

## Construction

Construction of the National Broadband Network (NBN) involves both construction of the network in public streets and work to connect individual premises (and related private land) to make those premises NBN ready.

In public streets, works include all activities required to install optical fibre cables and related equipment (either underground or overhead). To minimise the need for any trenching or other digging in streets, NBN Co plans to use existing ducts and power poles wherever practical.

To connect individual premises, construction work includes the installation of optical fibre cables (either underground or overhead) from the street to equipment fixed on the outside of the premises.

NBN Co strives to minimise construction impacts on the community and will have visibility of contractor on-site activities to make sure construction impacts are minimised and local communities are kept properly informed for the duration of the rollout.

Every effort will be made to notify residents and other stakeholders in

advance of all scheduled construction works. This will include holding community information sessions, where appropriate, prior to the commencement of construction to provide specific details about the local rollout. We will also provide information to local residents about the method of construction (underground or overhead) prior to starting work.

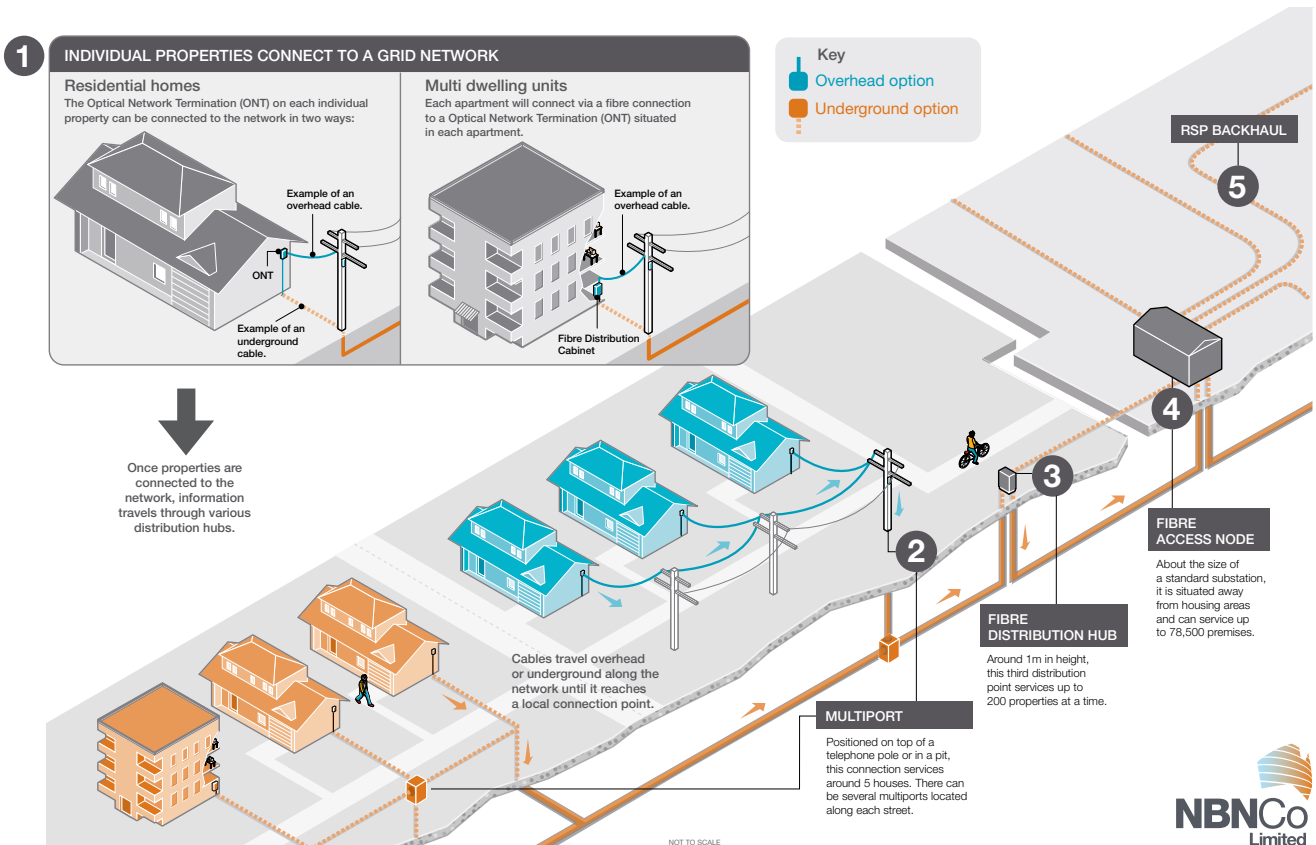
### Quick construction facts

- Rollout over approximately 9.5 years
- Fibre expected to pass 12 million premises when the rollout is complete
- Almost 6,000 premises forecast to be passed per day during peak rollout
- Projected contracted construction workforce of 15,000 to 20,000 Full Time Equivalents (FTEs) at the peak of construction
- Construction will be rolled out simultaneously in metropolitan, regional and rural areas
- It will be Australia's first national wholesale-only, open access broadband network

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The image below provides an overview of the typical network equipment used in the rollout of the NBN. Please note that final network architecture is subject to design changes.

Figure 1: What will the network look like?

