

Service Description

Sandpit Module

Wholesale Broadband Agreement





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Version	Description	Effective Date
4.0	First issued version of WBA 4	1 December 2020

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Environment

nbn asks that you consider the environment before printing this document.

Introduction

This Sandpit Service Description describes the Sandpit testing service. It forms part of the Sandpit Module.

Roadmap

A roadmap describing the structure of this Sandpit Service Description follows for the assistance of RSP.

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Part A: The Sandpit

The Sandpit:

- permits RSP to conduct specified testing and development activities relevant to:
 - **nbn**TM Ethernet (Fibre);
 - **nbn**TM Ethernet (FTTB) and **nbn**TM Ethernet (FTTN);
 - **nbn**TM Ethernet (FTTC);
 - **nbn**TM Ethernet (HFC);
 - **nbn**TM Enterprise Ethernet; and
 - the **nbn**TM Platform Interfacing Service,
 as set out below; and
- comprises the following services delivered from portions of the **nbn**TM Infrastructure that are quarantined from the **nbn**TM Platform and the **nbn**TM Network used by **nbn** to supply **nbn**TM Ethernet, **nbn**TM Enterprise Ethernet and the **nbn**TM Platform Interfacing Service:

Sandpit	Capabilities/Deliverables	Related activity	Activities described in section
Fibre Sandpit	NNI; CVC; AVC; UNI	nbn TM Ethernet Testing and Development Activities on the Fibre Network	1.2
VDSL Sandpit	NNI; CVC; AVC; UNI	nbn TM Ethernet Testing and Development Activities on the FTTB/N Networks	4.2
FTTC Sandpit	NNI; CVC; AVC; UNI	nbn TM Ethernet Testing and Development Activities on the FTTC Network	7.2
HFC Sandpit	NNI; CVC; AVC; UNI	nbn TM Ethernet (HFC) Testing and Development Activities	10.2
nbn TM Enterprise Ethernet Sandpit	NNI; OVC; UNI	nbn TM Enterprise Ethernet Testing and Development Activities	13.2
NPIS Sandpit	Digital certificates; API Credentials; Collaboration Protocol Agreement; Testing guide	nbn TM Platform Interfacing Service Testing and Development Activities	16.2

Part B: Fibre Sandpit

Section 1 sets out the testing and development activities which RSP may perform using the Fibre Sandpit.

1. Fibre Sandpit description

1.1 Function of the Fibre Sandpit

- (a) The Fibre Sandpit is made available by **nbn** only for the specific testing and development purposes set out in section 1.2.
- (b) RSP must not use the Fibre Sandpit to supply any products or services to Downstream Service Providers or End Users without the prior written consent of **nbn**.

1.2 **nbn**TM Ethernet (Fibre) testing activities

RSP may use the Fibre Sandpit to:

- (a) prepare for and perform:
 - (i) Pre-Certification Testing;
 - (ii) RSP Equipment testing;
 - (iii) development activities; and
 - (iv) any related or ancillary activities,in respect of **nbn**TM Ethernet (Fibre) (**nbn**TM **Ethernet (Fibre) Testing and Development Activities**); and
- (b) conduct any other activities which **nbn** undertakes pursuant to an SAU to permit RSP to conduct in the Fibre Sandpit.

Section 2 sets out the Fibre Sandpit elements that support the testing and development activities which RSP may perform using the Fibre Sandpit.

2. Fibre Sandpit architecture

- (a) The Fibre Sandpit comprises elements that enable RSP to perform **nbn**TM Ethernet (Fibre) Testing and Development Activities.
- (b) A diagram illustrating the RSP-hosted variant of the Fibre Sandpit (described below) follows:

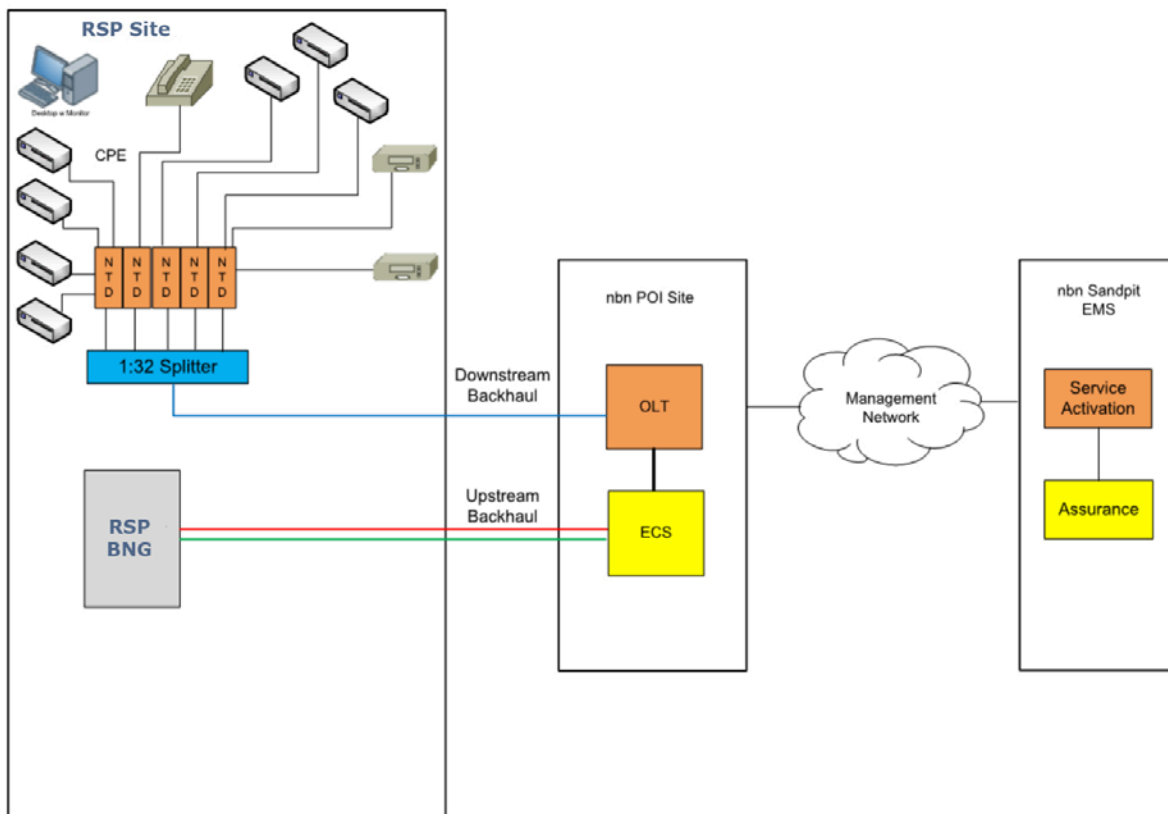


Figure 1: High-level illustration of RSP-hosted variant of the Fibre Sandpit

(c) The Fibre Sandpit is available in the following variants:

Variant	Features / conditions
nbn-hosted	<p>nbn hosts the 1:32 fibre splitter and NTDs, and provides access to the UNIs, at the National Test Facility.</p> <p>RSP may choose to bring its broadband network gateway to the National Test Facility.</p>
RSP-hosted	<p>RSP hosts the 1:32 fibre splitter and NTDs and provides or acquires Downstream Backhaul to establish connectivity between the 1:32 fibre splitter and the facility from which the RSP-hosted variant is supplied.</p>

*Section 3 sets out the locations at which the Fibre Sandpit is available, the requirements for performing testing and development activities and the support **nbn** will provide to RSP.*

3. Use of the Fibre Sandpit

3.1 Locations of the Fibre Sandpit

- (a) The RSP-hosted variant of the Fibre Sandpit is available from at least one location notified by **nbn** to RSP from time to time in each of the following cities, and at such other locations notified by **nbn** to RSP from time to time:
- (i) Sydney, New South Wales;
 - (ii) Melbourne, Victoria;
 - (iii) Brisbane, Queensland;

- (iv) Adelaide, South Australia; and
 - (v) Perth, Western Australia.
- (b) The **nbn**-hosted variant of the Fibre Sandpit is available at the National Test Facility.

