department and is independent of the Banking Department with a reporting line direct to the Governor and the ability for internal audit staff to liaise directly with the chair of the Board Audit Committee where matters of concern arise. The Board and its Audit Committee also contribute to the review of RBNZ’s risk management processes.

***KC17.2: An FMI’s board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI’s operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.***

The RBNZ’s Risk and Audit department is responsible for providing advice on and monitoring of the RBNZ’s risk management frameworks including in respect of the management of operational risk. ESAS is subject to review by RBNZ’s internal audit team which resides in this department. The Board monitors the RBNZ’s Enterprise-wide Risk Management framework and the Board Audit Committee also oversees internal and external audit functions.

Responsibility for management of operational risk relating to ESAS has been delegated to the Banking Department. Operational risks are identified by the Banking Department assessing the system and describing controls which are designed to meet stated control objectives. Risk matrices are reviewed quarterly. To minimise material and likely risks appropriate internal controls systems and procedures are developed and continuously improved on. The Bank’s Audit Committee is provided with regular reports on developments with respect to ESAS including systems changes, security, audit issues, performance of service providers, and incidents.

Internal controls of ESAS are audited by PricewaterhouseCoopers (PwC) who act on behalf of the RBNZ’s external auditor, the Auditor General. PwC’s audit reports are addressed to the Governor and reports are reviewed by the Audit Committee of the Board with external auditors, RBNZ governors and management in attendance. The PwC audit opinion is published on the RBNZ’s website. These audit reports list each control objective and the related controls relied on to achieve the control objective. The reports are therefore detailed and provide readers with details of compliance/non-compliance with each stated control based on testing by the external auditor. As

noted above, the control objectives and controls are reviewed at least annually and also when major changes are made to the system.

***KC17.3: An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.***

The ESAS system is designed for high availability and resiliency and there are multiple physical instances of computers systems in place in the event of a disruption to processing.

The targeted system availability is 99.90% and actual performance against this benchmark is reported and monitored. (The RBNZ annual report and the ESAS annual report which are both published on RBNZ's website report actual availability statistics). As describes in KC17.1, the RBNZ has a range of policies in place which are designed to ensure these availability and reliability objectives are met (e.g. change control procedures and business continuity plans).

The system is monitored continuously during the day with automated monitoring and alerting as described in KC17.1 above, and a help desk attends to users' enquiries. Problems, incidents and near misses are reported to senior management for decision making and action.

Measures and Key Performance Indicators (KPI's) are identified (and reported on) to provide an early warning mechanism of operational deficiencies. Generally, this takes the form of review of incidents, system alerts, system diagnostic reports, status of actions in response to audit recommendations and user feedback. In particular, each month Datacom prepares a report on these matters which is discussed by Datacom staff and Bank management.

In addition, other mechanisms to provide assurance that operational risk is being effectively managed are:

- On-going internal audit reviews of key operational processes, change control processes, network and access change control
- Regular forums with key service providers to monitor and manage their performance.

***KC17.4: An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.***

System capacity is planned and capacity utilisation is reviewed monthly. Datacom, as the ESAS technical support provider, is contractually obliged to assess and report on capacity utilisation and to assist with capacity planning. RBNZ's capacity planning requirement is to maintain a significant level of excess capacity over normal volumes to provide capacity both for growth and unanticipated high volumes.

ESAS capacity is deliberately under-utilised to provide a buffer for sharp upturns in volume. Past testing has proved the system can smoothly handle at least double existing volumes.

If alerting or reports indicates an emerging capacity issue, then RBNZ will engage the vendor to analyse and respond with a course of action in order to maintain the pre-determined buffers of the system.

***KC17.5: An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.***

The RBNZ has a comprehensive suite of policies that includes building and information security policies. These policies include (amongst other things) the following:

- Information disclosure,
- Records Management,
- Access restrictions – records and physical,
- Information systems security,
- Building security,
- Incident reporting management.

The Bank restricts physical access to both primary and secondary computer sites, as well as the Bank's offices. Audit trails are maintained of access to all sensitive areas.

