Papur cryno ar gyflwyniadau ynghylch gosod ceblau

Cable Ploughing submissions summary paper

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Rhagarweiniad / Introduction

Mae'r papur hwn yn casglu tystiolaeth o gyflwyniadau ysgrifenedig gan wahanol gwmnïau ynghylch gosod ceblau.

This paper compiles evidence submission text from different companies regarding cable ploughing.

Cyflwyniad gan ATP Cable Plough / Presentation from ATP Cable Plough

Rhoddodd ATP Cable Plough gyflwyniad am y dechneg gosod ceblau i'r Grŵp Cynghori Annibynnol ar Grid Trydan y Dyfodol i Gymru ym mis Medi 2024. Roedd yn cynnwys pwyntiau lefel uchel o'u cyflwyniad ysgrifenedig, gan gyflwyno'r rhain gydag enghreifftiau o brosiectau y maen nhw wedi bod yn rhan ohonyn nhw.

Gwnaethon nhw ddarparu fideo YouTube byr am y dechnoleg ar waith.

ATP Cable Plough delivered a presentation about the cable ploughing technique to the Independent Advisory Group on Future Electricity Grid for Wales in September 2024. It covered high level points from their written submission and articulated these with examples of projects they have been involved in.

They supplied a short YouTube video of the technique in practice.

Datganiad tystiolaeth gan ATP Cable Plough / Statement of evidence from ATP Cable Plough

Isod mae datganiad ysgrifenedig o dystiolaeth a gafodd y Grŵp Cynghori Annibynnol gan ATP Cable Plough, sy'n cyflwyno esboniadau'r cwmni o'r dechneg gosod ceblau, ei heffeithiau a'i ffactorau costio, yn seiliedig ar eu profiad o ddarparu gwasanaethau gan ddefnyddio'r dull hwn.

Below is a written statement of evidence that the Independent Advisory Group received from ATP Cable Plough, providing the company's insight into the cable ploughing technique, its impacts and costing factors, from their experience in providing services using this method.

This statement is provided by [redacted], Managing Director and owner of A Thomas Plant Hire Limited [ATP Cable Plough].

1.Illustrative and supporting video clips:

There are various video clips available on social media sites, including those of ATP and competitors, which show cable ploughing in action.

One video link is provided below, and three video clips are provided with this statement.

The link (https://youtu.be/jQIeCSMzK0w) is to a video explaining work undertaken by ATP, and showing our equipment in action, for a project on the Dunstable Downs. The client was UK Power Networks, on a site managed by the National Trust, as part of a process of replacing overhead lines and pylons in an area of outstanding natural beauty, instead placing underground by cable ploughing.

The first accompanying video clip shows our equipment in use laying 33KV cable direct into the ground, without ducting, but with backfill to the cables. The clip shows the lead winch, pulling the cable plough, the blade on the cable plough, the backfill carried on an adjacent machine, being laid simultaneously with the cable via a chute on the cable plough, the limited extent and nature of the groove or slit opened by the blade on the plough, and the ease with which the slit can be closed by the tracks of the excavator which follows behind the plough.

The second accompanying video clip shows a side view of ATP equipment in action as part of a demonstration held in April 2024 attended by many leading figures from industry and representatives from Welsh Government. The equipment in use, for the laying of ducting to facilitate cable for 400KV AC, involved a front winch (a spare winch is also shown in the footage but was not in use), the cable plough, and the

excavator following behind – the ducting was laid out adjacent to the equipment so that it could be fed manually into the cable plough. By explanation, if there is no requirement on a project for backfill, and if there is no requirement for direct laying of cable when the cable plough is being used, neither the cable carrier or the vehicle carrying backfill (which are shown via the link and in the first of the accompanying clips) would be required, reducing the equipment involved to just the lead winch, the cable plough, and the excavator following behind. Alternatively, ducts are laid out in readiness to be ploughed, adjacent to the cable route.