3.2 Performance of **nbn**™ Ethernet (Fibre) testing

For **nbn**™ Ethernet (Fibre) Testing and Development Activities:

- (a) Subject to section 1.3 of the [Sandpit Service Terms](#), **nbn** will provide the following items to RSP:

Item	Description	Quantity
NTD	NTD pre-configured by nbn (with labelling and AC power cables)	5
Fibre splitter	1:32 fibre splitter	1
Contact details	Contact details for Sandpit support	1

- (b) RSP must not reconfigure, or attempt to reconfigure, the fibre-specific NTDs; and
- (c) **nbn** will make available to RSP:

Capability	Description
NNI	Mirrors type and structure of NNIs available as a Product Component of nbn ™ Ethernet (Fibre)
CVC	Mirrors type and structure of CVCs available as a Product Component of nbn ™ Ethernet (including the Multicast Domain Product Feature of nbn ™ Ethernet (Fibre))
AVC	Mirrors type and structure of AVCs available as a Product Component of nbn ™ Ethernet (including the Multicast AVC Product Feature of nbn ™ Ethernet (Fibre))
UNI	UNI capability through provision of fibre-specific NTDs and fibre splitters

3.3 Establishing connectivity and use of the Fibre Sandpit

- (a) If RSP acquires the **nbn**-hosted variant of the Fibre Sandpit and does not bring its broadband network gateway to the National Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the Fibre Sandpit	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate Upstream Backhaul at the point specified by nbn	RSP
Conduct cross connection between the Upstream Backhaul termination point and the ECS port	nbn

Activity	Party responsible
Use the NNI to access the CVC and AVC remotely over Upstream Backhaul connecting the RSP Network and the Fibre Sandpit	RSP
Access and use the UNI to access the CVC and AVC locally at the National Test Facility in accordance with nbn 's directions	RSP

- (b) If RSP acquires the **nbn**-hosted variant of the Fibre Sandpit and chooses to bring its broadband network gateway to the National Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Conduct cross connection between RSP's broadband network gateway and the ECS port	nbn
Arrange physical access in accordance with section 19.2(d)	RSP
Access and use the NNI and UNI to access the CVC and AVC locally at the National Test Facility, and in accordance with nbn 's directions	RSP

- (c) If RSP acquires the RSP-hosted variant of the Fibre Sandpit, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the Fibre Sandpit	RSP
Provide or acquire Downstream Backhaul to establish connectivity between the Fibre Sandpit and the location at which RSP elects to have the fibre-specific NTDs and 1:32 fibre splitters installed	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate the Upstream Backhaul and Downstream Backhaul at the points specified by the facility owner	RSP
Arrange with the facility owner for cross connections from the Upstream Backhaul termination point to the ECS port and from the Downstream Backhaul termination point to the OLT port	RSP
If the Sandpit is supplied from a Type 1 Facility, conduct cross connections from the Upstream Backhaul to the ECS port and from Downstream Backhaul to the OLT port	nbn
Install all fibre-specific NTDs and 1:32 fibre splitters in RSP's elected location	nbn
Ensure the physical security of all fibre-specific NTDs and 1:32 fibre splitters	RSP
Operate, in accordance with nbn 's instructions, all fibre-specific NTDs and 1:32 fibre splitters at the location at which RSP elects to have them installed	RSP
Use the NNI to access the CVC and AVC remotely over the Upstream Backhaul connecting the RSP Network and the Fibre Sandpit	RSP

Activity	Party responsible
Access and use the UNI to access the CVC and AVC over the Downstream Backhaul at the location at which RSP elects to have the fibre-specific NTDs and 1:32 fibre splitters installed	RSP
Install and operate all RSP Equipment connected to any UNI	RSP

Part C: VDSL Sandpit

Section 4 sets out the testing and development activities which RSP may perform using the VDSL Sandpit.

4. VDSL Sandpit description

4.1 Function of the VDSL Sandpit

- (a) The VDSL Sandpit is made available by **nbn** only for the specific testing and development purposes set out in section 4.2.
- (b) RSP must not use the VDSL Sandpit to supply any products or services to Downstream Service Providers or End Users without the prior written consent of **nbn**.

4.2 **nbn**TM Ethernet (FTTB and FTTN) testing activities

RSP may use the VDSL Sandpit to:

- (a) prepare for and perform:
 - (i) Pre-Certification Testing;
 - (ii) RSP Equipment testing;
 - (iii) development activities; and
 - (iv) any related or ancillary activities,in respect of **nbn**TM Ethernet (FTTB) or **nbn**TM Ethernet (FTTN) (**nbn**TM Ethernet (FTTB and FTTN) Testing and Development Activities); and
- (b) conduct any other activities which **nbn** undertakes pursuant to an SAU to permit RSP to conduct in the VDSL Sandpit.

Section 5 sets out the VDSL Sandpit elements that support the testing and development activities which RSP may perform using the VDSL Sandpit.

5. VDSL Sandpit architecture

- (a) The VDSL Sandpit comprises elements that enable RSP to perform **nbn**TM Ethernet (FTTB and FTTN) Testing and Development Activities.
- (b) A diagram illustrating the RSP-hosted variant of the VDSL Sandpit (described below) follows:

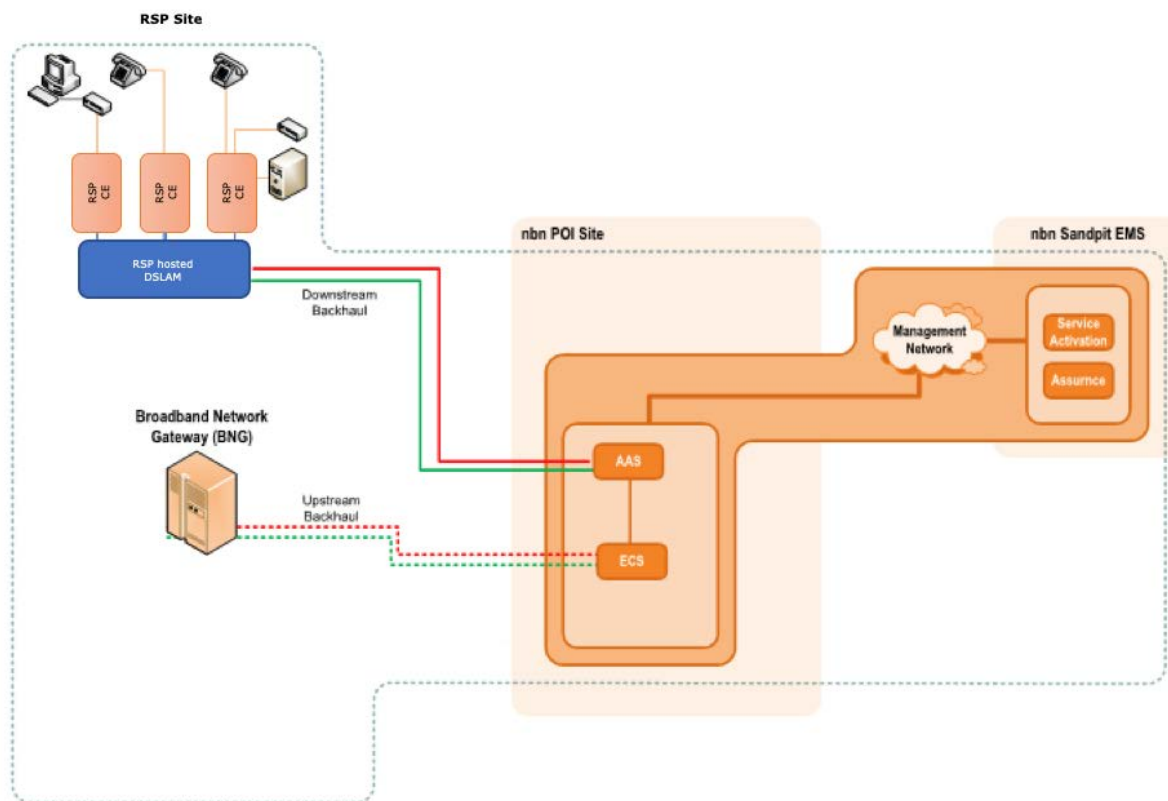


Figure 2: High-level illustration of RSP-hosted variant of the VDSL Sandpit

(c) The VDSL Sandpit is available in the following variants:

