

28<sup>th</sup> November 2013

Dear Hannah,

Thank you for providing iiNet with the opportunity to respond to the ACT Free Public Wi-Fi Capabilities RFP.

As a customer focused company, iiNet would be delighted to work with the ACT Government to produce a robust, high quality Wi-Fi network that its customers can use alongside free users enabled by the Territory.

The proposed network complements iiNet's existing Wi-Fi networks around Australia, and is supported by our current Wi-Fi strategy. The ACT will benefit from being integrated with iiNet's national Wi-Fi platform, allowing instant activation and a fast rollout of new coverage. The integration will minimise operating costs, as iiNet already has staff at its Dickson office involved in the national rollout.

Through its TransACT acquisition, iiNet owns and operates 1100km of fibre optic network throughout the ACT, which it will use where possible to provide a high quality Wi-Fi network running at gigabit speeds. iiNet can now reveal that it has been building a new VDSL2 FTTN network in the ACT during 2013, which we will also leverage for Wi-Fi. The combined networks will have lower operating costs than the NBN that it will one day compete with, providing future economic benefits to businesses in the ACT over and above an alternative Wi-Fi solution.

We have leveraged our existing vendor relationships to negotiate the best possible costs to ensure we will provide cutting edge technology within budget.

TransACT is an ACT based company and always endeavors to support the community through event sponsorship and public initiatives. This is unchanged under iiNet leadership. Our preferred vendor Huawei has also supported the community through their sponsorship of the Canberra Raiders.

We welcome this initiative, and should we be selected I will be personally committed to its success. Should you have any queries about this response, please do not hesitate to contact Stuart Adam or myself.

Yours Sincerely,



John Edwards  
**National Infrastructure Manager**  
Phone: (08) 8228 2132  
Mobile: 0449 258 337  
Email: [john.edwards@staff.iiinet.net.au](mailto:john.edwards@staff.iiinet.net.au)

Stuart Adam  
**Manager Government Business**  
Phone: (02) 6161 8378  
Mobile: 0414 513 219  
Email: [s.adam@staff.iiinet.net.au](mailto:s.adam@staff.iiinet.net.au)

### ATTACHMENT 3 RESPONDENT'S DECLARATION

I/We tender to the Territory for the Public WIFI Capabilities project for the ACT Government on behalf of the Policy and Cabinet Division within the Chief Minister and Treasury Directorate at the GST-Inclusive prices specified in this Response.

I/We have provided details of any information I/we wish to be treated as confidential in any resulting contract, in accordance with clause 5.10 of Part 1 to this RFP.

I/We undertake to provide insurance policies if selected as the preferred respondent prior to entering into a contract with the Territory.

I/We have sighted all addenda to this RFP.

**iiNet Limited**

Full Name and / or Name of Company AND/OR Trading Name (Business Name)

ACN (Australian Companies Number)

OR ABN (Australian Business Number)

**Level 1, 502 Hay St, Subiaco**  
Business Address

**Locked Bag 16, Cloisters Square**  
Postal Address

**WA** **6008**  
State P/Code

**WA** **6850**  
State P/Code

**08 8228 2132** **0449 258 337**  
Telephone No Mobile No

**john.edwards@staff.iinet.net.au**  
Facsimile No Email address

Name of ACT Professional Standards Scheme

**\$20,000,000**  
Upper Limit of capped Professional Indemnity Liability Insurance

**John Edwards**  
Tenderer's Representative

**08 8228 2132**  
(include telephone number)

**National Infrastructure Manager**

Position Held by Tenderer's Representative

  
Signature of Director (if corporation) else Tenderer

**John Edwards**  
Printed Name

**28/11/13**  
Date

  
Signature of 2nd Director (if corporation) else Witness

**MICHAEL WARREN**  
Printed Name

Is your organisation a Small to Medium Enterprise SME? YES/NO  
The definition of an SME is: A business with less than 200 full-time equivalent employees.