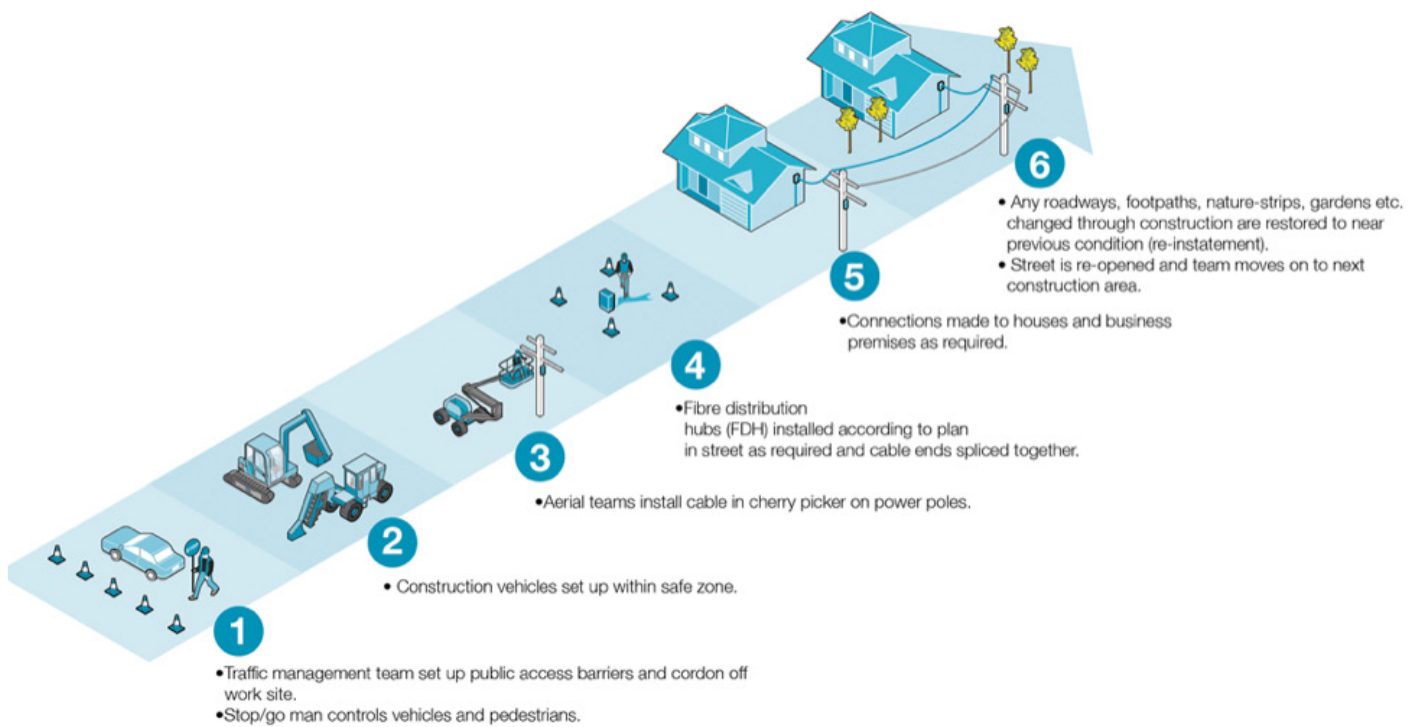


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## Construction sequence

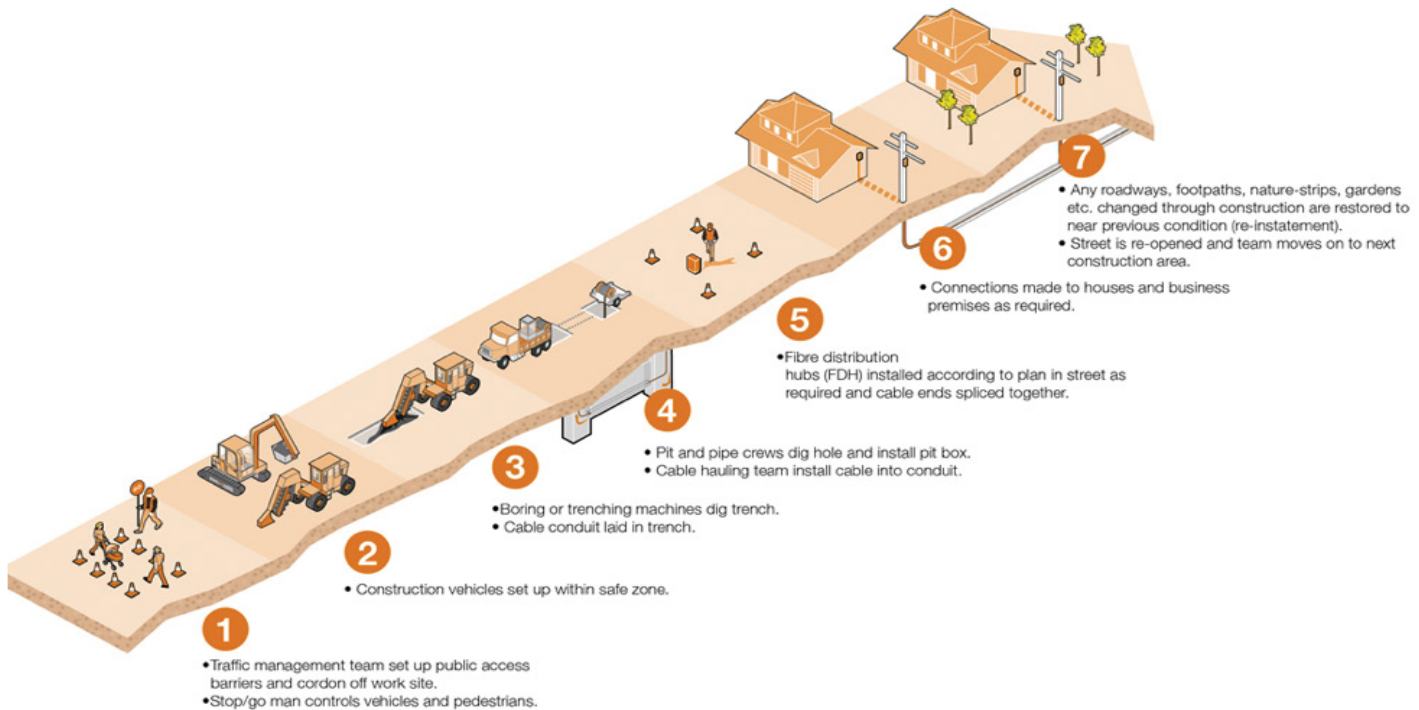
The following images show the sequence of the typical construction of the NBN from a single street point of view using both underground and overhead techniques. Note the final design is subject to revision. NBN Co expects that at the height of construction there will be multiple sites being constructed simultaneously using the modular design process as articulated in the pre-planning and design section.