Variant	Features / conditions
nbn-hosted	nbn hosts the DSLAM and provides a UNI-DSL at the National Test Facility. RSP may choose to bring its broadband network gateway to the National Test Facility.
RSP-hosted	RSP hosts the DSLAM and provides or acquires Downstream Backhaul to establish connectivity between the DSLAM and the facility from which the RSP-hosted variant is supplied.

Section 6 sets out the locations at which the VDSL Sandpit is available, the requirements for performing testing and development activities and the support **nbn** will provide to RSP.

6. Use of the VDSL Sandpit

6.1 Locations of the VDSL Sandpit

- (a) The RSP-hosted variant of the VDSL Sandpit is available from at least one location notified by **nbn** to RSP from time to time in each of the following cities, and at such other locations notified by **nbn** to RSP from time to time:
- (i) Sydney, New South Wales;
 - (ii) Melbourne, Victoria;

- (iii) Brisbane, Queensland;
 - (iv) Adelaide, South Australia; and
 - (v) Perth, Western Australia.
- (b) The **nbn**-hosted variant of the VDSL Sandpit is available at the National Test Facility.

6.2 Performance of **nbn**™ Ethernet (FTTB and FTTN) testing

For **nbn**™ Ethernet (FTTB and FTTN) Testing and Development Activities:

- (a) Subject to section 1.4 of the [Sandpit Service Terms](#), **nbn** will provide the following items to RSP:

Item	Description	Quantity
DSLAM	DSLAM for use with the VDSL Sandpit	1
Contact details	Contact details for Sandpit support	1

- (b) RSP must not reconfigure, or attempt to reconfigure, the DSLAM; and
- (c) **nbn** will make available to RSP:

Capability	Description
NNI	Mirrors type and structure of NNIs available as a Product Component of nbn ™ Ethernet (FTTB) and nbn ™ Ethernet (FTTN)
CVC	Mirrors type and structure of CVCs available as a Product Component of nbn ™ Ethernet (FTTB) and nbn ™ Ethernet (FTTN)
AVC	Mirrors type and structure of AVCs available as a Product Component of nbn ™ Ethernet (FTTB) and nbn ™ Ethernet (FTTN)
UNI	Mirrors type and structure of the UNI-DSL available as a Product Component of nbn ™ Ethernet (FTTB) and nbn ™ Ethernet (FTTN)

6.3 Establishing connectivity and use of the VDSL Sandpit

- (a) If RSP acquires the **nbn**-hosted variant of the VDSL Sandpit and does not bring its broadband network gateway to the National Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the VDSL Sandpit	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate Upstream Backhaul at the point specified by nbn	RSP
Conduct cross connection between the Upstream Backhaul termination point and the ECS port	nbn
Use the NNI to access the CVC and AVC remotely over Upstream Backhaul	RSP

Activity	Party responsible
connecting the RSP Network and the VDSL Sandpit	
Access and use the UNI-DSL to access the CVC and AVC locally at the National Test Facility in accordance with nbn 's directions	RSP

- (b) If RSP acquires the **nbn**-hosted variant of the VDSL Sandpit and chooses to bring its broadband network gateway to National Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Conduct cross connection between RSP's broadband network gateway and the ECS port	nbn
Arrange physical access in accordance with section 19.2(d)	RSP
Access and use the NNI and UNI-DSL to access the CVC and AVC locally at the National Test Facility, and in accordance with nbn 's directions	RSP

- (c) If RSP acquires the RSP-hosted variant of the VDSL Sandpit, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the VDSL Sandpit	RSP
Provide or acquire Downstream Backhaul to establish connectivity between the VDSL Sandpit and the location at which RSP elects to have the DSLAM installed	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate the Upstream Backhaul and Downstream Backhaul at the points specified by the facility owner	RSP
Arrange with the facility owner for cross connections from the Upstream Backhaul termination point to the ECS port and from the Downstream Backhaul termination point to the AAS port	RSP
If the Sandpit is supplied from a Type 1 Facility, conduct cross connections from the Upstream Backhaul to the ECS port and from Downstream Backhaul to the AAS port	nbn
Install the DSLAM in RSP's elected location	nbn
Provide rack space and power for the DSLAM	RSP
Ensure the physical security of the DSLAM	RSP
Operate, in accordance with nbn 's instructions, the DSLAM at the location at which RSP elects to have it installed	RSP
Use the NNI to access the CVC and AVC remotely over the Upstream Backhaul connecting the RSP Network and the VDSL Sandpit	RSP
Access and use the UNI-DSL to access the CVC and AVC over the Downstream Backhaul at the location at which RSP elects to have the DSLAM installed	RSP

Activity	Party responsible
Install and operate all RSP Equipment connected to any UNI-DSL	RSP

Part D: FTTC Sandpit

Section 7 sets out the testing and development activities which RSP may perform using the FTTC Sandpit.

7. FTTC Sandpit description

7.1 Function of the FTTC Sandpit

- (a) The FTTC Sandpit is made available by **nbn** only for the specific testing and development purposes set out in section 7.2.
- (b) RSP must not use the FTTC Sandpit to supply any products or services to Downstream Service Providers or End Users without the prior written consent of **nbn**.

7.2 **nbn**TM Ethernet (FTTC) testing activities

RSP may use the FTTC Sandpit to:

- (a) prepare for and perform:
 - (i) Pre-Certification Testing;
 - (ii) RSP Equipment testing;
 - (iii) development activities; and
 - (iv) any related or ancillary activities,in respect of **nbn**TM Ethernet (FTTC) (**nbn**TM Ethernet (FTTC) Testing and Development Activities); and
- (b) conduct any other activities which **nbn** undertakes pursuant to an SAU to permit RSP to conduct in the FTTC Sandpit.

Section 8 sets out the FTTC Sandpit elements that support the testing and development activities which RSP may perform using the FTTC Sandpit.

8. FTTC Sandpit architecture

- (a) The FTTC Sandpit comprises elements that enable RSP to perform **nbn**TM Ethernet (FTTC) Testing and Development Activities. The variations of the elements that support the **nbn**TM Ethernet (FTTC) Testing and Development Activities are below.
 - (i) The FTTC Sandpit configuration in the diagram below is the standard FTTC Sandpit configuration, which will be implemented unless **nbn** and RSP agree to implement the configuration shown in section 8(b).