### ATTACHMENT 3 RESPONDENT'S RETURNABLE SCHEDULE ON CONFORMANCE WITH THE RFP

<b>Respondents Returnable Schedule on Conformance with the RFP</b>			
Clause No.	Title	Response	Yes / No / Not applicable (✓)(X)(N/A)
<b>Part 1</b>			
<b>Conditions of Response (Including Special Conditions and Other Conditions of Response)</b>			
1.	<b>Conditions of Response - General</b>	Have you read and understood these clauses?	✓
2.	<b>Small-to-Medium Enterprise (SME)</b>	Have you read and understood this clause?	✓
3.	<b>Disclaimer</b>	Have you read and understood this clause?	✓
4.	<b>Terminology</b>	Have you read and understood this clause?	✓
5.	<b>Special Conditions of Response</b>	Have you read and understood these clauses?	✓
5.1	<b>Returnable Schedules</b>	Have you read and understood this sub-clause?	✓
	Attachment 1	Have you read and understood this Attachment?	✓
	Attachment 2	Have you read and understood this Attachment?	✓
	Attachment 3	Have you read and understood this Attachment?	✓
5.2	<b>Conformance and Compliance with the RFP</b>	Have you read and understood these clauses?	✓
5.2.1(a)	Will the Territory have receipt of your response prior to the closing date and time? <b>5PM</b>		✓
5.2.1(b)	Are you submitting an electronic copy of the response?		✓
5.2.1(c)	Have you completed <b>Attachment 1</b> (Technical and Cost Returnable Schedule)?		✓
5.2.1(d)	Have you completed <b>Attachment 2</b> (Respondent's Returnable Schedule on Conformance with the RFP)?		✓
5.2.1(e)	Have you completed <b>Attachment 3</b> (Respondent's Declaration)?		✓

<b>Respondents Returnable Schedule on Conformance with the RFP</b>			
<b>Clause No.</b>	<b>Title</b>	<b>Response</b>	<b>Yes / No / Not applicable (✓)(X)(N/A)</b>
5.2.1(f)	Have you including a letter of compliance from the Equal Opportunity for Women in the Workplace Agency <b>if</b> you respondent have been named as non-compliant under the <i>Equal Opportunity for Women in the Workplace Act 1999</i> (Cwlth) in the period 12 months prior to the closing date and time for responses?		N/A
5.2.2	Have you read and understood this sub-clause?		✓
5.2.3	Have you read and understood this sub-clause?		✓
5.2.4	Have you read and understood this sub-clause?		✓
<b>6.</b>	<b><i>Other Conditions of Response</i></b>	Have you read and understood these clauses?	✓
<b>6.1</b>	<b><i>Qualifications, Training and Knowledge</i></b>	Have you read and understood these clauses?	✓
<b>6.2</b>	<b><i>Alternative Responses</i></b>	Have you read and understood these clauses?	✓
<b>6.3</b>	<b><i>Lodgement of Responses</i></b>	Have you read and understood these clauses?	✓
<b>6.4</b>	<b><i>Ownership of Responses</i></b>	Have you read and understood these clauses?	✓
<b>6.5</b>	<b><i>Further information, Clarification and Enquiries</i></b>	Have you read and understood these clauses?	✓
<b>6.6</b>	<b><i>Addenda</i></b>	Have you read and understood these clauses?	✓
<b>6.7</b>	<b><i>Unintentional Errors of Form</i></b>	Have you read and understood these clauses?	✓
<b>6.8</b>	<b><i>Selection of Preferred Respondent</i></b>	Have you read and understood these clauses?	✓
<b>6.9</b>	<b><i>Price Basis, English Language and Metric Units</i></b>	Have you read and understood these clauses?	✓
<b>6.10</b>	<b><i>Confidential Text and Disclosure</i></b>	Have you read and understood these clauses?	✓
<b>6.11</b>	<b><i>Cost of Responding</i></b>	Have you read and understood these clauses?	✓
<b>6.12</b>	<b><i>Conflicts of Interest and Collusion</i></b>	Have you read and understood these clauses?	✓
<b>6.13</b>	<b><i>Insurances</i></b>	Have you read and understood these clauses?	✓
<b>6.14</b>	<b><i>Proprietary Names</i></b>	Have you read and understood these clauses?	✓

<b>Respondents Returnable Schedule on Conformance with the RFP</b>			
<b>Clause No.</b>	<b>Title</b>	<b>Response</b>	<b>Yes / No / Not applicable (✓)(X)(N/A)</b>
<b>6.15</b>	<b><i>Sustainability, waste reduction and greenhouse policies</i></b>	Have you read and understood these clauses?	✓
<b>6.16</b>	<b><i>Work Health and Safety</i></b>	Have you read and understood these clauses?	✓
<b>6.17</b>	<b><i>Equal Opportunity</i></b>	Have you read and understood these clauses?	✓
<b>6.18</b>	<b><i>No Guarantee of Business</i></b>	Have you read and understood these clauses?	✓
<b>6.19</b>	<b><i>Exchange of Information Between Government Agencies</i></b>	Have you read and understood these clauses?	✓
<b>6.20</b>	<b><i>National Competition Policy</i></b>	Have you read and understood these clauses?	✓
<b>6.21</b>	<b><i>Respondent Declaration</i></b>	Have you read and understood these clauses?	✓

**ATTACHMENT 1 – TECHNICAL AND COST RETURNABLE SCHEDULE**

**FOR RESPONSE TO REQUEST FOR PROPOSAL (RFP) NO: 2013.23179.210**

**FREE PUBLIC WIFI CAPABILITIES**

**ON BEHALF OF**

**CHIEF MINISTER AND TREASURY DIRECTORATE**

All enquiries in relation to the RFP must be directed in writing to the Contact Officer.

