



Power Project

Frequently Asked Questions

A major program to underground powerlines in suburban Darwin is well underway.

The Undergrounding Power Project will result in almost 9,000 properties in suburban Darwin having their overhead powerlines replaced with more reliable and safe underground lines.

Which powerlines will be undergrounded?

The program covers undergrounding the electricity distribution powerlines in urban residential areas of Darwin.

Excluded are powerlines along arterial roads and in commercial and industrial areas, except where these are immediately adjacent to residential areas. Transmission lines (typically on the tall lattice towers or concrete poles) are also not included in this program.

How much will it cost?

Placing power distribution systems underground is costly. The cost to underground the urban residential areas of Darwin is estimated to be in excess of \$150 million.

For a particular lot or street, the actual costs will vary considerably depending on the housing density, congestion of the underground services in the road reserve and many other factors.

Who pays for underground power?

Undergrounding power is a Northern Territory Government initiative and the government will directly fund the majority of the works. Power and Water and other participating service providers will fund the remainder on a commercial basis.

These works will not impact on electricity prices.

What are the benefits of underground power?

Although costly to install, underground power has many advantages. In a tropical environment, which is subject to cyclones and fierce thunderstorms, underground power provides substantially improved reliability and security of supply.

There are some savings through reduced maintenance costs. However, these savings are not sufficient by themselves to make undergrounding powerlines a commercially attractive proposition. The main benefits from undergrounding, although difficult to put a figure on but which are enjoyed by residents and the community as a whole, include enhanced visual appearance, improved property values, reduced tree pruning and improved safety.

When will my area be undergrounded?

The order of works will be based primarily on supply reliability criteria. The suburbs of Nightcliff and Rapid Creek have been determined as the first priority and are referred to as Stage A. Works commenced in Nightcliff in early 2004 with completion planned by the end of 2006 resulting in 698 properties having underground power. Works are scheduled to commence in Rapid Creek in mid-2006.

How much of Darwin is supplied by underground power?

Since the late 70's, all new urban residential developments were required to have underground power. Today, around half of Darwin customers are supplied by underground power.

How is power put underground?

The traditional or conventional method of undergrounding power supply involves a narrow, deep trench in which cables are direct buried relying on the burial depth for protection. However, this method has many drawbacks, especially with the challenging conditions encountered in Darwin including rock and high rainfall conditions.

With lessons learnt from a pilot project in 1997 where the power supply was put underground to 94 properties in the Nightcliff area, the preferred method is that of a shallow trench approximately 600 mm wide and 425 mm deep dug along the nature strip where the footpath is (or will be).

Conduits are then laid and surrounded by cement-stabilised sand. A concrete cover is laid as protection for the cables and to serve as the footpath. Cables are pulled through the conduits and are connected to transformers, then to pillars and to your supply point. To minimise disruption and inconvenience to residents, the preferred method of connecting your service, from the pillar to your meter box, is by way of underground boring.

After areas have been converted to underground power, the overhead powerlines will be dismantled and taken away. The poles will be removed and these areas reinstated with top soil.

What happens to my driveway and nature strip?

A 1200 mm wide slot is cut into the existing driveway. Once conduits are laid, they are covered with concrete to become a continuous footpath. Alternatives such as boring under driveways have been considered. However, the cost is substantially greater and the risk of driveway cracking is significant.

Where residents have an established garden or planted trees on the nature strip, some relocation or replacement may be required to accommodate the underground cables and footpath.

Why do we need transformers and where will they go?

The distribution of electrical energy at the normal supply voltage (240 volts) would generate significant losses and produce an unmanageable voltage drop over distances greater than 300 metres.

It is more efficient to cover longer distances at a higher voltage, such as 11,000 volts. Transformers are then used to reduce the voltage back down to 240 volts, suitable for your appliances.

Power and Water and the Darwin City Council will have a demanding task in finding locations for transformers that meet the technical requirements and minimise the impact on the community. Where possible, transformers will be located in unobtrusive sites on public land. In some cases where alternatives are limited, a selected location on the verge may be necessary.

Why aren't the transmission lines being undergrounded?

Transmission lines (66,000 and 132,000 volts), usually of lattice tower or concrete construction in residential areas, transport electricity from power stations over relatively long distances to major load centres. Power and Water's transmission lines are designed for cyclonic conditions and for higher reliability than distribution lines.

Consequently, undergrounding transmission lines is not the priority for this program.

Is streetlighting a part of the program?

As most of the existing streetlighting is located on the power poles which are being removed, new streetlighting is being installed. The Darwin City Council will approve the streetlighting design as per the Australian Standard. Streetlight columns will be placed, where possible, at the common boundary of properties.

What happens if my property gets damaged?

Skilled contractors will carry out the works. However, occasional damage can occur. If that happens, your property will be reinstated to a standard similar to that, which was existing.

The program will include photography of the existing property prior to site works commencing and again on completion of the works to verify the contractors take every care with your property.

Will access to my house be restricted?

Access will be restricted only while work is in progress outside your property. This will include a few hours while the trench is being dug. Once dug, a steel bridge will be placed over the trench to accommodate normal vehicle and pedestrian access. Once the concrete footpath has been poured, access will be restricted for a period of around 24 hours.

What notification will I receive?

As works progress from street to street, affected residents will be notified prior to each step of the works occurring. This will be by way of a letter placed in your letterbox around one to two weeks prior to the works occurring. Details of the program of works will also be provided in the Darwin Sun each week.

What access do you need to my property?

Your property will need to be accessed on three to four occasions during the works. This includes the boring of conduit/s into your property, the pulling of cables through

the conduit/s, the connection to your meter box or supply point and the final changeover of your existing service to the new underground supply.

To enable access, gates will need to be unlocked and to ensure safety of all workers, it will be necessary for pets to be confined.

Does the program include undergrounding the connection to the house?

Yes. The program includes removing the overhead service that in most cases runs from the nearby power pole to the attachment point on your house and installing an underground service. The underground service will run from a new pillar installed on the nature strip straight to your meter box or supply point. Where a property already has an underground service internally, the new underground power along the street will connect into the existing service.

Will the power be interrupted during the works?

Supply will be interrupted during the changeover of your service connection. Other interruptions due to the works are expected to be minimal.

How much better will the supply reliability really be?

Power and Water has put considerable effort into improving supply reliability for all customers. However, an overhead system is more exposed to the elements and other causes of interruptions than an underground system.

On average, areas of Darwin already supplied by underground power have less than one quarter of the interruptions experienced in areas supplied by overhead powerlines. By putting the powerlines underground, the risk of another cyclone devastating Darwin's electricity distribution system will be eliminated.

What happens with telecommunications and Austar cables?

The project team will be working hand-in-hand with communications carriers and Austar to ensure that their services to you are impacted as little as possible by the undergrounding works.

What will the project look like during construction and when completed?



Before - a typical residential street with overhead powerlines.



During - the trench has been dug and conduits laid.



After - the finished product.

Further enquires

Further information can be obtained by contacting the Undergrounding Power Project on free call **1800 000 761**. Enquiries can also be emailed to undergrounding.power@powerwater.com.au .

Contact Details

The project office at Nightcliff will be relocating to Power and Water's Ben Hammond Complex, Iliffe Street, Stuart Park in late July 2006. The freecall 1800 000 761 number will continue to remain in operation.

Residents of Nightcliff and Rapid Creek are encouraged to contact the office to find out when their street will be undergrounded.

Telephone	1800 000 761
Email	undergrounding.power@powerwater.com.au
Location	Shop 2B, 40 Progress Drive, Nightcliff
Schedule of Works	<u>Scheduling of the works</u>