The third accompanying video clip provides an overhead view of the demonstration of our equipment during the April presentation. It should be noted that the ground at the time of the demonstration was saturated, a]er a prolonged period of rainfall. Consequently, the cable plough was put on skis, which is an option available to us, so it could slide over the saturated ground, and so slide marks can be seen which would not normally be evident. The footage helps to demonstrate the low compaction and narrow working strip required for the machines involved as part of the presentation.

2.Illustrative and supporting photographs.

To further assist and illustrate, several still photographs are provided within the schedule attached to this statement.

3. Background:

ATP is a specialist utility plough contractor operating in the UK and elsewhere in Europe. Our cable ploughs install cables and ducts for electricity transmission and distribution as well as for fibre optics and communication, telecoms, gas, water and sewerage. My experience and expertise is derived from:

- many years of direct involvement in laying cables, ducts and pipes by cable ploughing.
- many years of direct involvement in laying cables, pipes and ducts using open trenching/open cut methods.
- 27 years of experience and knowledge of industry practices.

4.Technical information:

- We have used cable plough machinery to lay a variety of electricity cables and a variety of ducts for electricity cables, suitable for cable voltages for alternate current (AC) of 400KV, 220KV, 132KV, 66KV, 33KV and 11KV.
- Cable ploughing has been used and is being used in continental Europe to facilitate the laying of high voltage cables, both for AC and DC.
- The fact that there are sections of the existing transmission and distribution grid networks in the UK which have been undergrounded already, is both indicative, and confirmatory to that extent, that it is feasible and practicable for

high voltage transmission lines and for distribution infrastructure to be placed underground.

- The open cut method (also referred to as open trenching) has with some exception been the traditionally preferred means of placing ducts to facilitate high voltage transmission underground in the UK.
- However, cable ploughing can achieve the same end result as open cut. It is purely an alternative means of delivery. Importantly, cable ploughing minimises the disruption and impact associated with open trenching. Cable ploughing is a very different method of installation to open cut, offering the potential for reduced costs, reduced impacts and speedier delivery.
- I have reviewed various specification drawings for the undergrounding of 400KV using the older method of open cut excavation. I confirm that by using our cable plough machinery to lay the same ducts as shown in the specification drawings, the ducts can be laid at the same depth and at the same distance apart and within the same bedding, as shown in the design drawings for the installation of 400KV by way of open trenching which I have reviewed.
- Specification drawings which I have reviewed for 400KV using open trenching, allow for a maximum depth of 1100 mm between ground level and the top of a duct of diameter 250mm on a bed of 100mm-this specification is easily achieved using the cable plough as the equipment can accommodate cable, pipe or ducts with a diameter of up to 620 mm max and can permit for ducts to be laid up to a depth of 2.8m. Bedding materials if required can be laid simultaneously.
- Based on design drawings reviewed, providing for three phases in flat formation, the width for a circuit at 400KV AC including the spacing between the three ducts, each duct accommodating one phase, could be as liVle as a width of 2.2 metres in total.
- For a second circuit of 400km AC in flat formation alongside the first circuit, keeping the spacing between the outer ducts of each circuit at approximately 5 meters dependant on design requirements, two circuits at 400KV could be laid within a strip of just 9.4 m in width.
- Cable plough can be used for laying the ducts required to host transmission cables for high voltage direct current (HV DC) as well as for a variety of transmission and distribution voltages using AC.
- On the basis that only two phases should be required for a HV DC circuit, whereby each of the two phases would be placed within a separate duct, (each duct to be placed in a separate slit opened by the cable plough), the process for HV DC in flat formation would involve just two parallel slits in proximity.
- The Western Power Distribution (WPD) cable installation manual CA 6A, which is available online, permits for double 132KV circuits to be placed within the same duct, but expresses a preference for each circuit to be placed within

an individual duct and for the ducts to be kept separate. The cross-sectional drawing on page 20 of the manual shows 132kV phases in trefoil, whereby the diameter of each of three phases (cables) in trefoil is shown as 100mm in diameter, and therefore each set of three cables together in trefoil being one circuit is circa 300mm (3cm) in diameter, with the spacing between each circuit in trefoil no more than 650mm apart. This would require two ducts only (one for each circuit comprising three phases in trefoil), and therefore just two slits to be opened by the cable plough.