Figure 2: Overhead construction techniques



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Figure 3: Underground construction techniques



## Premises connection

The connection to an end-user is achieved with a single fibre drop cable installed between the multipoint (located in a pit, generally in the footpath near the property, or on a pole in the street) and the end-user's premises.

For aerial installations the drop cable is likely to be installed in the same manner as the existing electricity or phone services, where practical, taking the same path to the premises as other drop cables.

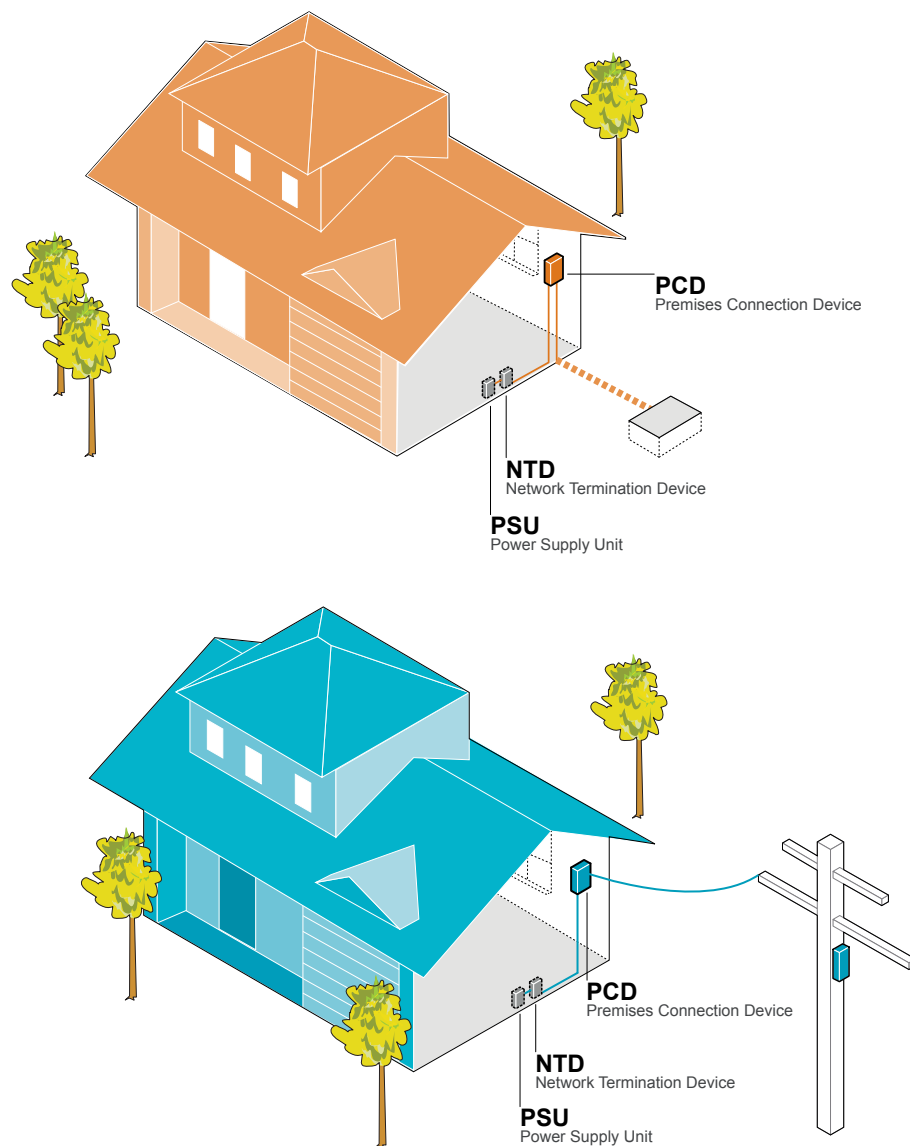
A Premises Connection Device (PCD) will be installed on the outside of the premises and the cable left coiled within it to be connected to a Network Termination Device (NTD) at a later date. Or, if the NTD is installed at the same time, the drop cable will be connected immediately.