**Contact officer:** Hannah Gill – Shared Services Procurement – ICT  
**Phone:** (02) 6207 0171  
**Email:** [ICT.Tenders@act.gov.au](mailto:ICT.Tenders@act.gov.au)

**Issue Date:** Saturday, 9 November 2013  
**Closing Date:** Thursday, 28 November 2013  
**Closing Time:** 5:00PM Canberra Time  
**Response**  
**Lodgement:** Response must be emailed to [ICT.Tenders@act.gov.au](mailto:ICT.Tenders@act.gov.au)

**Please note** - This Technical and Cost Returnable Schedule (for responses to the RFP) is required to be completed by the Respondent.

**CHECK LIST**

Below is a list of actions and/or information that the Respondent should review/include prior to submitting their Response.

- RFP submitted on time.
- Technical and Cost Returnable Schedule Completed.

## GENERAL REQUIREMENTS

<b>Respondent</b>
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<b>iiNet Limited</b>
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<b>ABN 48 068 628 937</b>
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<b>Responsible person:</b>
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<b>John Edwards</b>
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<b>National Infrastructure Manager</b>
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<b>Respondent's Executive Summary</b>
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iiNet wishes to build a meaningful free Wi-Fi network in the ACT in collaboration with the ACT Government
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iiNet subsidiary Internode has been operating free public Wi-Fi networks in Adelaide since 2003, and this same team is now building a national iiNet capability.
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iiNet expects that the ACT will match its contribution with access to public assets and the maximum available funding to improve the coverage and depth of the solution. This will cement the ACT's position as a technology leader, and provide an engagement platform for residents.
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**TECHNICAL AND COST RETURNABLE SCHEDULE  
FOR RESPONSES TO THE RFP**

**Note:** No word limits apply to the Respondent's Response.

The Territory is seeking detailed responses from Respondents comprising the following:

**1. ASSUMPTIONS**

Respondent to detail any Assumptions which underpin their Response (for all Technical and Cost components of the Response), below:

iiNet has assumed that it will receive an agreement with the ACT to utilise public infrastructure such as ducts, fibre and street lights to complete the solution.

It is assumed that iiNet will receive unfettered access to experts and decision makers employed by the ACT government, to consult on decisions relating to areas such as electrical power, design, asset management, safety and bus electrical systems.

## **2. TECHNICAL REQUIREMENTS**

### **2.1 Mandatory Requirements**

Responses for the provision of a Wi-Fi Network must meet the following mandatory criteria:

- hold a Carriers Licence as defined by the Australian Communications and Media Authority, or have a contractual arrangement with a holder of a Carriers Licence;
- provide free public Wi-Fi access;
- filter undesirable content from the free public service; and
- offer customer support for connection and service issues.

The carrier licence entity for all network units shall be iiNet subsidiary company TransACT Capital Communications Pty Ltd.

Free public Wi-Fi access will be provided at all locations in the network.

Content that has been identified as undesirable to the ACT will be filtered from the service.

A support service will be provided during ACT business hours for the free service. 24 hour support will be available for commercial services via the iiNet "Follow the sun" international network of call centres in Auckland, Sydney, Canberra, Melbourne, Adelaide, Perth and Capetown.

## 2.2 General Wi-Fi Requirements (Essential)

The Canberra Wi-Fi Network must provide Wireless Broadband Service:

- with a basic entry-level service at no cost to users;
- with coverage in public spaces around Canberra:
  - town centres (such as Civic, Belconnen, Tuggeranong);
  - public spaces (such as Garema Place, Glebe Park);
  - bus interchanges (such as Cohen Street); and
  - on buses.
- that is able to facilitate upgrade paths to meet user demand and growth;
- that is based upon Wi-Fi based technology that ensures the widest number of devices supported, and to align with national and international trends;
- that provides for ease of use and low cost setup due to the proliferation of devices with inbuilt Wi-Fi capability;
- that maximises the ease of use of the service, with a focus on ease of log on, authentication and access procedures;
- that complies with emerging standards and certifications for authentication such as the Wi-Fi alliance Hotspot 2.0 process; and
- that supports the Internet Protocol (IP) with an acceptable level of service provisioning, service assurance, customer network management and customer support that includes as a minimum resolution of connectivity problems and service interruptions/degradation.