As indicated under KC 17.1, access to the system is subject to authorisation with access privileges allocated consistent with users' responsibilities. Users are required to present valid credentials such as a valid log-on, a password and a one-time password generated by a token or access from a valid network address. Cyber security threats are continuously evolving and the Bank is constantly making systems changes designed to improve system security. Risks are generally assessed as a result of regular penetration testing or in response to notification of vulnerabilities advised by system vendors. While ESAS has developed an extensive range of security measures, the security structures used have been developed within the Bank rather than relying on a third party security framework. The Bank has assessed its security practices for ESAS and NZClear against the NZISM framework and also the SWIFT Customer Security Programme.

In 2018 the RBNZ completed an upgrade to SWIFT version 7.2 and enhanced security in line with SWIFT's Customer Security programme.

***KC17.6: An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.***

The RBNZ maintains and regularly tests a comprehensive business continuity plan (BCP). The BCP includes planning for incidents such as a building outage in Wellington or Auckland, regional disasters in Wellington or Auckland, computer hardware failure and pandemic-type scenarios.

The RBNZ maintains two fully equipped computer operations sites, one in Wellington and one in Auckland. One site is the production site (primary) and the other is the backup site (secondary). Production is regularly alternated between Wellington and Auckland.

All data is backed up in real time to the secondary site. The primary production system has a mirrored disk configuration and backup server on site that ensures the seamless continuity of the system in the event of a disk failure. Also, the system is duplicated at a facilities-managed disaster recovery centre in Wellington/Auckland. RBNZ also has contracted for backup telecommunications

services to be provided. Both sites have diesel powered generators to provide backup electricity supply.

There is a formal business continuity plan (BCP) detailing the arrangements and decision points. This is shared with the industry and is maintained and updated by the RBNZ, in consultation with the industry, on a regular basis. The regular switching of production between the Auckland and Wellington sites provides a high level of assurance that BCP plans will be effective when invoked.

In the normal course of events, individual transactions can be traced from the time of entry in the system until settlement. The time taken to recover operations through secondary system is around one hour. Key decision points for the RBNZ as the system operator are reached after 20 minutes, 60 minutes and 2 hours. In the event of a systems failure that requires activation of systems located in the alternate site, the RBNZ is committed to resume processing from the alternate site within 60 minutes of the decision being made to switch processing sites.

BCP testing exercises are incorporated in the wider Payment & Settlement team plan and include:

<b>Type of Exercise</b>	<b>Exercise Frequency</b>	<b>Exercise Description / High-level Scope</b>
Walkthrough	Quarterly	Full walkthrough and familiarisation of plan carried out with staff.
Desktop	Ad hoc	Round table discussions on various different scenarios and how each of those scenarios will be approached. What has to be done, where it will be done from, who will do it.
'Live' tests	January	Auckland/Wellington Anniversary Day
	Wellington Anniversary Day	Auckland team fully responsible for managing the whole day
	Auckland Anniversary Day	Wellington team fully responsible for managing the whole day.
Remote access		Everyone who has remote access sign off and test all connectivity

Daily operations are divided between staff located in RBNZ's offices in Auckland and Wellington. This enables the operations to continue unaffected for a period of time if the services of one location (plus its operators) become unavailable.

For example, earthquake activity in Wellington in mid-2013 and late 2016 and the managed evacuation and temporary closure of the Bank's Wellington building in 2018 for remediation work demonstrated the ability for the Auckland site to immediately assume full responsibility for ESAS without disruption to services provided to account holders. Staff in the RBNZ's Auckland office were able to monitor all activity and provide technical assistance until such time normal coverage resumed in the primary location.

***KC17.7: An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and manage the risks its operations might pose to other FMIs.***

The RBNZ recognises system failure as one of its major enterprise risks. The ESAS system is designed for high availability and resiliency and there are multiple physical instances of computers systems in place in the event of a disruption to processing.

Most participants in ESAS are registered banks which prepare quarterly attestations regarding the adequacy of their management of risks including operational risk. It is acknowledged that similar attestations could be obtained from other participants to provide additional assurance that they are managing their BCP appropriately.

The system is monitored continuously during the day and a help desk attends to users' issues.

Incidents are reported to senior management for decision making and action and are also reported to regulators. Network reliability and security statistics are regularly reviewed by senior management.