Where there is a PCD and an NTD, there will be a fibre cable installed between the NTD location and the PCD.

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See below for an illustration of the premises infrastructure, but note this is still subject to final design specifications.

**Figure 4: Premises infrastructure required to connect to the NBN**



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It is the responsibility of the Service Provider to assist NBN Co in determining what type of installation is required at a particular premises by providing all required information during the ordering and appointment processes.

NBN Co is in the process of determining which types of installation will be considered 'standard' and which types will be 'non-standard'. For NBN Co's initial customer trial to be held in First Release Sites, an internally installed NTD will be a standard installation.

NBN Co will seek to place the NTD in a preferred location indicated by the owner of the premises, as long as that is consistent with NBN Co's safety and other requirements and regulations, and can be achieved using NBN Co's standard installation methods.

There are technical and operational considerations as well as safety requirements which affect where NBN equipment and cables can be attached to a property, just as there are when connecting other services such as electricity, gas or water. These requirements ensure that the installation is done as safely as possible, and that the equipment will be both protected from accidental damage and easily accessible.

### Outside PCD connection

The best position for the PCD will be different for each premises and will be determined by taking into account a range of factors including NBN Co's guidelines for installation. The PCD:

- Will be attached to the side of the building closest to the pit or pole in the street to which the drop cable is connected; and
- Must be more than one metre from the point at which the electricity utility's mains power supply cable is attached to the premises.

### NTD and power supply

The standard installation of an NTD will be inside the premises, and on the inside of an external premises wall. The Power Supply Unit (PSU) will also usually be installed inside the premises on the inside of an external wall within three metres cable length from the NTD.

If the NTD is located:

- Outside – it will need to be near the electricity meter for the premises; or
- Inside – a small hole will need to be drilled to connect the fibre cable from the PCD to the NTD.

The best location for the NTD is generally one that is:

- Near a dedicated powerpoint (within 1.5 metres from the PSU);
- Near any existing telephone or data cables;
- Cool and well ventilated;
- Away from water, damp and steam;
- Away from busy areas and protected from damage; and
- Easy for the end-user to check the indicator lights.

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## Community liaison

NBN Co is committed to leaving a positive legacy in local communities. In all phases of the construction, NBN Co and its contractors will work together to make sure that residents, businesses and the wider community are informed of the progress of construction.

Below are a series of guidelines that contractors are encouraged to adopt when dealing with the local community.

### GUIDELINES

- Always behave in a polite and helpful, professional and courteous manner
- Use the community information cards (which provides the FreeCall number 1800 881 816, [connectme@nbnco.com.au](mailto:connectme@nbnco.com.au), [www.nbnco.com.au](http://www.nbnco.com.au)) when interacting with residents
- All complaints to be managed within specified timeframes
- Do not enter private property without permission
- Wear your identification card and appropriate Personal Protective Equipment (PPE) at all times
- Minimise noise around work areas
- Start and finish work within agreed hours
- Minimise impacts on access and parking
- No swearing or littering (and no smoking outside designated areas)
- Once all construction work is completed, leave properties how you find them
- Not to be onsite with young children without an adult present

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## Notification for construction activities

When contractors undertake work on the NBN rollout, they will be required to meet certain notification procedures, outlined in the Contractor's Community and Stakeholder Involvement Plan, to ensure local residents are kept up to date with the progress of the build.

### General work notifications

NBN Co contractors will notify residents of upcoming construction work through local advertising and letterbox drops. As a minimum, residents in mainland First Release Sites and Second Release Sites will be contacted up to two weeks advance of construction work commencing. Three to four days notification is recommended for work being undertaken in a specific street. Different timelines may apply under local state law.

### Lead-in or subscriber installation notification process

#### Prior to work proceeding

Contractors are required to make contact with mainland occupiers / owners of mainland premises to identify a mutually agreed time for the lead-in installation. This contact should involve providing details about the timing and nature of works involved to undertake the lead-in installations. Specific notification requirements may apply under local state law.