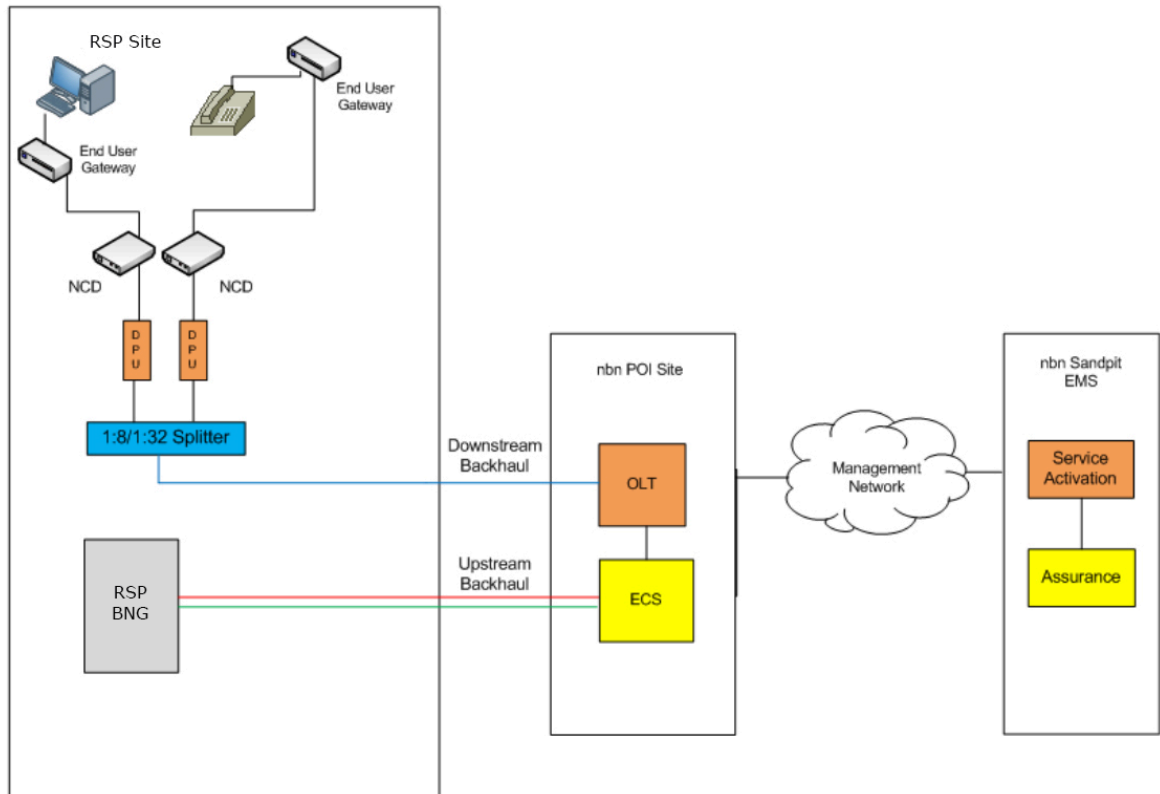


Figure 3: High-level illustration of the standard FTTC Sandpit configuration

- (ii) The FTTC Sandpit configuration in the diagram below in section 8(b) is available only by agreement between RSP and **nbn**.
- (b) A diagram illustrating the RSP-hosted variant of the FTTC Sandpit for **nbn**TM Ethernet (FTTC) Testing and Development Activities (described below) follows:

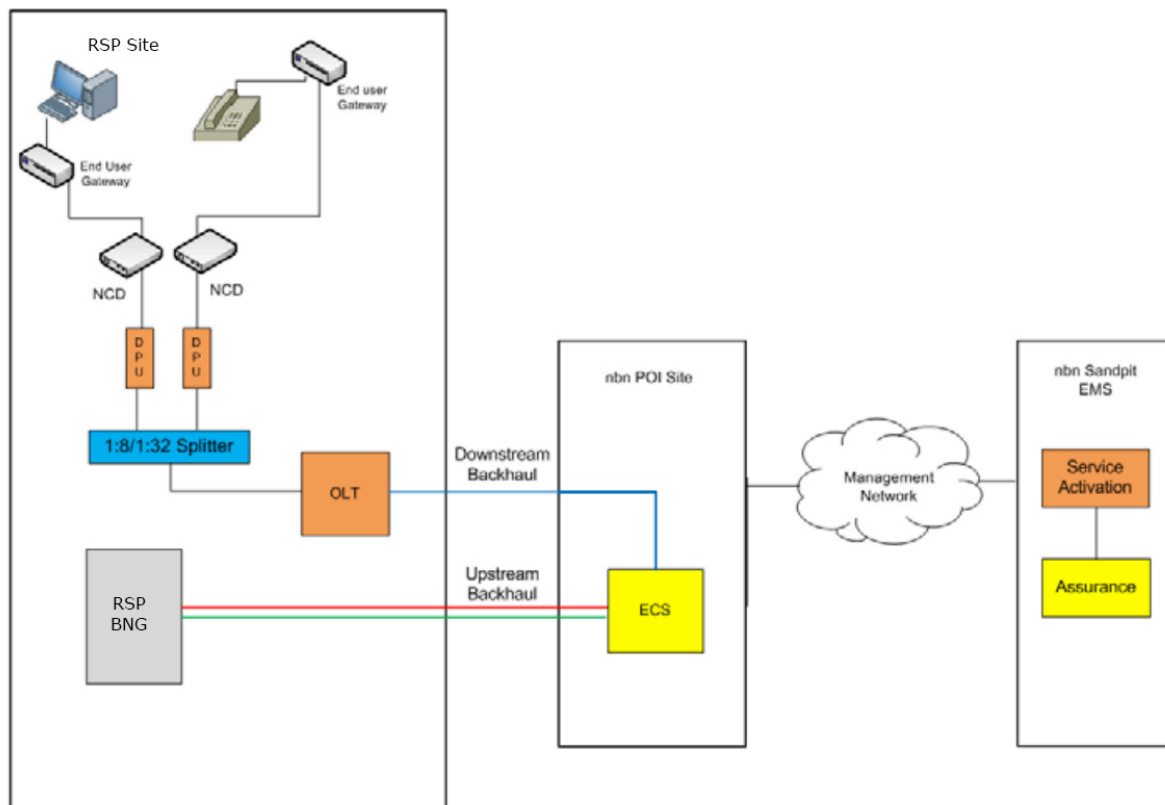


Figure 4: High-level illustration of RSP-hosted variant of FTTC Sandpit

(c) The FTTC Sandpit is available in the following variants:

Variant	Features / conditions
nbn-hosted	nbn hosts the FTTC Equipment and provides a UNI-D at the National Test Facility.
RSP-hosted	RSP hosts the FTTC Equipment and provides or acquires Downstream Backhaul to establish connectivity between the nbn™ DPU and a facility listed in section 9.1(a) where the RSP hosted variant is available. Please note an existing GPON Sandpit Service can be repurposed to provide the backhaul for FTTC.

Section 9 sets out the locations at which the FTTC Sandpit is available, the requirements for performing testing and development activities and the support nbn will provide to RSP.

9. Use of the FTTC Sandpit

9.1 Locations of the FTTC Sandpit

- (a) The RSP-hosted variant of the FTTC Sandpit is available from at least one location notified by nbn to RSP from time to time in each of the following cities, and at such other locations notified by nbn to RSP from time to time:
- (i) Sydney, New South Wales;
 - (ii) Melbourne, Victoria;

- (iii) Brisbane, Queensland;
- (iv) Adelaide, South Australia; and
- (v) Perth, Western Australia.

(b) The **nbn**-hosted variant of the FTTC Sandpit is available at the National Test Facility.