The RBNZ's main office is in Wellington and it has a small office in Auckland. As a result, day-to-day operating activities are shared between staff based in Auckland and those based in Wellington. Staff in the Auckland office will provide on-going continuity of business operations should a region-wide disaster impact ESAS's Wellington staff. Both offices and premises where data centres are located have access to diesel powered generators in the event of an interruption to power supply.

The RBNZ maintains two fully equipped computer operations sites and utilises four separate systems (two at each site) with one system being designated "production" (primary) at any time and the other three designated as secondary. All three secondary systems are synchronised in real time to the primary system. The location of the production system is alternated between sites on a regular basis.

The operation of ESAS includes some elements of the administration of the SWIFT system which are the responsibility of the RBNZ. In most other respects, reliance is placed on the SWIFT organisation itself for operation of that system. The Bank has contracted with SWIFT for that organisation to provide premium support and defined service levels, including response times and escalation to incidents which are reported or which may arise and be detected by SWIFT.

Software support, software development and operational support services are provided by Datacom Systems Limited (Datacom). The RBNZ manages Datacom's provision of services through a services contract and related service level agreement. The management process includes assessment of risks and performance at monthly review meetings, monthly performance reports, review of problem management reports and relevant project steering committees. At present all Datacom support is provided from Wellington. Arrangements have been made to mitigate this concentration of staff in one region although this risk is not totally eliminated.

The telecommunications network on which the ESAS system operates is provided by Spark New Zealand Limited with a second provider operating a backup network service.

The Bank does not require accountholders to submit their own business continuity plans or confirm those plans have been tested. The major ESAS accountholders are registered banks which are

required to provide a quarterly directors' attestation to the Reserve Bank regarding the suitability of their own business continuity plans. When outages occur, involving either the Bank's systems or accountholder's systems, an incident report is prepared and reviewed. Accountholders are required to notify the Bank of all processing issues which impact ESAS and equally the Bank advises accountholders immediately if Bank systems are not operating as required. The incident reports endeavour to identify the root cause of disruptions and require appropriate follow up actions are taken to minimise the chance of recurrence.

ESAS manages the risk it might pose to other FMIs by managing the resilience of the ESAS system itself and its interfaces to feeder systems.

**Principle 18: Access and participation requirements**

*An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.*

**Assessment:**

ESAS **broadly observes** principle 18.

**Key considerations**

***KC18.1: An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.***

The ESA eligibility policy has been designed to promote the development of a payments system which is efficient, open and flexible; which has a high level of integrity; and which is robust in the face of financial crises.

When deciding on an application for an ES account RBNZ will consider the following matters:

- whether the applicant fits the definition of financial institution in the Reserve Bank Act 1989.
- whether provision of an ES account to the applicant might detract from the soundness of the financial system.
- whether provision of an ES account to the applicant might detract from the efficiency of the financial system.
- whether there is a legitimate business interest that can be served by access to an ES account.
- whether the provision of an ES account would adversely affect the reputation of the Reserve Bank.
- any other matters RBNZ considers relevant to the application.

The rights and obligations of participants to each other and the rights and obligations of RBNZ as operator of the system are governed by a mutual contract entered into by all participants.

The RBNZ has complete and unfettered discretion to determine membership of the ESAS settlement system.

The membership application process raises awareness of the risks a participant may pose to the system. In applying the criteria outlined above, RBNZ will examine information provided by an applicant regarding its capacity to meet its present and future obligations having regard to operational capacity, financial condition, business continuity arrangements, character and business integrity and any other considerations.

RBNZ intends to provide more specificity regarding the matters which it will take into account when applying its access policy for the provision of ESAs. This work is currently in progress and includes understanding developments in other jurisdictions.

***KC18.2: An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.***

The factors listed in Key Consideration 18.1 are designed to promote the safety and integrity of the system.

RBNZ intends to provide more specificity regarding the matters which it will take into account when applying its access policy for the provision of ESAs.

***KC18.3: An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.***

RBNZ's Banking Department does not undertake on-going monitoring of accountholders' financial condition or their risk management frameworks. As noted earlier, the design of ESAS means RBNZ does not incur material liquidity or credit risk in its capacity as operator of ESAS.

