

## Episode 295

# How to connect a new electricity supply to your home – with Neil Clarke from UK Power Networks

The show notes: [www.houseplanninghelp.com/295](http://www.houseplanninghelp.com/295)

Neil: So, just over fifty years of age. I've been with the company for thirty-two years, man and boy. I started at the bottom and worked my way up.

Currently I head up Connections Services – that's our small service arena, that's your everyday households, new-builds up to four plots, up-to three phase one-hundred amps. I also look after highways services. So, if you walk down a high street, anything that's terminated on a high street I also manage. That's your bus shelters, speed cameras, streetlights. So, the majority of the fifty-four local authorities across our three licence areas plus your larger street furniture customers like BT, Openreach, Virgin Media.

I also look after all the LV disconnections for the company as well. These are the builders that want something demolished in readiness to do a new build, or people who are just moving or knocking two premises into one.

Ben: Maybe we could find out a bit more general stuff. For example, how long has the electricity grid existed? It must have taken a while to piece together but what's the background of it?

Neil: It started in the late 1800s. The first sector to go live was the public lighting, bizarrely which I now look after. But electricity has spread from that time really, up to probably the mid-1900s where it's now broken down into twelve separate regions throughout the country which are owned by six different companies.

We own three: The Eastern Network, the London Network, and the South East Network. So, as you look at a map of England, the far right-hand bottom corner is UK Power Networks.

We're not the grid. We don't generate or transmit electricity. We are the distribution side. So, we look after and maintain the wires, the substations, to get to the homeowners, to make sure that their lights and power is kept on.

Ben: How come it's not just one big area that's looked after? Is there a reason that it developed in that way?

Neil: Competition and lots of other reasons. Obviously, it was privatised and went down its own routes a number of years ago, and it's just whichever company has chosen to invest really. I'm not sure whether the government would allow one person to own all of it. As I say, we currently own three.

So, there's no real reason really. It's just a competitive market.

Ben: Is it always growing, this network, or are some people disconnecting at the same time as new installations come across?

Neil: That's a good question. It's a bit of both really. The smaller developments seem to be disconnecting and they put a larger building in its place. I don't look after the major projects, but you can clearly look at the London skyline and see buildings going up all the time.

But the market I'm in, is it a growing market? It's been static for many, many years. We can only grow so many. But competition is out there. So, although there is probably a bit more work out there, there are more competitors out there.

Ben: How many new connections do you make as a business then each year, or are we talking about any building basically?

Neil: If I solely look at small domestic – in our world, it's known as Connections Services, Small Services – we have about sixty-thousand enquiries a year which generates about twenty-four-thousand quotations. The take-up of those quotations is quite high, sixty percent plus that we're doing.

On the flipside of that, as you say, we're doing many disconnections and other bits and pieces, and those quotations are not always for a new build. It could be for an alteration of a current service, or a disconnection of a metered service.

The new element is, I'd say, about forty percent of our overall connections that we do. So, it is increasing year on year, but as I say, we're doing lots of disconnections as well.

Ben: Is the process always the same, of this is how a connection works?

Neil: Yes. We've done a lot of work on our website and you'll see it's all been updated and refreshed.

We offer two different processes at the moment. They would go online, fill in an application form, that will flow through and we will contact them. Or they can now actually request a site visit process, so they don't actually fill in an application form. You request for someone to come to site, we'll come to site and meet you, talk you through that process, hold your hand filling it in so that you get exactly what you want, and then we'll process it through the system for you.

Regular customers who know our process will probably just fill in the application and go. Those one-off ones we assume will want a bit more hand holding and a bit more guidance with the process.

Ben: Maybe we can just talk through that. First of all, do we know our technical requirements beforehand? I apologise if that's not a very good question.

Neil: We get this all the time. We try to break down all the technical jargon and everything else. But if somebody is applying for something then they know roughly what they want, the technicalities. Usually they would have had an electrician involved and their electrician would guide them. So, many applications we get would be from the electrician but it's actually for the homeowner, developer or builder. But it's the electrician that works with us.

If it's not, we will break it down and explain to the customer what it means, what kind of supply they would need. Most houses would be a single phase, one-hundred amp, and that would suffice for most people. But if they've got larger machinery or larger pumps – three phase pumps, depending on the size of the property – then we can do a three phase which just evens it out, the voltage across each phase, to make it better for them.

All we're trying to do is support the integrity of the network, to make sure that whatever we supply is sufficient for the homeowner but also fits in with the network.

In some instances, if it was a larger development, we may have to reinforce the network. That's where it becomes very complicated. That's why we've made this split between one to four, and four above. Because if it's four or above, we know it's going to be a bit more than just a normal connection. Or potentially some additional mains lay.