9.2 Performance of **nbn**TM Ethernet (FTTC) testing

For **nbn**TM Ethernet (FTTC) Testing and Development Activities:

(a) Subject to section 1.4 of the [Sandpit Service Terms](#), **nbn** will provide the following items to RSP:

Item	Description	Quantity
nbn TM DPU	Distribution Point Unit	2
nbn TM NCD	Network Connection Device	8
Contact details	Contact details for Sandpit support	1

- (b) **nbn** will provide an OLT to RSP if **nbn** and RSP have agreed to deploy the FTTC Sandpit configuration illustrated in section 8(b) and there is no remaining capacity on the existing OLT already provided by **nbn** to RSP as part of the Fibre Sandpit.
- (c) RSP must not reconfigure, or attempt to reconfigure, the FTTC Equipment;
- (d) **nbn** will make available to RSP:

Capability	Description
NNI	Mirrors type and structure of NNIs available as a Product Component of nbn TM Ethernet (FTTC)
CVC	Mirrors type and structure of CVCs available as a Product Component nbn TM Ethernet (FTTC)
AVC	Mirrors type and structure of AVCs available as a Product Component of nbn TM Ethernet (FTTC)
UNI	Mirrors type and structure of the UNI-D available as a Product Component of nbn TM Ethernet (FTTC)

- (e) RSP is responsible for installing and operating the FTTC Equipment and all RSP Equipment connected to the UNI-D in respect of **nbn**TM Ethernet (FTTC) Testing and Development Activities, as the case may be; and
- (f) RSP is responsible for, and assumes the risk in the FTTC Equipment, where RSP acquires the RSP hosted variant of the FTTC Sandpit for **nbn**TM Ethernet FTTC, from the time RSP receives delivery of those items until the time those items are returned to **nbn**. RSP must return those items to **nbn** in good working condition.

9.3 Establishing connectivity and use of the FTTC Sandpit

- (a) If RSP acquires the **nbn**-hosted variant of the FTTC Sandpit and does not bring its broadband network gateway to the National Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the FTTC Sandpit	RSP
Use the NNI and CVC remotely over Upstream Backhaul connecting the RSP Network and the FTTC Sandpit	RSP
Use the UNI-D and AVC locally at the National Test Facility in accordance with nbn 's directions	RSP
Arrange for the provisioning of the UNI-D with nbn 's assistance	RSP
Supply FTTC Equipment	nbn

- (b) If RSP acquires the **nbn**-hosted variant of the FTTC Sandpit and chooses to bring its broadband network gateway to National Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Conduct cross connection between RSP's broadband network gateway and the ECS port	nbn
Arrange physical access in accordance with section 19.2(d)	RSP
Access and use the NNI and UNI-D to access the CVC and AVC locally at the National Test Facility, and in accordance with nbn 's directions	RSP

- (c) If RSP acquires the RSP-hosted variant of the FTTC Sandpit, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the FTTC Sandpit	RSP
Provide or acquire Downstream Backhaul to establish connectivity between the FTTC Sandpit and the location at which RSP elects.	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate the Upstream Backhaul and Downstream Backhaul at the points specified by the facility owner	RSP
Arrange with the facility owner for cross connections from the Upstream Backhaul termination point to the ECS port and from the Downstream Backhaul termination point to the ODF port	RSP
If the Sandpit is supplied from a Type 1 Facility, conduct cross connections from the Upstream Backhaul to the ECS port and from the Downstream Backhaul to the ODF port	nbn

Activity	Party responsible
Install the FTTC Equipment	RSP
Provide rack space and power for the FTTC Equipment	RSP
Ensure the physical security of the FTTC Equipment	RSP
Operate, in accordance with nbn 's instructions, the FTTC Equipment at the location at which RSP elects to have it installed	RSP
Install and operate all RSP Equipment connected to any UNI-D	RSP
Use the NNI and CVC remotely over Upstream Backhaul connecting the RSP Network and the FTTC Sandpit	RSP
Use the UNI-D and AVC at the place nominated by RSP without nbn 's assistance	RSP
Supply FTTC Equipment	nbn
Terminate RSP backhaul transmission at the ODF port specified by the facility owner	RSP
Procure or provide cross connects and patches from ODF ports to the ECS ports	nbn
Terminate RSP backhaul transmission at the ODF port specified by the facility owner	RSP
Procure or provide cross connects and patches from retail service provider's rack to nbn ODF	RSP
Terminate RSP backhaul transmission at a tray location in a "meet me room" as specified by nbn	RSP

Part E: HFC Sandpit

Section 10 sets out the testing and development activities which RSP may perform using the HFC Sandpit.

10. HFC Sandpit description

10.1 Function of the HFC Sandpit

- (a) The HFC Sandpit is made available by **nbn** only for the specific testing and development purposes set out in section 10.2.
- (b) RSP must not use the HFC Sandpit to supply any products or services to Downstream Service Providers or End Users without the prior written consent of **nbn**.

10.2 **nbn**TM Ethernet (HFC) testing activities

RSP may use the HFC Sandpit to:

- (a) prepare for and perform:
 - (i) Pre-Certification Testing;
 - (ii) RSP Equipment testing;
 - (iii) development activities; and
 - (iv) any related or ancillary activities,in respect of **nbn**TM Ethernet (HFC) (**nbn**TM Ethernet (HFC) Testing and Development Activities); and
- (a) conduct any other activities which **nbn** undertakes pursuant to an SAU to permit RSP to conduct in the Sandpit.

Section 11 sets out the HFC Sandpit elements that support the testing and development activities which RSP may perform using the HFC Sandpit.

11. HFC Sandpit architecture

- (a) The HFC Sandpit comprises elements that enable RSP to perform **nbn**TM Ethernet (HFC) Testing and Development Activities.
- (b) A diagram illustrating the RSP-hosted variant of the HFC Sandpit (described below) follows:

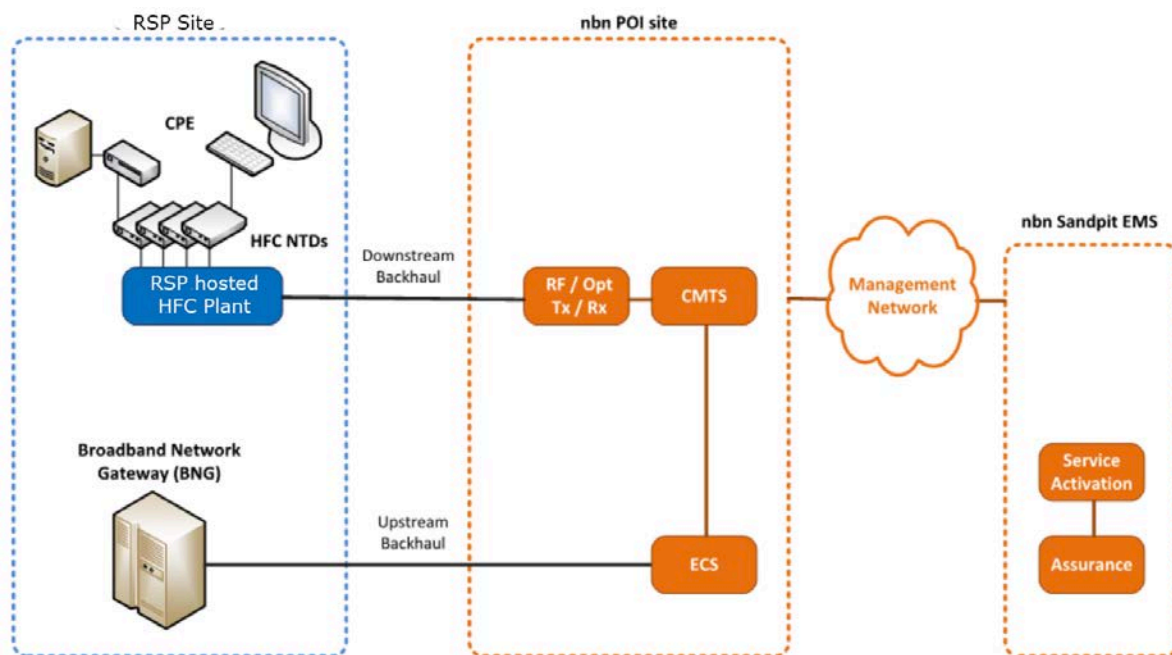


Figure 5: High-level illustration of RSP-hosted variant of the HFC Sandpit

(c) The HFC Sandpit is available in the following variants:

Variant	Features / conditions
nbn-hosted	<p>nbn hosts the HFC Transmission Equipment and RF Passive Equipment and provides the UNI-D access on the NTD at the nbnTM Sydney Test Facility.</p> <p>RSP may choose to bring its broadband network gateway to the nbnTM Sydney Test Facility.</p>
RSP-hosted	<p>RSP hosts the HFC Transmission Equipment and RF Passive Equipment and provides or acquires Downstream Backhaul to establish DOCSIS connectivity between the RSP environment and a facility, listed in section 12.1(a), where the RSP-hosted variant is available.</p>

*Section 12 sets out the locations at which the HFC Sandpit is available, the requirements for performing testing and development activities and the support **nbn** will provide to RSP.*

12. Use of the HFC Sandpit

12.1 Locations of the HFC Sandpit

- (a) The RSP-hosted variant of the HFC Sandpit is available from at least one location notified by **nbn** to RSP from time to time in each of the following cities, and at such other locations notified by **nbn** to RSP from time to time:
- (i) Sydney, New South Wales;
 - (ii) Melbourne, Victoria;
 - (iii) Brisbane, Queensland;
 - (iv) Adelaide, South Australia; and

(v) Perth, Western Australia.

(b) The **nbn**-hosted variant of the HFC Sandpit is available at the **nbn**TM Sydney Test Facility.

12.2 Performance of **nbn**TM Ethernet (HFC) testing

For **nbn**TM Ethernet (HFC) Testing and Development Activities:

(a) Subject to section 1.6 of the [Sandpit Service Terms](#), **nbn** will provide the following items to RSP:

Item	Description	Quantity
HFC Transmission Equipment	HFC Transmission Equipment	1 set
RF Passive Equipment	RF Passive Equipment	1 set
NTD	Single service HFC NTDs with power supply provided	8
Contact details	Contact details for Sandpit support	1

(b) RSP must not reconfigure, or attempt to reconfigure, the HFC-specific NTDs, HFC Transmission Equipment or RF Passive Equipment; and

(c) **nbn** will make available to RSP:

Capability	Description
NNI	Mirrors type and structure of NNIs available as a Product Component of nbn TM Ethernet (HFC)
CVC	Mirrors type and structure of CVCs available as a Product Component of nbn TM Ethernet (HFC)
AVC	Mirrors type and structure of AVCs available as a Product Component of nbn TM Ethernet (HFC)
UNI	UNI-D capability through provision of HFC-specific NTDs and RF Passive Equipment.

12.3 Establishing connectivity and use of the HFC Sandpit

(a) If RSP acquires the **nbn**-hosted variant of the HFC Sandpit and does not bring its broadband network gateway to the **nbn**TM Sydney Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the HFC Sandpit	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate Upstream Backhaul at the point specified by nbn	RSP
Conduct cross connection between the Upstream Backhaul termination point and the ECS port	nbn

Activity	Party responsible
Use the NNI to access the CVC and AVC remotely over Upstream Backhaul connecting the RSP Network and the HFC Sandpit	RSP
Access and use the UNI-D to access the CVC and AVC locally at the nbn TM Sydney Test Facility in accordance with nbn 's directions	RSP

- (b) If RSP acquires the **nbn**-hosted variant of the HFC Sandpit and chooses to bring its broadband network gateway to **nbn**TM Sydney Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Conduct cross connection between RSP's broadband network gateway and the ECS port	nbn
Arrange physical access in accordance with section 19.2(d)	RSP
Access and use the NNI and UNI-D to access the CVC and AVC locally at the nbn TM Sydney Test Facility, and in accordance with nbn 's directions	RSP

- (c) If RSP acquires the RSP-hosted variant of the HFC Sandpit, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the HFC Sandpit	RSP
Provide or acquire Downstream Backhaul to establish DOCSIS connectivity between the HFC Sandpit and the location at which RSP elects to have the HFC Transmission Equipment, RF Passive Equipment and HFC-specific NTDs installed	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate the Upstream Backhaul and Downstream Backhaul at the points specified by the facility owner	RSP
Arrange with the facility owner for cross connections from the Upstream Backhaul termination point to the ECS port and from the Downstream Backhaul termination point to the cable modem termination system	RSP
If the Sandpit is supplied from a Type 1 Facility, conduct cross connections from the Upstream Backhaul to the ECS port and from Downstream Backhaul to the cable modem termination system	nbn
Install the HFC Transmission Equipment, RF Passive Equipment and HFC-specific NTDs in RSP's elected location	nbn
Provide rack space and power (as required) for the HFC Transmission Equipment, RF Passive Equipment and HFC-specific NTDs	RSP
Ensure the physical security of the HFC Transmission Equipment, RF Passive Equipment and HFC-specific NTDs	RSP
Operate, in accordance with nbn 's instructions, the HFC Transmission Equipment, RF Passive Equipment and HFC-specific NTDs at the location at	RSP

Activity	Party responsible
which RSP elects to have them installed	
Use the NNI to access the CVC and AVC remotely over the Upstream Backhaul connecting the RSP Network and the HFC Sandpit	RSP
Access and use the UNI-D to access the CVC and AVC over the Downstream Backhaul at the location at which RSP elects to have the HFC Transmission Equipment, RF Passive Equipment and HFC-specific NTDs installed	RSP
Install and operate all RSP Equipment connected to any UNI-D	RSP

Part F: nbn™ Enterprise Ethernet Sandpit

Section 13 sets out the testing and development activities which RSP may perform using the nbn™ Enterprise Ethernet Sandpit.

13. nbn™ Enterprise Ethernet Sandpit description

13.1 Function of the nbn™ Enterprise Ethernet Sandpit

- (a) The nbn™ Enterprise Ethernet Sandpit is made available by nbn only for the specific testing and development purposes set out in section 13.2.
- (b) RSP must not use the nbn™ Enterprise Ethernet Sandpit to supply any products or services to Downstream Service Providers or End Users without the prior written consent of nbn.

13.2 nbn™ Enterprise Ethernet testing activities

RSP may use the nbn™ Enterprise Ethernet Sandpit to:

- (a) prepare for and perform:
 - (i) RSP Equipment testing;
 - (ii) development activities; and
 - (iii) any related or ancillary activities,in respect of nbn™ Enterprise Ethernet (**nbn™ Enterprise Ethernet Testing and Development Activities**); and
- (b) conduct any other activities which nbn undertakes pursuant to an SAU to permit RSP to conduct in the nbn™ Enterprise Ethernet Sandpit.

Section 14 sets out the nbn™ Enterprise Ethernet Sandpit elements that support the testing and development activities which RSP may perform using the nbn™ Enterprise Ethernet Sandpit.