At this time, every effort will be taken to further explain the work to be done and discuss any special conditions of entry or relevant information for the lead-in process (underground or aerial connection etc.) These conditions may include the requirement of additional details regarding gates, dogs, or the location of existing water irrigation systems or underground tanks etc.

#### Undertaking property work

Contractors will be required to ensure the property is re-instated to a condition similar to that before the work was carried out or as otherwise agreed with the owner. Contractors will carry appropriate identification and a letter of authorisation from NBN Co (see 'Identifying an NBN Co employee or contractor').

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## Identifying an NBN Co employee and contractor

When working on private property, NBN Co asks its construction contractors to carry ID cards with the following details so that end-users can readily identify them:

- ID number;
- Expiry date;
- Portrait-sized photo;
- Employee / contractor status verification;
- Company logo; and
- Company contact number.

When arriving on site, contractors are asked to make themselves known to the owner / occupier of the premises and show them their ID. In addition to this, a laminated letter from NBN Co's Head of Construction is provided for contractor use to demonstrate the authority granted by NBN Co to the contractor to undertake associated work in connecting optic fibre cables to premises.

Contractors will also be encouraged to carry ID when working in the street.

## Local requirements

The NBN rollout is expected to generate tens of thousands of jobs.

As the NBN rolls out, local and regional economies are expected to receive additional benefits as work crews eat in local restaurants, shop at local retailers and stay in local hotels / motels.

NBN Co and its contractors are likely to also require a range of temporary facilities which may include depot / warehousing, shop front information office, temporary site sheds, etc. Decisions on local requirements will be made predominantly by the relevant NBN Co patch contractor with oversight from NBN Co.

NBN Co is interested in engaging with local councils and other local authorities to encourage them to rent these premises to contractors where possible.

Councils are urged to identify these opportunities in the council checklist and in early discussions with NBN Co.

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## Environmental planning

Environmental planning and assessment is a key element to the safe and reliable roll out of the NBN.

NBN Co will deliver the project primarily through the engagement of contractors who will be responsible for the construction of the passive network in their nominated regions or areas.

An NBN Co construction manager will be responsible for the overall delivery of construction in a certain locality.

An environmental representative from each contractor will be the direct liaison with the relevant local, state and Federal planning authorities with oversight from NBN Co's construction planning team.

Below is a high-level six step approach to environmental planning which closely follows the lifecycle of the NBN build.

PHASE	OBJECTIVES	COMMENTS
Site identification	<p>Identification of areas of environmental significance, as defined by the LIFD (<i>Low Impact Facilities Determination under the Telecommunications Act 1997</i>).</p> <p>Identification of any approvals required under legislation.</p>	<p>Boundaries of the Fibre Serving Area (FSA) or Fibre Serving Area Module (FSAM) could be modified during this phase to seek to ensure that areas of environmental significance are contained within as few areas as possible.</p>
Technical design	<p>Maximise the use of existing infrastructure.</p> <p>Consider use, where applicable, of exemptions provided by the LIFD and other Commonwealth, state, or territory legislation, policies and codes to streamline approach.</p>	<p>The siting and design of the Fibre Distribution Hub (FDH) cabinets has been one of the most significant issues for local authorities as they are generally located on council assets and are one of the more prominent elements of the network. Therefore, early discussions on the FDHs will be undertaken to determine required clearances from kerbs or property boundary or distances from vehicle crossings.</p> <p>The siting, design and finishes of the NBN rollout infrastructure within local environmentally significant areas (such as local heritage conservation areas or local heritage items) may be a significant issue for local authorities and require consultation.</p>