You're then assigned a project designer that would do exactly the same as what my staff do. They'll hold your hand through the whole process and make sure you get exactly what you need.

Ben: For my particular self-build I had a three phase coming to site and then it was changed at that point. I don't know much about that, but why would that happen?

Neil: Every site is obviously site specific. So, it depends if you're rural or urban. If you're in a rural area where there's no electricity, we may have to lay a three phase main that would get up to your property, and then we would run a service off the end of that. We would look at volt drop and all the other bits and pieces, the size of the substation.

That technical check is done all behind the scenes. It's included in the price. We do all of that and work it all out for you and then come back to with whatever you needed.

So, without knowing your job...

Ben: That sounds about right, what you're saying there. We are fairly rural, and it will have travelled from the road.

One thing you brought up there, you mentioned if you're quite rural, can you get an electricity supply to anywhere? It's just the cost?

Neil: In essence, yes. And a lot of people take this into the equation before they start building because if they're going to struggle to get electricity there, they're going to struggle to get water there, they're going to struggle to get gas there. So, it's then does it become viable to do that self-build?

But yes, anything is possible.

Ben: When you're digging trenches and so forth, presumably how long the cable is is one price and all the rest of it, but it's really at either end of that where the real cost is? The cable itself isn't too bad – or is that false?

Neil: Obviously, there's a cost to everything that we do. The reinstatement cost is probably the biggest cost, but every part of our work now is contestable for new works. I'm not talking about fault related work where there's a potential issue there, but for new work, a customer can choose to do lots of elements themselves to bring the price down.

If we're on a site and there's a trench and they've got the gas and water coming in, that's where you want to start sharing the work together rather than having the trench dug out three times. Going back twenty or thirty years, that's probably how it was. The water would turn up, dig it out, then fill it in. Then we would turn up, dig it out, fill it in. There's collaborative working now because we all have to go through the local authorities for notices and permits and they will now tell us if the gas or water is going in. That's when we start working together to reduce the cost for everybody, and the disruption to the residents and everyone around.

Ben: This is something that's been really tricky to do historically, hasn't it? Coordinating everything. It's obviously what we would all like, but out in reality it's not quite so simple.

Can you cross any road, any pavement? Is it just a matter of waiting until that permit can kick in?

Neil: We would apply to local authorities for whatever we're doing. That's all built into the price as well. So, we'll liaise with the local authorities.

It depends on the make-up of the road and other bits and pieces, but in essence, yes, we can cross many places. If there's a high pressure gas mains there then you have to follow a different process because you would need somebody out there while you're doing that work for safety reasons, and depending on how busy the road was, the width of the road, and lots of other things – what classification it is – if we have to undertake a road closure then we would have to give the local authority and the local residents three months prior warning which just adds time to the job as well as cost, as you can imagine.

But we've got local people who know the areas anyway so, we've got their expertise, but we now all go through each local authority, all on the same system, so in essence we can see what everybody else is doing. And if we're going on to a site, we will ask the customer, 'have you got the water coming? Have you got the gas in?' and we'll try to tie up with them to minimise any disruptions whilst we're on site, but also allows the works to go ahead quicker and probably, for the resident, cheaper.

Ben: Can we talk a little bit about what it is, what the technical bits of kit might be coming into a detached house? I know it might vary a little bit, but for example, you're going to need the cable in a trench – anything like that, and then a meter, or whether that then crosses on to someone else's domain?

Neil: Our responsibility as UK Power Networks is up to the termination. We're not a supplier so, we're not metering. We're not a meter operator. So, we do up to the termination, from the house outwards.

At the end of our cable you'll have a termination. Nowadays it will be a hundred amps but historically it could be sixty amps or lower, depending on how old the termination and the property is.

So, we finish there. You've got the termination. You've then got our cable that comes out of the property. Most homes will have a single or a three phase. That will come out of the property into a ducting usually on their property that will run to the edge of the boundary line of that property, and from there goes out into the public footway where usually our main is, or on some occasions we may have to cross the road. It just depends where our mains cable is located.

Ben: Are all those cables and so forth mapped these days? I know this is a historical thing, but I just feel on one of our service connections – I can't remember which one it was – we didn't actually know where certain things were.

Neil: All of our mains cables are logged. They're on our system. We can see them. As I say, there's competition out there so, they're allowed to see theirs as well. So, it's open for people to see. Anyone can request a set of plans, going through our plans provisions teams that will provide those plans.

There's a lot of myths around our cables are incorrect but it's just not true. There's an element that our service cables in a couple of areas were not logged as vigorous as other areas but it's a very small minority and we can trace any of our cables out with the correct electrical equipment anyway.