## Free Wi-Fi Service

iiNet will provide a basic Wi-Fi service for non-commercial purposes that allows web browsing, common apps and email at no cost to end users. The service will be limited to modest 2mbps speeds, and bandwidth-hungry applications that are not in the spirit of free Wi-Fi will be blocked (ie: bittorrent peer-to-peer file sharing)

Where and when the ACT has declared a disaster, limitations on the free service will be lifted to free up mobile networks and allow families and businesses a maximised opportunity to communicate.

## Coverage

iiNet will provide coverage to town centres in:

- Belconnen
- Braddon
- Bruce
- CBD/ Civic
- Dickson
- Parkes

Further coverage will be provided (subject to private agreements) at the Canberra International airport, and Hospitals within the ACT.

iiNet will provide outdoor Wi-Fi coverage at up to 330 sites.

A large number of public spaces have a TransACT Supernode present, which will be able to provide data and power to Wi-Fi AP's. iiNet will deploy outdoor Wi-Fi at these locations subject to an agreement with Actew/AGL for use of their poles.

Bus interchanges will have outdoor coverage at:

- Cohen St Bus Station
- Belconnen Westfield Bus Station
- Belconnen Community Bus Station
- City Bus Station

- Woden Bus Station
- Tuggeranong Bus Station

iiNet will provide Wi-Fi services on 20 buses as an R&D exercise. This coverage will not be integrated with the greater Wi-Fi service to avoid interference issues, but it will remain free. iiNet will subject this service to lower limits such as a daily quota to prevent scarce and expensive 4G data from being unfairly consumed.

All coverage is subject to a detailed design plan, which will be organised at iiNet's cost should this bid be accepted. The detailed design plan will invite iterative feedback from stakeholders during the build to maximise the benefit of coverage to the public.

### **Upgrade Paths**

Outdoor access points in the network will be constructed on fibre access back to TransACT hub sites, and connected using Gigabit links. Single-fibre optics will be used to minimise the physical fibre cores required, which will also halve operational costs of maintaining fibre for the network. This alone will put extensive bandwidth into outdoor areas, and provide for upgrades as Wi-Fi technology improves. Each link will have optical characteristics that allow it to be upgraded to 10-gigabit Ethernet without additional works, should the need arise.

Indoor access points will use TransACT's state-of-the-art VDSL2 network which is currently being built. The Canberra Wi-Fi network will be the first project to take full advantage of this new network in the ACT. Speeds of up to 100mbps per access point will be available. In the unlikely event that a popular site causes network congestion, iiNet will bond additional VDSL2 services, or upgrade a site to utilise one of its nearby fibre paths.

The core network will be duplicated in two locations and use 10G interfaces for its uplink to the Internet. This will ensure that the network will have spare capacity well beyond its 5 year design life.

The network architecture is designed to scale linearly, so that more devices can be added in parallel to existing devices, without relying on massive core upgrades.

iiNet currently operates its own International network, and has agreements for Terabits of capacity to Australia. There is unlikely to be any shortage of Internet bandwidth.

### **Compatibility**

iiNet subsidiary Internode has been operating Wi-Fi networks for more than 10 years and has a wealth of experience in compatibility with a majority of devices. We have not fielded any compatibility complaints with our networks in the last year.

The network will support the widest number of devices possible without compromising performance.

The network access points will all use dual-band radios to support 2.4Ghz and 5Ghz Wi-Fi.

The entire network will support 802.11a, 802.11g and 802.11n protocols.

iiNet's target platform for compatibility will be a handheld smartphone device such as an Apple iPhone5 or Samsung S4.

**Ease of use**

iiNet will provide portal methods for connecting to Wi-Fi that require no typing or user interaction beyond accepting the terms and conditions. The free network will be open, which will make connecting to it easier than most people's secured home networks.

**Hotspot 2.0**

**Internet Protocol**

The network will support both IPv4 and IPv6 protocols, like the iiNet Wi-Fi network does in Adelaide.

Commercial users and free users will use different networks to reach the internet.

### 2.3 Services and Support (Essential)

The ACT Government envisages that services would be provided on a tiered approach from community level basic free-to-user potentially advertising-supported services to commercial level higher-volume higher-speed fee-based services.

Basic services providing wireless broadband access would be available free of charge to the user, and may be commercially supported through some level of advertising or other sponsorship.

Respondents are to clearly identify the nature of advertising or other commercial support, access speeds and download limits and any other conditions, restrictions, impact on users, commercial arrangements and assumptions that may underpin their proposed solution.

Note that the ACT Government may wish to retain veto rights over sponsorship or advertising deemed inappropriate for a publicly supported service, including the type and frequency at which these ads will be displayed.

Respondents are encouraged to submit innovative alternatives and options that would ensure the sustainability of this basic service. It is expected that the service would be provided, maintained and supported for a period of at least 5 years.

Premium services may be provided in addition to the basic services and these could potentially include a variety of features such as higher-speed access, advertisement-free, tiered technical support and traffic prioritisation.