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PHASE	OBJECTIVES	COMMENTS
Planning approvals	Where exemptions are not applicable, all planning approvals (development assessments) to be carried out in a timely and consultative manner and all statutory approval requirements to be identified.	<p>A planning submission (a pre-planning document) will be used as a tool to inform the local authority of the design of the network and the statutory planning review process.</p> <p>If a merit based assessment (such as a development assessment) is required, all necessary council processes will be met (i.e. application lodgement, public exhibition, modification, etc.).</p> <p>All other necessary permits and approvals to be sought in the manner in which the authority requires (i.e. road permits).</p>
Construction	<p>All environmental approvals and conditions to be met including general notification.</p> <p>Regular contact with council.</p> <p>Escalation process from contractor to NBN Co to ensure oversight is maintained.</p>	<p>Requirements of NBN Co contractors include:</p> <ul style="list-style-type: none"> <li>• Operation of an effective Construction Environmental Management System (CEMS) to control the planning and implementation of environmental protection measures certified by a recognised independent authority to ISO14001:2004;</li> <li>• Planning of work activities and environmental protection measures to minimise environmental risks and comply with specified environmental protection requirements developed by a Construction Environmental Management Plan (CEMP);</li> <li>• Setting up response procedures which will initially contain, then remedy, any environmental damage that does arise;</li> <li>• Regular environmental inspections (audits) undertaken at work sites;</li> <li>• Use of standard workplace inspections checklists to conduct environmental inspections (audits);</li> <li>• Maintenance of records of all training and induction programs undertaken for employees in the company; and</li> <li>• Use of procedures that ensure compliance with environmental legislation included in the specific job risk assessments.</li> </ul>

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PHASE	OBJECTIVES	COMMENTS
Post construction	Re-instate all areas both onsite and off site as a result of NBN activities to a condition at least similar to the existing condition before disturbance or as previously agreed with the land owner.	Restoration will include restoration of disturbed areas (such as areas for compounds, material storage, access and any accommodation, e.g. site sheds and amenities), remedying of any ground contaminated by incidents such as oil or fuel spills (particularly in fuel storage areas), appropriate re-vegetation and any other measures to restore the land to a condition at least similar to the existing condition before disturbance or as agreed with the landowner.  Evaluation and assessment of the restoration works at agreed intervals is required to ensure satisfactory handover to local management authorities.
Operations	Minimise impacts of any maintenance.  Ensure compliance with conditions.	Ensure any required maintenance meets all statutory requirements such as the installation or replacement of facilities, cutting down vegetation if it interferes with the running of the network, etc.

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## Noise and dust

Contractors will be required to address noise and dust as part of their Construction Environment Management Plans (CEMP).

NBN Co aims to minimise impacts associated with noise and dust through the use of existing duct and power pole infrastructure. However, some dust and noise arising from construction works should be expected in delivering the NBN. NBN Co is committed to making sure our contractors will comply with local, state and Federal requirements.

### Noise

The level and duration of noise from construction activity will vary depending on the types of machines and the nature of works being undertaken. NBN Co contractors must comply with local and state requirements for operating hours and Australian Standards which set specific limits to the amount of noise emitted by engines.

As part of the planning process, NBN Co also requires contractors to consider potential noise impacts on stakeholders so that they can be best planned to minimise impact. Contractors are required to provide residents and other stakeholders advance notice of all scheduled construction works and likely impacts.

NBN Co contractors will be required to comply with relevant state and territory laws, including when working between the hours of 10pm and 7am. If no standard exists, noise must not be audible by a person in a nearby home or business unless prior approval has been obtained from the relevant authority.

### Dust

Where operations involve excavation and earth works, dust may be generated. NBN Co requires its contractors to take a planned approach to minimise any potential release of dust into the air and / or stormwater system. This may involve both proactive measures like sandbags around drains and reactive measures such as using spill kits should an emergency situation arise.

Where earth is removed and / or stockpiled at site, contractors will be required to ensure it is for the least possible time and where possible returned to the same area to reduce any disturbance or cross contamination.

Some works may involve the replacement of old pits, which may contain small amounts of non-friable asbestos (non-friable asbestos does not readily break up into dust as compared with friable asbestos) with new plastic pits. NBN Co views the removal of asbestos containing aged infrastructure and its replacement with safe durable infrastructure as a positive initiative for general public and occupational health.

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Contractors performing these works will be appropriately licensed and trained in line with legislative requirements and will be required to minimise the risk of dust being generated through work practices aligned to strict health and safety requirements.

NBN Co has monitoring programs as a means of verifying our contractors' compliance with safety and environmental requirements. Our safety and environmental systems and those of our contractors provide confidence and assurance that works are compliant with legislative requirements and do not pose a health and safety risk to workers and members of the public.