So, even if you approached us for a new connection, I would send one of my surveyors out there – I have just shy of one-hundred surveyors – we will come out there, map all the cables out, mark them all out, put them all on our drawings. That in conjunction with our actual cable records will be looked at to make sure that what's found does tally up. If ever we find that it doesn't then we'll record that and then we'll get some people out there to get it matched correctly.

That does happen on occasions, but that could be for lots of reasons. Our records may be incorrect, or it may be that the local authority have changed the road layout and the footpath is no longer where it shows, or a developer has done something slightly different.

So, there are lots of reasons why but in the main we know where our cables are. They're our assets. As you can imagine, as we've inherited five different companies over the years, we've either invested more than previous. And our current status, we're investing probably six-hundred-million pounds every year on the network and improving it, to make sure we can maintain it and see where all of our equipment is.

So, I think it's a bit of a myth, to be honest. But I can't sit here and say they're one-hundred percent accurate. Of course, ground levels change, and we have to deal with that unfortunately when we arrive on site.

Ben: Yes. It obviously wasn't electricity. It must have been one of the others. I just thought that was interesting.

What about safety? We're talking about electricity which we know you need trained people for. How do you tap into the main without causing any problems?

Neil: That's a fantastic question. Safety is our number one priority. It is embedded in everything we do across UK Power Networks.

All the staff are fully trained. They have to go on refreshers every six months, a year to keep their competency up. We have what's called a [WEP 0:17:54] process and this is where we go out and physically inspect the guys, test the guys every six months. As part of a two year cycle they must have three of these tests.

On top of that, we do behavioural exchanges on these and audits on the staff each week, each month. Every one of my team would have a behavioural exchange done on them, which are their safety conversations. So, we'll go out, meet them, watch them working, and they have to have one of them every six months.

We do monthly briefings, we have what's called a First Fifteen which is a safety briefing for all staff – not only our jointers, linesmen and engineers that work outside but all staff and office staff. We make it bespoke to them, just to reiterate safety to them.

I was a jointer many, many years ago. It was a four year course. That has condensed now because back then they were obviously lead covered cables where our covers are now plastic.

We take on apprentices every year, adult trainees, adult engineers, and train them efficiently to work on our network.

Ben: How many people are we likely to have coming to a site, or again is that like how long is a piece of string?

Neil: Again, it's site specific, but for safety reasons, our staff work in twos. Our field staff, if they're linesmen they will come in twos, jointers will come in twos.

Our civils is where it slightly changes. If I've got two jointers coming out, it may be that we put one civils with them, so it would be a three man team. In some other areas, especially in towns and especially in London, we'd probably setup separate civils gangs.

But for most reasons, you'll get one of my surveyors coming to site to check on the job, and although we guide you through the job, that surveyor will also turn up a couple of days before the work is planned just to make sure you've done everything or if you need any other questions answered. So, you'll probably see my surveyor a couple of times. You'll then see a civils gang which is two people, a jointing gang which is two people, and then a reinstating team which could be the same as the civils one or if it's a specialist top, a separate one.

So, most times you'll probably see four different entities coming to site for our work.

Ben: What factors affect the cost, and have you got any examples of detached buildings, which we're generally interested in?

Neil: Obviously, every job is site specific, as I said earlier, but there is a basic cost. We know what the cost is for a new supply into a house. That usually covers up to forty metres which would cover most properties. Anything above forty metres then we may have to start, as you mentioned earlier, laying a three phase cable to stop the volt drop and other bits and pieces. That's when prices would start rising.

So, it depends on the length of the service. Over forty-three metres it would be slightly more. If it's detached or a terraced house, there should be no difference in the cost, just the actual location. So, it's usually the distance from the edge of your boundary.

And then when we get out into the road, it depends on the make up of the road. If we need a road closure, that adds cost. If we need specialist traffic management, we live in a safety world at the moment and as you can imagine with street works, there's a lot of focus on street works at the moment, lots of rules have changed. Whether it be red routes, parking bay suspensions, all of these would add cost to the job.

Ben: What about going overground versus underground? Is there any reason why you choose one over the other? Is that a cost thing as well?

Neil: No, not necessarily. There's a safety implication. We don't particularly want to be working at height so, where practically possible we will manage out working at heights. But if it's a rural area and the only supply is overhead, then we would supply that property overhead. But where we can, even if it is overhead, we would run it underground into the property so we can try to eliminate that risk.

There's lots of negativity around areas of natural beauty and our overhead lines and that's why there are lots of schemes where we're trying to underground lots of our cables at the moment.

But it is site specific and if a customer came to us, we've got to give them the most competitive, cheapest option that we can. So, we can't choose to say, 'you're going to have it underground and it's going to cost you X amount more'. We have to give them the most competitive price we can.