14. nbn™ Enterprise Ethernet Sandpit architecture

- (a) The nbn™ Enterprise Ethernet Sandpit comprises elements that enable RSP to perform nbn™ Enterprise Ethernet Testing and Development Activities.
- (b) A diagram illustrating the RSP-hosted variant of the nbn™ Enterprise Ethernet Sandpit (described below) follows:

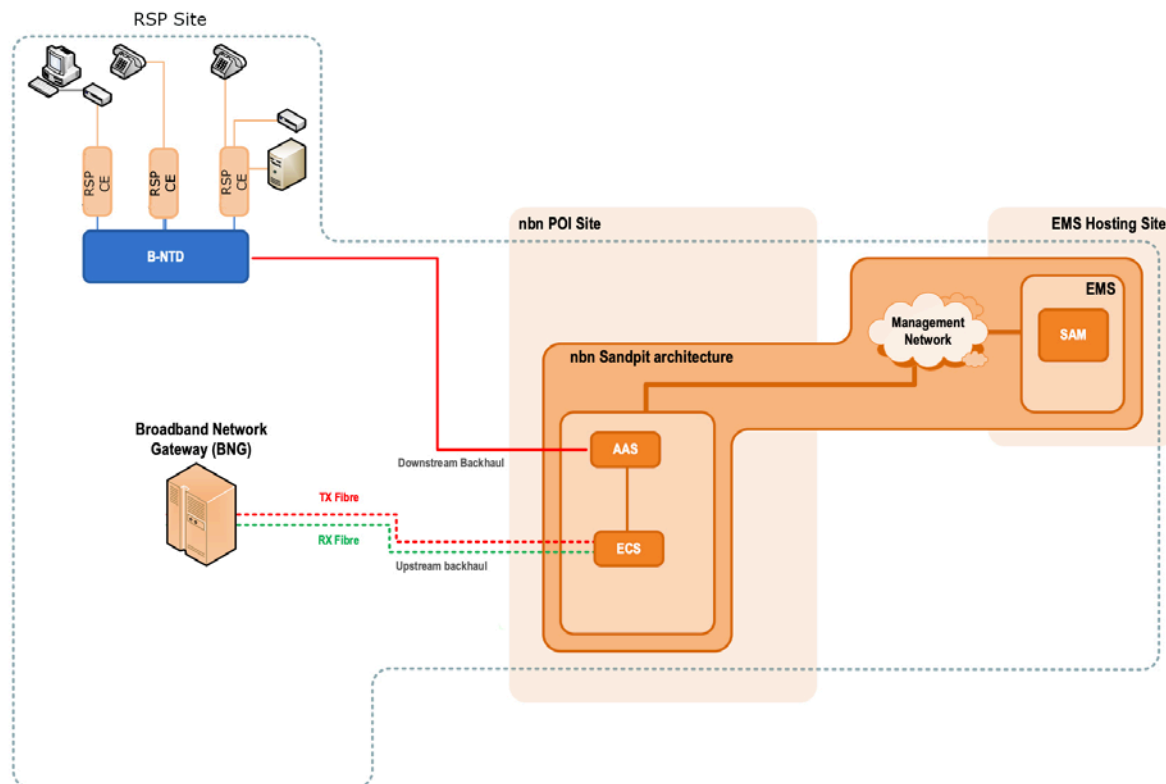


Figure 6: High-level illustration of RSP-hosted variant of the **nbn™** Enterprise Ethernet Sandpit

(c) The **nbn™** Enterprise Ethernet Sandpit is available in the following variants:

Variant	Features / conditions
nbn -hosted	nbn hosts the B-NTDs, and provides access to the UNIs, at the nbn™ Sydney Test Facility. RSP may choose to bring its broadband network gateway to the nbn™ Sydney Test Facility.
RSP-hosted	RSP hosts the B-NTDs and provides or acquires Downstream Backhaul to establish connectivity between the B-NTD and the facility from which the RSP-hosted variant is supplied.

Section 15 sets out the locations at which the **nbn™** Enterprise Ethernet Sandpit is available, the requirements for performing testing and development activities and the support **nbn** will provide to RSP.

15. Use of the **nbn™** Enterprise Ethernet Sandpit

15.1 Locations of the **nbn™** Enterprise Ethernet Sandpit

- (a) The RSP-hosted variant of the **nbn™** Enterprise Ethernet Sandpit is available from at least one location notified by **nbn** to RSP from time to time in each of the following cities, and at such other locations notified by **nbn** to RSP from time to time:
- (i) Sydney, New South Wales; and
 - (ii) Melbourne, Victoria.

- (b) The **nbn**-hosted variant of the **nbn**™ Enterprise Ethernet Sandpit is available at the **nbn**™ Sydney Test Facility.

15.2 Performance of **nbn**™ Enterprise Ethernet testing

For **nbn**™ Enterprise Ethernet Testing and Development Activities:

- (a) subject to section 1.7 of the [Sandpit Service Terms](#), **nbn** will provide the following items to RSP:

Item	Description	Quantity
B-NTD	B-NTD pre-configured by nbn (with labelling and AC or DC power cables)	1
Contact details	Contact details for Sandpit support	1

- (b) RSP must not reconfigure, or attempt to reconfigure, the B-NTDs; and
- (c) **nbn** will make available to RSP:

Capability	Description
NNI	Mirrors type and structure of NNIs available as a Product Component of nbn ™ Enterprise Ethernet
OVC	Mirrors type and structure of OVCs available as a Product Component of nbn ™ Enterprise Ethernet
UNI	UNI capability through provision of B-NTDs

15.3 Establishing connectivity and use of the **nbn**™ Enterprise Ethernet Sandpit

- (a) If RSP acquires the **nbn**-hosted variant of the **nbn**™ Enterprise Ethernet Sandpit and does not bring its broadband network gateway to the **nbn**™ Sydney Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the nbn ™ Enterprise Ethernet Sandpit	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate Upstream Backhaul at the point specified by nbn	RSP
Conduct cross connection between the Upstream Backhaul termination point and the ECS port	nbn
Use the NNI to access the OVC remotely over Upstream Backhaul connecting the RSP Network and the nbn ™ Enterprise Ethernet Sandpit	RSP
Access and use the UNI to access the OVC locally at the nbn ™ Sydney Test Facility in accordance with nbn 's directions	RSP

- (b) If RSP acquires the **nbn**-hosted variant of the **nbn**™ Enterprise Ethernet Sandpit and chooses to bring its broadband network gateway to the **nbn**™ Sydney Test Facility, each party must conduct the following activities (as applicable):

Activity	Party responsible
Conduct cross connection between RSP's broadband network gateway and the ECS port	nbn
Arrange physical access in accordance with section 19.2(d)	RSP
Access and use the NNI and UNI to access the OVC locally at the nbn ™ Sydney Test Facility, and in accordance with nbn 's directions	RSP

- (c) If RSP acquires the RSP-hosted variant of the **nbn**™ Enterprise Ethernet Sandpit, each party must conduct the following activities (as applicable):

Activity	Party responsible
Provide or acquire Upstream Backhaul to establish connectivity between the RSP Network and the nbn ™ Enterprise Ethernet Sandpit	RSP
Provide or acquire Downstream Backhaul to establish connectivity between the nbn ™ Enterprise Ethernet Sandpit and the location at which RSP elects to have the B-NTDs installed	RSP
Arrange building entry rights and physical access in accordance with section 19.2(d)	RSP
Terminate the Upstream Backhaul and Downstream Backhaul at the points specified by the facility owner	RSP
If the nbn ™ Enterprise Ethernet Sandpit is supplied from a Type 1 Facility, conduct cross connections from the Upstream Backhaul to the ECS port and from Downstream Backhaul to the AAS port	nbn
Install all B-NTDs in RSP's elected location	nbn
Ensure the physical security of all B-NTDs	RSP
Operate, in accordance with nbn 's instructions, all B-NTDs at the location at which RSP elects to have them installed	RSP
Use the NNI to access the OVC remotely over the Upstream Backhaul connecting the RSP Network and the nbn ™ Enterprise Ethernet Sandpit	RSP
Access and use the UNI to access the OVC over the Downstream Backhaul at the location at which RSP elects to have the B-NTDs installed	RSP
Install and operate all RSP Equipment connected to any UNI	RSP

Part G: NPIS Sandpit

Section 16 sets out the testing and development activities which RSP may perform using the NPIS Sandpit.