*Digging a residential trench to lay fibre optic cable.*

## Traffic control plan

Safety and Environment Management Plans detail a planned approach to meeting local / state traffic requirements. These will provide specific measures for traffic and pedestrian management, accommodating the various conditions encountered at each site.

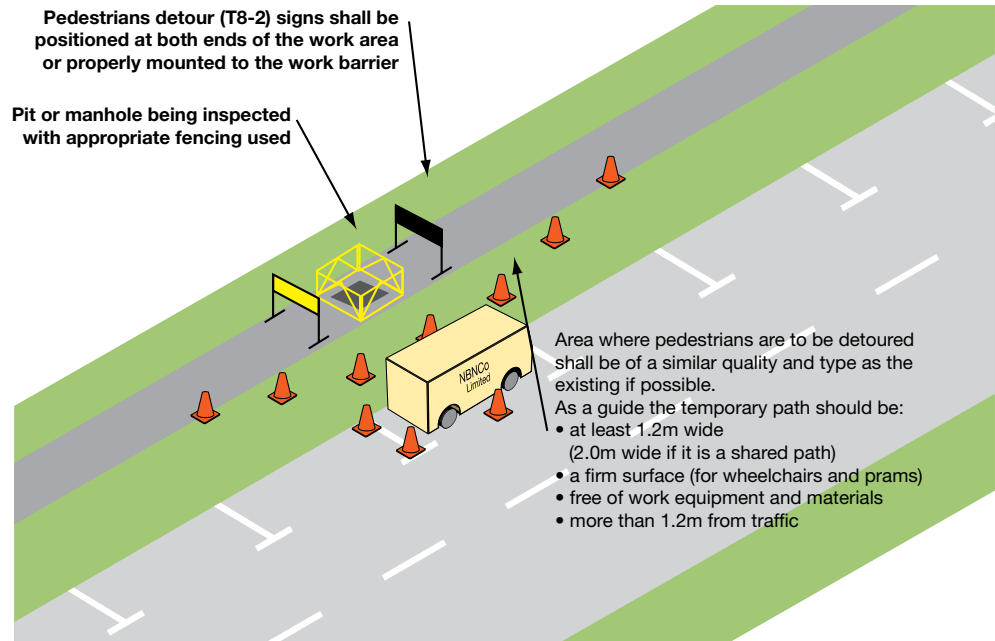
Plans may provide sample traffic management scenario cards for minor works however, where operations involve closing, diverting or narrowing a road or bridge, notification to the road authority shall be provided at least 10 business days prior to commencing works. The authority however may waive its right to be given a notice and make other arrangements, i.e. approve the planned approach for an entire project in one go.

Barricades and signs are erected to protect areas where work is being carried out, with equipment stored to minimise access from members of the public. General controls that apply to worksite traffic and pedestrian management include but are not limited to:

- Erection of pedestrian signage and / or barriers such as tiger tape / parawebbing;
- Operating under site specific plans, the installation of signage and use of traffic management professionals with Stop / Slow bats;
- Use of ramps where footpaths are closed so that prams can safely move around the site; and
- Use of parawebbing / fencing where equipment is left onsite.

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**Figure 5: An example of a pedestrian detour**



## Image library

The below image library provides examples of what typical network equipment may be used in the rollout of the NBN.



*Typical Premises Connection Device used in Kiama, New South Wales, a First Release Site.*



*Inside a Fibre Distribution Hub in Kiama, New South Wales.*

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Type 1 fibre used in Kiama,  
New South Wales.



Fibre Distribution Hub and closed pit in Kiama,  
New South Wales.



Use of an existing pit in Brunswick, Victoria,  
a First Release Site.



A construction pit in Kiama,  
New South Wales.



Hauling fibre in Kiama, New South Wales.

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*Laying pipe in Kiama, New South Wales.*



*Underground fibre hauling in Kiama, New South Wales.*



*Aerial construction in Kiama, New South Wales.*

### Contact

Phone **1800 881 816**  
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