Respondents are invited to:

- provide details of the access speeds and download limits and all other features of the proposed services;
- identify support available for basic services;
- describe how their solution addresses the registration, authentication and logon process and detail any terms and conditions that are required;
- describe the network statistical information that will be made available to government and any conditions attached to such data;
- identify applications that illustrate innovative use of the services, including basic services, location based retail, smart infrastructure, tourism and events; and
- describe how service will comply with all relevant legal and regulatory requirements for Internet Service Providers, Carriers and Carriage Service Providers.

### **Free service**

The Free Service will be limited to 2Mbps and restricted to web browsing and email, along with common apps used on smartphones and tablet devices. It may be supported by advertising, or commercial analytics services derived from the usage of the network.

The Free service will include support via community channels (ie: Twitter or Whirlpool) along with a helpdesk phone number and email support during ACT business hours.

The Free service will be open, and data will be un-encrypted.

### **Free Service on buses**

The free service offered on buses will be subject to available mobile data speeds as an aggregate limit.

A download limit of 10mb per device per day will be applied to allow fair access to all bus riders. This limit will be regularly reviewed.

Should an individual bus exceed 20gb download in a month, the free wi-fi will be disabled to prevent cost overruns.

### **Commercial Services**

The commercial services will have no restrictions on types of usage. iiNet at its discretion may apply a 100mbps speed limit to commercial services to ensure fair usage of wireless resources. Commercial services by default will be limited to 5 simultaneous devices per login.

Commercial services will not be supported on mobile bus Wi-Fi access points.

iiNet business will provide corporate or wholesale plans to entities wishing to use the network for groups of users or M2M devices.

## Data

iiNet will provide data to the government as aggregate statistics that do not breach privacy laws for individuals. iiNet is also subject to the privacy provisions of the telecommunications act. iiNet considers mac addresses to be personally identifiable information.

Where iiNet aggregates data to conceal personal information, a minimum of 5 data points will be required to prevent individuals from being exposed (ie: the coffee shop owner who is always the first person to use the Wi-Fi each day, and might be identifiable even with all the usual data scrubbed). Data that does not meet this criteria will not be included in reports.

Normal data will be sanitised as tabular data and suitable for publishing under open data schemes, such as data.gov.au. Examples of data shared will include:

- Counts of users using the network by time of day
- GeoLocations of access points
- Ranking of popularity of access point by user count and data consumed
- Statistics showing % fractions of device type and protocol used

Analytics reporting will be available as a commercial service.

## Events

iiNet will build 10 mobile access points to be used at events to increase the capacity of existing Wi-Fi. They will form a pop-up mesh network. 5 of these access points will include batteries to allow them to operate at events without AC power available.

The ACT will be allowed to nominate 3 events each year that iiNet will service at no charge and have priority over commercial bookings.

iiNet will bring the mobile access points to events that it sponsors in the ACT.

The mobile capability will be available for deployment should a disaster be declared in the ACT.

iiNet will provide a booking and scheduling service for the mobile capability so that it may be used by other events at commercial rates, subject to availability.

### **Regulatory**

iiNet must operate within the provisions of the Telecommunications act and its carrier licence obligations. iiNet is also subject to its TIO membership obligations.

iiNet and the Attorney General's department have developed methods for allowing free Wi-Fi networks to operate in Australia while supporting law enforcement's abilities to detect and deter criminal activities on them. iiNet is not able to disclose these methods.

All data transmitted on the network will traverse central controllers to allow for accurate lawful intercept. Peer-to-peer communications between devices will also go via the central controllers.

Lawful intercept has been carefully engineered to ensure that only individual devices will be captured on the iiNet network. Other Wi-Fi networks require a catch-all approach, which involves innocent users having their data captured and analysed by authorities in the event of a crime.

## 2.4 Network and Technology

### 2.4.1 Wireless Standards (Essential)

The Respondent should clearly identify which wireless standards the service supports. In particular the Respondent should outline which of the IEEE 802.11 family of standards are supported and in which frequencies, and how upgrades to emergent standards will be addressed.

iiNet will support the following wireless transmission standards:

- 802.11a 5Ghz
- 802.11g 2.4Ghz
- 802.11n 2.4Ghz
- 802.11n 5Ghz
- 802.11ac 5Ghz (limited to 1 location initially)

iiNet will not support 802.11b as there are no devices used in public areas that require it. To do so would reduce the performance of the network for all 2.4Ghz users. Today, approximately 2% of usage occurs on 5Ghz.

iiNet encourages the use of 802.11ac end-user devices to improve use of 5Ghz spectrum, increase available radio channels for planning purposes and reduce interference. iiNet asserts that 802.11ac is not good value for public Wi-Fi AP rollouts, due to its pre-standard specification, it's short range, and high cost. Where the majority of users will be operating below 100mbps, 802.11n should be sufficient.

iiNet will deploy a single library site with 802.11ac as a trial. This should satisfy curious users and technology journalists.

iiNet will keep a close eye on 802.11p automotive and "smart roads" applications, and deploy the network in such a way that it can be later upgraded to support Vehicle-to-infrastructure operation.