16. NPIS Sandpit description

16.1 Function of the NPIS Sandpit

- (a) The NPIS Sandpit is made available by **nbn** only for the specific testing and development purposes set out in section 16.2.
- (b) RSP must not use the NPIS Sandpit to supply any products or services to Downstream Service Providers or End Users without the prior written consent of **nbn**.

16.2 NPIS testing activities

RSP may use the NPIS Sandpit to perform the following Pre-Certification Testing activities, development activities and any related or ancillary activities in respect of the **nbn**TM Platform Interfacing Service:

- (a) business process interoperability activities and Key Business Transaction testing related to the development of the RSP B2B Gateway or RSP B2B Applications;
- (b) ebMS interoperability functional testing activities in accordance with the B2B Sandpit ebXML Collaboration Protocol Agreement; and
- (c) API interoperability testing activities,

(NPIS Testing and Development Activities).

Section 17 sets out the NPIS Sandpit elements that support the testing and development activities which RSP may perform using the NPIS Sandpit.

17. NPIS Sandpit architecture

- (a) The NPIS Sandpit comprises elements that enable RSP to perform NPIS Testing and Development Activities.
- (b) A diagram of the NPIS Sandpit follows:

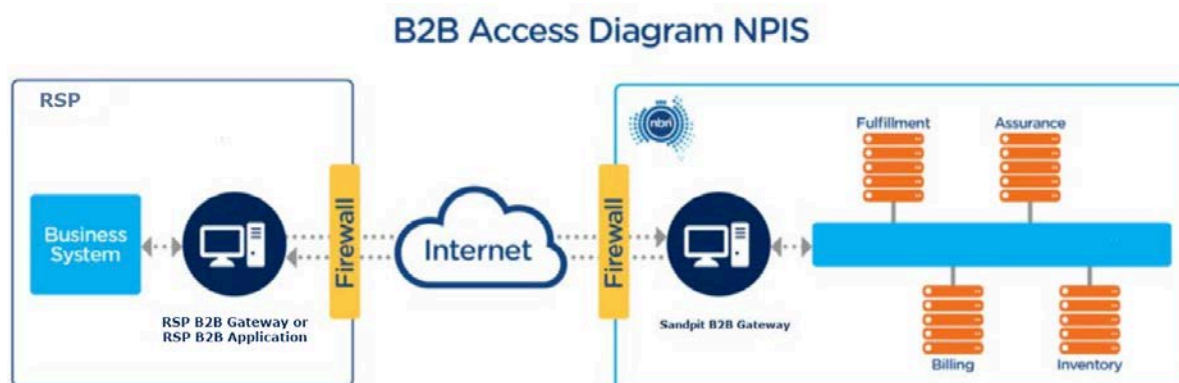


Figure 7: High-level illustration of the NPIS Sandpit

Section 18 sets out the requirements for performing testing and development activities and the support **nbn** will provide to RSP in connection with the NPIS Sandpit.

18. Use of the NPIS Sandpit

18.1 Performance of NPIS Testing and Development Activities

nbn will make available to RSP for NPIS Testing and Development Activities:

Deliverable	B2B Access variant	Description
Digital certificates	ebMS	Digital certificate(s) to enable RSP to establish a secure connection between the RSP B2B Gateway and the Sandpit B2B Gateway
Collaboration Protocol Agreement	ebMS	Collaboration Protocol Agreement (XML) defining the published services and ebXML-compliant gateway message service handler configuration applicable to the NPIS Sandpit
Testing guide	ebMS and API	B2B Sandpit Test Scenarios Document for Key Business Transaction testing
API Credentials	API	a client key and a client secret issued by nbn to enable RSP to authenticate RSP B2B Applications accessing the Sandpit B2B Gateway

18.2 Establishing connectivity and use of the NPIS Sandpit

To use the NPIS Sandpit for NPIS Testing and Development Activities, RSP must:

- (a) access the NPIS Sandpit through a secure Internet connection between:
 - (i) the RSP B2B Gateway and Sandpit B2B Gateway using ebXML, or
 - (ii) an RSP B2B Application and Sandpit B2B Gateway using an API; and
- (b) in respect of B2B Access via ebXML, establish and maintain a secure Internet connection between the RSP B2B Gateway and the Sandpit B2B Gateway utilising the digital certificates and Collaboration Protocol Agreement (XML) referred to in section 18.1.

Part H: General conditions of supply

Section 19 includes general terms in relation to the availability of the Sandpit and sets out exclusions to the supply of the Sandpit.

19. Availability and exclusions

19.1 Availability

- (a) The Sandpit is a shared resource and access to the Sandpit is subject to availability.
- (b) RSP acknowledges that use of the Sandpit may not be continuous or free of faults and that **nbn** may interrupt use of the Sandpit at any time.

19.2 Exclusions

- (a) The Sandpit is one element required for RSP to perform the testing and development activities described in this Sandpit Service Description.
- (b) RSP is responsible for providing or acquiring other elements necessary to perform the testing and development activities described in this Sandpit Service Description.
- (c) The Sandpit does not include the supply by **nbn** of:
 - (i) any Upstream Backhaul or Downstream Backhaul, interconnecting broadband infrastructure, such as dark fibre or Ethernet links, or other connections for the purposes of Upstream Backhaul or Downstream Backhaul from the Sandpit to the RSP Network;
 - (ii) the premises (or part of any premises) in which RSP is required to install the fibre-specific NTDs, 1:32 fibre splitter, DSLAM, HFC Transmission Equipment, RF Passive Equipment, B-NTDs and HFC-specific NTDs (as the case may be), if RSP acquires an RSP-hosted Sandpit variant;
 - (iii) any content or applications, including IP transit, Internet gateway connection, any RSP Equipment, BGP routing, soft switching infrastructure and all international connectivity;
 - (iv) any other end user equipment, such as personal computers and network attached storage solutions;
 - (v) direct access to, or direct use of, **nbn**'s core systems or the functionality of **nbn**'s core systems;
 - (vi) building entry rights or physical access to any facility in which the Sandpit is hosted or available, including for the purposes of establishing connectivity between the RSP Network and the Sandpit (other than access to the National Test Facility, where RSP acquires the **nbn**-hosted variant of the Fibre Sandpit or VDSL Sandpit);
 - (vii) any connectivity between the RSP B2B Gateway and the Sandpit B2B Gateway; or
 - (viii) any connectivity between any RSP B2B Application and the Sandpit B2B Gateway.
- (d) In respect of each facility from which RSP elects to acquire a Fibre Sandpit, VDSL Sandpit, **nbn**[™] Enterprise Ethernet Sandpit or HFC Sandpit:

- (i) if the facility is owned or operated by a third party, RSP must arrange building entry rights and physical access to that facility directly with the facility owner (as notified by **nbn** from time to time);
- (ii) if the facility is a Type 1 Facility, RSP must acquire relevant Service Elements of the Facilities Access Service from **nbn** to enter and access the facility, and Charges may apply as set out in the [Facilities Access Service Price List](#); and
- (iii) if the facility is the National Test Facility, RSP must choose a connectivity method, connect to the National Test Facility and obtain physical access to the National Test Facility (as applicable) in accordance with section 2.2.3.1 of the [WBA Operations Manual](#).