Reliance is placed upon accountholders complying with their obligation under the ESAS Terms and Conditions to report any material issues to the RBNZ. RBNZ does monitor any operational incidents that participants have which RBNZ become aware of and follow up with participants as required. Any non-compliance with the ESAS Terms and Conditions, either by RBNZ or participants is required to be reported to the regulator.

RBNZ has power to suspend or terminate operation of an accountholder's account if it is reasonable for RBNZ to do so. Where a breach has been identified and the participant has taken appropriate steps to rectify it, RBNZ will likely continue to monitor the participant closely for a period of time. The Bank intends to provide more specificity regarding the matters it will consider when determining whether to suspend or terminate an accountholder's membership.

**Principle 19: Tiered participation requirements**

*An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.*

**Assessment:**

ESAS broadly observes principle 19.

**Key considerations**

***KC19.1: An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.***

ESAS accountholders are the only participants. The RBNZ does not admit or recognise indirect or tiered participants nor have any relationship with underlying clients of ESAS accountholders.

Eligibility to become an ESAS accountholder is determined by risk-related participation requirements. Risks and their materiality are assessed at the level of the accountholder. There is no formal procedure to evaluate potential risks arising from dependencies linked to accountholders' underlying clients' activities nor any procedures to gather information from accountholders about their underlying clients. Because all financial institutions which are considered to be systemically important each have their own ESAS account rather than using an agency relationship, the Bank's assessment is that such risks are relatively non-material in the context of ESAS's operations.

RBNZ believes the ESAS Terms and Conditions may be enhanced by explicitly making provision for RBNZ to request information from accountholders for information relevant to the operation of their ESAS account. The risk of not having these powers at present is considered low because the largest accountholders by far are registered banks which are required to provide such information by virtue of their status as registered banks.

***KC19.2: An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.***

Whilst the RBNZ is aware of each accountholder's activity in ESAS, it does not have visibility of indirect participants' (accountholders' clients') activity settling via the ESAS accountholders. As explained in Key Consideration 19.3, reliance is placed on direct participants identifying and managing their key dependencies arising from their own customer activity.

***KC19.3: An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes***

***or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.***

Whilst the RBNZ is aware of each accountholder's activity in ESAS, it does not have visibility of indirect participants' (accountholders clients') activity settling via the ESAS accountholders.

The design of ESAS as an RTGS system which does not provide overdrafts and which settles on an irrevocable basis in central bank funds, minimises the risk of loss to the system operator and other participants as a result of failure of a participant.

ESAS is largely an inter-bank settlement system, although non-bank financial institutions also participate in the system. Financial institutions inherently must manage risk generated by their customers and ensure they have sufficient controls in place so as to mitigate the risk that their customers' activity will cause disruption to their own ability to meet their obligations to settle in ESAS. As noted in key Consideration 19.1, the participants which account for the greatest volume and value passing through ESAS are registered banks which have to prepare quarterly attestations regarding management of key risks. The largest non-bank participant is CLS Bank International which is incorporated as a bank in the United States and is regulated by the Federal Reserve Bank of New York. The CLS system is a designated payment system and is subject to regulation by the RBNZ's Supervision Department. Accordingly, RBNZ does not believe that there is a material risk to the operation of ESAS that is presented by indirect participation.

***KC19.4: An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.***

RBNZ regularly reviews volume and value statistics to ensure that registered banks and CLS Bank International continue to generate the vast majority of volume and value passing through the ESA system. As explained above, each quarter registered banks are required to attest that they have adequate systems in place for monitoring and managing their material risks.

**Principle 20: FMI links**

*An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.*

**Assessment:**

Principle 20 is not applicable to ESAS.

**Key considerations**

***KC20.1: Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.***

No link arrangements (as defined) exist between ESAS and other FMIs. ESAS does have feeder systems which rely on appropriate communications links for secure delivery of payment instructions from those feeder systems.

***KC20.2: A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.***

Not applicable.

***KC20.3: Linked CSDs should measure, monitor, and manage the credit and liquidity risks arising from each other. Any credit extensions between CSDs should be covered fully with high-quality collateral and be subject to limits.***

Not applicable.