The iiNet Wi-Fi network will allow for partitioning and segmenting, to allow new technologies to be gradually deployed without affecting the existing network.

### 2.4.2 Technology, Capacity and Capability (Essential)

Respondents are required to provide details of the proposed technology that would be used in their solution clearly addressing the differentiating features of their solution including capability, capacity and planned upgrades over the next 5 years.

The technology being deployed in Canberra will be a new series of Huawei access points derived from their work with LTE small cells. This technology has not been deployed outside of China, and the intention is that the ACT will become a global showcase for Huawei.

iiNet representatives have witnessed this technology in operation at R&D facilities in China and been impressed by its operation, performance and coverage. We recommend this for Canberra.

2 City-scale Wireless LAN Controllers will be deployed, each capable of supporting 30,000 access points or hundreds of thousands of simultaneous end users.

A unique management tool will be deployed that can identify gaps in coverage and proactively suggest the optimal placement of new access points as the network grows. This will reduce the need for a dedicated design team, and allow us to act on coverage improvement. This will be without dependency on unreliable and subjective (but still valuable) customer feedback.

The network will be designed with 10-gigabit aggregation, management and uplink capabilities, so that the network performance is assured for the next 5 years without costly hardware upgrades.

iiNet has prepared an option for similar state-of-the-art Cisco hardware at a higher cost, should the ACT consider Huawei equipment to be unsuitable. iiNet does not believe that Huawei presents any risk over other equipment vendors.

**2.4.3 Connectivity Type (Highly-Desirable)**

Respondents are required to provide details of their solution’s capability to support the following types of wireless broadband connectivity:

- fixed (stationary subscriber at a single location);
- nomadic (stationary subscriber at a variety of locations); and
- portable (in-motion subscriber at a variety of locations).

iiNet proposes to provide the following connectivity types for users:

Connectivity Type	iiNet Subscribers	Guest users
Fixed	✓ Single one time only logon to free Wi-Fi network	To be discouraged by acceptable use policy – Free Wi-Fi is not a substitute for fixed-line services
Nomadic	✓ Single one time only logon to free Wi-Fi network	✓ Time limited logon to free Wi-Fi network
Portable	✓ Single one time only logon to free Wi-Fi network	✓ Time limited logon to free Wi-Fi network

#### 2.4.4 Handoff (Essential)

The network should provide seamless handoff between access points for data applications at pedestrian speeds. It is not intended that the network is a replacement for mobile voice networks and as such support for voice handoff is not required. Handoff at vehicular speeds is not required. Respondents are required to provide details on handoff capabilities.

The network will use centralised controllers to coordinate hand-off between access points at pedestrian speeds. Initial testing has revealed that this hand-off is able to support video calls such as Skype without dropping video frames.

The controller is able to anticipate a pending move between access points, and buffer packets to ensure that re-transmission is not required and additional interference is not created.

The centralised nature and city-scale capacity of the controllers means that an end user device will keep the same IP address and authentication credentials across the entire ACT.

#### 2.4.5 Supported Applications (Essential)

The network is expected to allow users access to send and receive emails and browse the Internet as a minimum as part of the provision of basic services. Other applications to be considered by respondents as either part of the free or premium service offerings may include Virtual Private Network (VPN) tunnelling, Instant Messaging, Voice-Over-IP (VoIP), CCTV and Video Conferencing. Respondents are to clearly identify the applications supported by their solution.

iiNet will support internet access with browsing, instant messaging and email at a minimum for all users. Full internet connectivity will only be available to iiNet group customers.

The network will support mobile offload via Hotspot 2.0 capability.

iiNet is also pleased to offer support for additional private network services for use by local government, i.e.

- Vehicle Tracking
- M2M Applications
- Parking Meter Automation
- CCTV backhaul

The aggregating network is built to Metro Ethernet Forum specifications, which will allow virtually unlimited partitioning and segmentation scenarios using VLANs, Stacked VLANs, MPLS and Ethernet Virtual Circuits.

The iiNet international network supports MPLS to all locations globally. The mobility component of the wireless LAN controllers is being built to support segmentation.

The traffic on each access point will be tunnelled to central controllers, where limits and policies can be defined centrally rather than on hundreds of remote devices.