Ben: How far underground does it go?

Neil: It depends. If it's in the road, we would say a metre down or a minimum of six-hundred. If it's in the footway, it's usually a minimum of four-hundred-and-fifty deep.

Ben: And that's just a safety thing again, so that no-one's going to put a spade in there and start digging it up?

Neil: Yes, exactly. As I say, lots of roads and footways get altered for many different reasons. But if we're laying new cables, it would be four-fifty deep on the footway going into the customer's premises.

Ben: The cables that are in there, you mentioned plastic earlier, but what's in the middle of that? Is it just a solid core?

Neil: At the moment it's a solid aluminium core covered, and it's a copper neutral which also acts as the earth nowadays but in the old days it was what we know as a PILC cable – paper insulated, lead covered.

So, when you look in the ground and you see these cables that people think are crumbling and old, they're not; it's just the casing that's around it. Under that casing is lead and inside that lead would be a couple of cores. Historically, they would have been copper, which is why they're slightly smaller.

But aluminium is an excellent conductor which is why we use it. And it's cheaper. If we start using copper for everything it would just add to the price as well.

Ben: I wanted to ask you about timeframes and so forth. We had our supply connected when the house was there and pretty much ready to go, but how early in the process can you go? Can you go to just a field?

Neil: If you were just setting out, we would meet you on site. We would advise you to probably install a TBS – temporary builder's supply – while you're doing the work.

So, yes, we can put a supply into a field as long as it's going into a lockable, waterproof housing, safe from the elements and safe from the general public, and that's on your property under your control. But we would classify that as a TBS. So it's a metered cabinet, that would have a door on the front, that's lockable, waterproof.

But we can come in earlier if it suits you, but it would be put into a temporary builder's supply. Then we can make that into a permanent supply if needed when you're ready.

Ben: What about timeframes then if we did want it for the beginning of our construction? So, what's a typical timescale? Let's say we wanted to start building the house, should we get this all in motion first?

Neil: We work on the premise that it's the customer's wishes. The minute you apply to us we have to raise a quote within five days. We'll come to site, we'll meet you, we'll arrange all of that – bearing in mind that if a customer applied today and said to me, 'can I meet you next week?', that's outside of the five days. So, we always try to push where we can, but it's down to the customer's wishes.

Once you've paid that quotation, which is down to the customer when they pay, the minute that's paid the clock starts ticking.

Ideally, we would do that within twenty-five days. But the problem is, again, it's down to the customer. So, if they say they're not going to be ready for a couple of months, then obviously they will drive the programme dates.

What I can tell you is within the small service arena we give the customer a date of their choice. All we will do is probably five days before that date, we'll call the customer, have a conversation, ask if they're ready, if there's anything else they need to know and if there's anything else they need from us. Then a couple of days

before we're due on site we will do a drive-by just to make sure they're okay and make sure they're ready, give some guidance if they're unsure – because all we want to do is to make sure that the work goes ahead on the day otherwise you end up with wasted costs for all of us if it doesn't go ahead.

So, timeframes are usually within twenty-seven days.

Ben: What about when we pay? Is it all one lump sum or is something needed upfront?

Neil: It's usually one lump sum. As I said, I do up to four properties. If it's larger than that and it's obviously a lot more money, there are probably some staged payments and other bits and pieces. But for our smaller developments it's payment up front and once it's paid, we can process that to the next stage of the programme deliver and close.

Ben: You've obviously seen a lot of these over the years, quite interesting on different sides when you've been down on the sites as well doing all the work. Is there an area we need to watch out for where things might go wrong or where we could be better as self-builders?

Neil: All I would say is just early intervention, early conversations with us. So, whether it's a disconnection – I'll give you an example of a disconnection: they've demolished the site but left our termination standing there in the middle. Just tell us at an early stage because it could be dangerous. It could cause a problem. And god forbid anything was to happen to any of us, us or our customers.

So, early intervention. Contact us as soon as you know, even if you're just enquiring or you want to understand a process or how much it's going to cost. Contact us as early as you can in the process. We will guide you through the whole stages of how we work, what you will need to do.

Obviously, we're not suppliers as I mentioned earlier. So, there's always a third entity. If it's a new supply, you're talking to us, you've got an electrician, then you've also got to talk to your meter operator which we're not. Now, whoever you choose that's another one in the mix that we have to try to collaborate all the working together.

So, all I'd say is early intervention with us. Once you've made contact with us, we'll give you one point of contact, one person who will deal with your job from start to finish, and we will do all of the



running around behind the scenes with the delivery and talking to all these other entities to make sure that job happens correctly.

Ben: Neil, I really appreciate your time today. Hopefully you've found my questions alright.

Neil: No, that's fine Ben. Appreciate your time.