***KC20.4: Provisional transfers of securities between linked CSDs should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.***

Not applicable.

***KC20.5: An investor CSD should only establish a link with an issuer CSD if the arrangement provides a high level of protection for the rights of the investor CSD's participants.***

Not applicable.

***KC20.6: An investor CSD that uses an intermediary to operate a link with an issuer CSD should measure, monitor, and manage the additional risks (including custody, credit, legal, and operational risks) arising from the use of the intermediary.***

Not applicable.

***KC20.7: Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.***

Not applicable.

***KC20.8: Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfill its obligations to its own participants at any time.***

Not applicable.

***KC20.9: A TR should carefully assess the additional operational risks related to its links to ensure the scalability and reliability of IT and related resources.***

Not applicable.

**Principle 21: Efficiency and effectiveness**

*An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.*

**Assessment:**

ESAS **observes** principle 21.

**Key considerations**

***KC21.1: An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.***

To ensure that the needs of its participants and the markets it serves are met, RBNZ consults widely on any proposed changes to ESAS. RBNZ also updates accountholders on planned fee changes and developments every six months. This provides an opportunity both for participants to suggest improvements and for RBNZ to consult on planned upgrades. RBNZ also liaises closely with the industry through Payments NZ Limited, and directly with ESAS participants on proposed changes to ESAS.

***KC21.2: An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.***

Each year, the RBNZ (System Operator) prepares objectives for the year ahead which are published in the ESAS annual report and RBNZ's Statement of Intent (the Sol covers a 3 year period). In addition to reporting on outcomes against planned initiatives, key measures include system availability, customer satisfaction, financial outcomes, transaction volumes and holdings of securities and reporting on external audit outcomes.

***KC21.3: An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.***

RBNZ has processes in place to ensure that ESAS is operated in an efficient manner. These include regular audits of the functional areas involved in the operation of ESAS, which are presented to the Audit Committee. A key metric for the review of the effectiveness of Payments & Settlement Services Department is its operational performance. This is reviewed on a quarterly

basis. Feedback from periodic liaison with and industry liaison through Payments NZ are also key inputs into reviews of the effectiveness of ESAS.

**Principle 22: Communication procedures and standards**

*An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.*

**Assessment:**

ESAS **observes** principle 22.

**Key considerations*****KC22.1: An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.***

Payments instructions can be fed into ESAS via the feeder systems – NZClear, ESAS-SWIFT Interface; and Settlement Before Interchange (SBI) – or entered directly into ESAS. Messages sent to ESAS via the ESAS-SWIFT Interface – which accounts for the majority of volumes and value settled in ESAS – are sent using internationally accepted communication procedures and message standards set by SWIFT, and are transmitted over the SWIFT communications network. The procedures and standards for participants to send payments via NZClear are determined by RBNZ, as operator of NZClear. Some payments are manually entered directly into ESAS using the ESAS User Interface.

The ESAS SWIFT Interface (ESI) is a full application to application interface that allows accountholders to send transactions automatically into ESAS via SWIFT messages sent over the SWIFT Network, without a user connecting to an ESAS terminal.

Settlement Before Interchange (SBI) involves a closed user group administered by Payments NZ Limited. SBI utilises SWIFT FileAct and SWIFT Y-Copy functionality.

**Principle 23: Disclosure of rules, key procedures and market data**

*An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.*

**Assessment:**

ESAS **observes** principle 23.

**Key considerations**

***KC23.1: An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.***

The ESAS Terms & Conditions are comprehensive and published on the RBNZ website.

***KC23.2: An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.***

Accountholders' rights and obligations are disclosed in the ESAS Terms and Conditions. An overview of the ESAS system which gives a clear description of the systems design and operations is published on the RBNZ website.

***KC23.3: An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.***

Information in the ESAS Terms and Conditions is supplemented by comprehensive on-line documentation and an on-line help facility accessed via the system. The RBNZ provides focused training in the use of ESAS functionality to new accountholders and new employees upon request. A test system is available for participants to familiarize themselves with the system and a helpdesk is available during business hours to answer specific questions.

RBNZ operates a help desk and will provide assistance and training to accountholders as required.