#### 2.4.6 Traffic Prioritisation (Highly-Desirable)

Respondents are to identify how their solution addresses traffic prioritisation.

For the free service, iiNet may prioritise web browsing over other traffic types. Protocols primarily used for downloading (i.e. bittorrent) will be blocked altogether.

A priority level below the free service will be reserved for future use by M2M applications that are not time sensitive (i.e. electricity metering)

Commercial services will have options to be prioritised over other types of traffic. Please note that Quality of Service (QoS) is used in telecommunications terminology to denote prioritisation.

As a guideline, QoS will be provided using methods compatible with ITU recommendation Y.1541 Network performance objectives for IP-based services.

#### 2.4.7 Quality of Service (Essential)

Respondents are to identify how their solution can provide different levels of quality of service, security and other characteristics for multiple domains over a single physical network.

iiNet will only build high quality networks. To do otherwise would create unacceptable damage to our brand reputation and cause unwanted additional load on our busy call centres. This response will deliver a network of high quality.

iiNet will use 10Gb capable equipment in the core to deliver this service, and dedicated gigabit links to each root access point. The network has been designed in such a way that it is easy to augment capacity by simply adding additional access points in any area that congestion occurs.

As a guideline, QoS will be provided using methods compatible with ITU recommendation Y.1541 Network performance objectives for IP-based services.

iiNet will map users with different classes of service into different vlans within the network, where the aggregating equipment will make decisions on priority.

Some WMM will be used to enforce priority levels, particularly over air interfaces between mesh access points.

#### 2.4.8 Roaming Agreements (Essential)

It is expected that roaming agreements would be setup between the Network Operator and other Service Providers to allow subscribers of all participants to gain access to the network using the same credentials. It is desirable to provide for seamless roaming to and from the proposed service and other hotspot networks (public library etc) without the need to re-authenticate.

iiNet proposes guest level access to allow users to access the service as a guest regardless of their service provider. However, this free Wi-Fi access will restrict users to Internet and Mail traffic, will not be encrypted and will time-out requiring the guest to log back into the network on a regular basis. Roaming agreements will allow other customers of service providers besides iiNet to overcome these limitations.

#### **2.4.9 Security and Filtering (Mandatory)**

The network is to include appropriate proactive security measures, both physical and logical, to prevent and mitigate risk of attacks.

The network is also to include appropriate levels of protection for viruses and other malicious programs. Respondents are to identify the multilayered security capabilities of their solution. Respondents are also required to provide details of how their solution could restrict access to undesirable and inappropriate material.

#### 2.4.10 Privacy (Essential)

Respondents are to ensure that all customer data held by the organisation is managed within appropriate privacy policies and in a manner that meets all relevant privacy legislation. Respondents are invited to submit information on the privacy policies of their proposed solution. Respondents are also invited to submit information on how the privacy of customer data traversing their network will be maintained.

iiNet will not secure the data transmissions of guest users on the free Wi-Fi service, as it is not technically possible on an open network. Users will be advised of this limitation as part of the terms and conditions of use.

As a carrier, iiNet is subject to the privacy requirements of the telecommunications act in addition to general corporate privacy legislation. The iiNet privacy policy can be found at <http://www.iinet.net.au/about/legal/privacy.html>

Where data is shared with third parties for purposes besides law enforcement, including the principle, it will only be shared in an aggregated and “anonymised” form that does not allow end users to be identified. This will include time-domain and location “anonymisation” such that aggregate stats will not show data where less than 5 users are involved. Mac addresses and hashes of mac addresses are considered to be identifying information, and will not be shared.

iiNet has already started a compliance program for new privacy legislation to be introduced in 2014. iiNet has recently appointed a senior compliance officer who specialises in online privacy.

#### 2.4.11 Congestion (Essential)

The Principal notes that a number of the areas that may be covered have short term events that will significantly increase potential user numbers and result in substantial congestion of the network. These include events such as Floriade and Summernats. The Principal recognises that the success of the service may well be judged on its performance during such events. Respondents are to provide details on how such temporary congestion events are to be managed, including the potential for temporary capacity increasing facilities.

The iiNet solution will be designed to service the day to day requirements of a municipal Wi-Fi network while also providing the required backhaul bandwidth to handle increased traffic seen during festivals and events. The backhaul network will be built with gigabit links to fibre connected APs, and VDSL2 links to indoor APs where fibre is not available. 10G links will be used to aggregate the network in the core.

iiNet needs to ensure that the commercial network offers superior performance to the free network, so that free users have an incentive to upgrade and pay to support the continued operation of the network. This may involve mild levels of congestion in the free network. iiNet will not allow poor performance of the free network to impact upon its brand and will proactively monitor for excessive congestion.

iiNet will build a mobile Wi-Fi capability of 10 APs on temporary masting that can be rolled into events to improve coverage, capacity and availability of existing iiNet Wi-Fi

#### 2.4.12 Architecture and Design (Essential)

Respondents are to provide a technical architecture of how the network would be deployed addressing backhaul, roaming, standards-based technologies, security standards, and radio interference, congestion and delay minimisation measures.