***KC23.4: An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes***

All fees applicable to the operation of an ESAS account are reviewed and provided to accountholders semi-annually and prospective accountholders on request.

***KC23.5: An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO Disclosure framework for financial market infrastructures. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.***

RBNZ's self-assessment of compliance with the CPSS-IOSCO *Disclosure Framework for Financial Market Infrastructures* will be published on the RBNZ website. Data on transaction volumes and values is disclosed in the ESAS Annual Report which is published on the RBNZ website.

**Principle 24: Disclosure of market data by trade repositories**

*A TR should provide timely and accurate data to relevant authorities and the public in line with their respective needs.*

**Assessment:**

Principle 24 is not applicable to ESAS.

**Key considerations**

***KC24.1: A TR should provide data in line with regulatory and industry expectations to relevant authorities and the public, respectively, that is comprehensive and at a level of detail sufficient to enhance market transparency and support other public policy objectives.***

ESAS is not a trade repository.

***KC24.2: A TR should have effective processes and procedures to provide data to relevant authorities in a timely and appropriate manner to enable them to meet their respective regulatory mandates and legal responsibilities.***

Not applicable.

***KC24.3: TR should have robust information systems that provide accurate current and historical data. Data should be provided in a timely manner and in a format that permits it to be easily analysed.***

Not applicable.

## **Attachment A - FMIs: definition, organisation and function**

Extract from *Principles for financial market infrastructures*, CPSS-IOSCO, April 2012.

An FMI is defined as a multilateral system among participating institutions, including the operator of the system, used for the purposes of clearing, settling, or recording payments, securities, derivatives, or other financial transactions. FMIs may differ significantly in organisation, function, and design and can be legally organised in a variety of forms, including associations of financial institutions, non-bank clearing corporations, and specialised banking organisations. FMIs may be owned and operated by a central bank or by the private sector.

The definition of an FMI includes five key types of FMIs:

- payment systems (PSs)
- central securities depositories (CSDs)
- Securities settlements systems (SSSs)
- Central counterparties (CCPs) and
- Trade repositories (TRs).

There can be significant variation in design among FMIs with the same function. For example, some FMIs use real-time settlement, while others may use deferred settlement. Some FMIs settle individual transactions while others settle batches of transactions.

### ***Payment systems***

A payment system is a set of instruments, procedures, and rules for the transfer of funds between or among participants; the system includes the participants and the entity operating the arrangement. Payment systems are typically based on an agreement between or among participants and the operator of the arrangement, and the transfer of funds is effected using an agreed-upon operational infrastructure. A payment system is generally categorised as either a retail payment system or a large-value payment system (LVPS). A retail payment system is a funds transfer system that typically handles a large volume of relatively low-value payments in such forms as cheques, credit transfers, direct debits, and card payment transactions. Retail payment systems may be operated either by the private sector or the public sector, using a multilateral deferred net settlement (DNS) or a real-time gross settlement (RTGS) mechanism. An LVPS is a funds transfer system that typically handles large-value and high-priority payments. In contrast to retail systems, many LVPSs are operated by central banks, using an RTGS or equivalent mechanism.

### ***Central securities depositories***

A central securities depository provides securities accounts, central safekeeping services, and asset services, which may include the administration of corporate actions and redemptions, and plays an important role in helping to ensure the integrity of securities issues (that is, ensure that securities are not accidentally or fraudulently created or destroyed or their details changed). A CSD can hold securities either in physical form (but immobilised) or in dematerialised form (that is, they exist only as electronic records). The precise activities of a CSD vary based on jurisdiction and

market practices. For example, the activities of a CSD may vary depending on whether it operates in a jurisdiction with a direct or indirect holding arrangement or a combination of both. A CSD may maintain the definitive record of legal ownership for a security; in some cases, however, a separate securities registrar will serve this notary function. In many countries, a CSD also operates a securities settlement system but unless otherwise specified, this report adopts a narrower definition of CSD that does not include securities settlement functions.<sup>10</sup>