The network has been designed for high quality access and efficient handoff to a wired network. While meshing is deployed to reduce costs and increase coverage, iiNet is careful not to do this at the expense of quality and performance. i. This adds resiliency to the network in the event of an equipment failure, and guarantees high performance along with the ability to utilise 5Ghz spectrum for end users. Some Wi-Fi solutions only use the 2.4 Ghz spectrum for end users and utilise 5Ghz spectrum exclusively for backhaul.

iiNet has minimised single points of failure in the network, and designed enough capacity to upgrade hardware without severely impacting the operation of the network.

iiNet proposes to use its own and the ACT Government fibre assets where possible. In short, the commercial architecture is as follows:

- The ACT Government will pay for the majority of access points required for outdoors areas, buses and at tourist attractions. ACT Stadiums are out of scope.
- iiNet will contribute fibre, VDSL2, operations, bandwidth and all access points for indoor sites as required.
- iiNet will contribute 20 bus access points as an R&D exercise

- iiNet will contribute 90 outdoor sites to establish the network
- Any rents or charges the ACT Government wishes to levy for access to infrastructure (i.e. fibre services, poles, towers, rooftops and buildings) will be managed as a credit for Wi-Fi services.

#### 2.4.13 Spectrum (Essential)

Respondents are to provide details of the use of spectrum (licensed or unlicensed) available to them to deploy the network. Providers are responsible to meet any costs associated with the use of the spectrum proposed, and to meet all legal requirements in the use of the spectrum including human exposure to electromagnetic energy (EME) requirements. Respondents are to detail how their proposed solution addresses the potential interference and congestion associated with the use of unlicensed spectrum, where applicable.

iiNet will use spectrum in the ISM bands of 2.4 Ghz and 5 Ghz to provide Wi-Fi services. iiNet will consider using 24 Ghz unlicensed spectrum for delivery of bandwidth to outdoor access points in some locations. This will provide additional bandwidth required to service high density events that are not near fibre or VDSL2.

iiNet may deploy some network hardware that is capable of supporting 4.9Ghz for emergency services Wi-Fi or 5.9Ghz for 802.11p short range vehicle communications; however it has no current plans to operate such services.

iiNet will deploy equipment that is rated safe under ARPANSA standards for prolonged occupational exposure at distances greater than 20cm. The Wi-Fi access points will be mounted in such a way that such exposure and proximity will be impossible under normal circumstances.

iiNet will take steps to minimize interference from mobile Wi-Fi access points in buses, which may intermittently clash with channels used by fixed access points.

#### 2.4.14 Regulatory and Legal Requirements (Essential)

Respondents will be required to meet all Carrier and/or Carriage Service provider licensing obligations and radiofrequency licensing at their cost. All relevant requirements for the support of emergency calls, provision of location information to Emergency Service Operators, downloading of prohibited material, and lawful interception will also need to be addressed. Respondents must state how these and any other relevant regulatory and legal requirements will be met with their solution.

iiNet will meet all of its carrier licensing obligations. As the operator of Australia's largest free Wi-Fi network, iiNet already has a relationship with Federal agencies for interception and a dedicated security team. iiNet has consulted to the Attorney General's Department on Wi-Fi security and interception and helped to define policy in this area.

#### 2.4.15 Wireless Network Equipment (Essential)

Respondents are to provide details of the wireless network equipment proposed to be deployed to support the network and services outlined. In particular, the space and electricity requirements associated with the equipment are to be clearly identified. Respondents are required to detail costs associated with the acquisition, installation, provision and maintenance of the equipment.

The proposed models to be used are:

- WA251DT-NE, with external 5ghz antennas for outdoor deployment
- WA201DK-NE for deployment under outdoor ceilings or indoor settings

Both of these AP's are capable of 450Mbps aggregate throughput.

The outdoor equipment is rated to IP66, and is pictured at the end of this section. The physical dimensions of the outdoor unit are 260 mm x 260 mm x 73 mm.

They are expected to draw about 12W of power under normal operations, however are designed for 24W.

The device is powered from 240V AC or POE. iiNet will deploy a special fibre "backpack" as part of the solution.

The iiNet engineering team has performed an RF hazard analysis of Wi-Fi units for an electricity utility elsewhere in Australia and found them to emit 30x less radiation than an iPhone 4S.

iiNet will be responsible for delivery and storage of equipment at its Ainslie warehouse during deployment. iiNet will maintain the equipment from a spares