### ***Securities settlement systems***

A securities settlement system enables securities to be transferred and settled by book entry according to a set of predetermined multilateral rules. Such systems allow transfers of securities either free of payment or against payment. When transfer is against payment, many systems provide delivery versus payment (DVP), where delivery of the security occurs if and only if payment occurs. An SSS may be organised to provide additional securities clearing and settlement functions, such as the confirmation of trade and settlement instructions. The definition of an SSS in this report is narrower than the one used in the RSSS, which defined an SSS broadly to include the full set of institutional arrangements for confirmation, clearance, and settlement of securities trades and safekeeping of securities across a securities market. For example, the RSSS definition for SSSs included CSDs and CCPs, as well as commercial bank functions involving securities transfers. In this report, CSDs and CCPs are treated as separate types of FMIs. As noted above, in many countries, CSDs also operate an SSS.

### ***Central counterparties***

A central counterparty interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer and thereby ensuring the performance of open contracts. A CCP becomes counterparty to trades with market participants through novation, an open-offer system, or through an analogous legally binding arrangement. CCPs have the potential to reduce significantly risks to participants through the multilateral netting of trades and by imposing more-effective risk controls on all participants. For example, CCPs typically require participants to provide collateral (in the form of initial margin and other financial resources) to cover current and potential future exposures. CCPs may also mutualise certain risks through devices such as default funds. As a result of their potential to reduce risks to participants, CCPs also can reduce systemic risk in the markets they serve. The effectiveness of a CCP's risk controls and the adequacy of its financial resources are critical to achieving these risk-reduction benefits.

### ***Trade repositories***

A trade repository is an entity that maintains a centralised electronic record (database) of transaction data.<sup>13</sup> TRs have emerged as a new type of FMI and have recently grown in importance, particularly in the OTC derivatives market. By centralising the collection, storage, and dissemination of data, a well-designed TR that operates with effective risk controls can serve an important role in enhancing the transparency of transaction information to relevant authorities and the public, promoting financial stability, and supporting the detection and prevention of market abuse. An important function of a TR is to provide information that supports risk reduction, operational efficiency and effectiveness, and cost savings for both individual entities and the market as a whole. Such entities may include the principals to a trade, their agents, CCPs, and other service providers offering complementary services, including central settlement of payment obligations, electronic novation and affirmation, portfolio compression and reconciliation, and collateral management.<sup>14</sup> Because the data

maintained by a TR may be used by a number of stakeholders, the continuous availability, reliability, and accuracy of such data are critical.

**Table 1****General applicability of principles to specific types of FMIs**

Principle	PSs	CSDs	SSSs	CCPs	TRs
1. Legal basis	•	•	•	•	•
2. Governance	•	•	•	•	•
3. Framework for the comprehensive management of risks	•	•	•	•	•
4. Credit risk	•		•	•	
5. Collateral	•		•	•	
6. Margin				•	
7. Liquidity risk	•		•	•	
8. Settlement finality	•		•	•	
9. Money Settlements	•		•	•	
10. Physical deliveries		•	•	•	
11. Central securities depositories		•			
12. Exchange-of-value settlement systems	•		•	•	
13. Participant –default rules and procedures	•	•	•	•	
14. Segregation and portability				•	
15. General business risk	•	•	•	•	•
16. Custody and investment risks	•	•	•	•	
17. Operational risks	•	•	•	•	•
18. Access and participation requirements	•	•	•	•	•
19. Tiered participation requirements	•	•	•	•	•
20. FMI links		•	•	•	•
21. Efficiency and effectiveness	•	•	•	•	•
22. Communication procedures and standards	•	•	•	•	•
23. Disclosure of rules, key procedures and market data	•	•	•	•	•
24. Disclosure of market data by trade repositories					•

This table depicts the applicability of the principles to each type of FMI. If an FMI performs the functions of more than type of FMI, all the principles that address the actual functions performed by the particular FMI will apply in practice.

***Attachment B - The designation and oversight of designated settlement systems***

ESAS is a designated settlement system under Part 5C of the Reserve Bank Act 1989. Designation also gives legislative backing to the finality of settlements effected in accordance with the Terms and Conditions of the ESAS system. The Reserve Bank's Supervision Department is the regulator of the system. Institutional arrangements are in place to ensure that dealings between the Banking Department and the Supervision Department occur on an arm's length basis.