- The appearance of a flat formation is illustrated in the upper right section of the first diagram which is to be found in the schedule of diagrams accompanying this statement. The appearance of a trefoil formation is illustrated in the upper le] section of the first diagram
- ATP has facilitated the undergrounding of double circuit 132KV. Cables for a single circuit consisted of three phases in trefoil, tightly together, each circuit placed within a separate duct, each duct placed into an individual slit. Therefore, two slits, each carrying one duct. The ducts were laid at a depth of 1.2m, and the centre-to-centre distance was just 1.5m.
- The ‘Sea Green’ project in which we were involved was a 220kV link, comprising three circuits. The system was ducted using cable ploughing equipment. The ducts were 225mm in diameter. The communication ducts laid at the same time were 110mm.The machine also installed the master tile with a 100mm separation from the electrical duct and marker tape (warning tape) 100 mm above the stock board.

5. Method and Technical:

- The front vehicle is a winch which can be tracked depending on the terrain or ground conditions.
- The cable plough is winched forward from the front vehicle, which has significant traction and pulling strength.
- The cable plough places cable or duct in a sensitive way, installing the cable or duct within a slit cut in the ground by the blade of the cable plough as the cable plough moves forward.
- As it opens a slit in the ground the cable plough can simultaneously lay into the slit each of the ducts (or cables if cable installation direct into the ground is preferred) required to be placed in the slit, together with fibre optic cable if required, warning tape, and the protective plate, placing in order and with precision.
- Depending on size or weight, coils of cable or ducting can be carried on the cable plough or can be carried on and fed from a separate drum carrier travelling in convoy. As an alternative, ducts can be laid out on the ground, uncoiled, running within the easement strip, immediately adjacent to the route of the cable plough, so that the ducts can then be li]ed and fed manually into the chute of the cable plough as it moves forward.

- The cable plough can also lay simultaneously any imported backfill -if backfill is necessary it is fed into a chute from a machine running alongside or behind the cable plough which carries the selected bedding material which passes via a conveyor into a chute fitted to the blade of the plough. The process is controlled and timed so that the cable or duct remains suspended until the bed has been laid.
- The slit opened by the plough is closed by the tracks of the excavator which follows behind. It is just flattened back over. If we are ploughing firm ground, the excavator may need only drive over the slit to close it back. If the ground is wetter, or if ground conditions are such that there is a need for more attention to prevent scarring, there may be some bucket work with the excavator but limited to ensure a smooth surface ready for seeding.
- The equipment allows us to cut, install and back-fill - all in one operation.
- Up to 1.5 km a day is achievable for the opening of a slit and for the simultaneous installation into the slit and for closing over by the excavator following behind the cable plough.
- We averaged 1.45 km a day on the Sea Green project. Cable ploughing through the rural countryside of Wales (general geological information for Wales is in the public domain) or passing through well worked agricultural land, is expected to be comparable.
- If more than one parallel slit is required, the machine would need to undertake an additional run for each additional slit. We own a number of cable plough machines which could be put to work on the same route at the same time.
- Even if operation should be limited to an average of 1km a day, then for a route of 75km requiring six slits to facilitate the ducting for a double circuit at 400KV AC in flat formation, an overall total of 450 days' work(75 x 6) could be reduced by using four machines on the route so that by dividing 450 by four the ducting for the whole route of 75km could be laid in circa 112 days.
- Limiting to an average of 1km a day, then for a route of 75km requiring two slits to facilitate the ducting for a HV DC circuit or a double circuit at 132KV applying the specifications within the Western Power Distribution (NGED) manual CA 6A, an overall total of 150 days' work (75 x 2) could be reduced by using four machines on the route so that dividing 150 by four the ducting for the whole route of 75km could be laid in circa 38 days.
- If four slits should be required, possibly for two circuits of HV DC, then assuming operation should be limited to 1km a day, an overall total of 300 days' work (75 x 4) could be reduced by using four machines on the route so that dividing 300 by four the ducting for the whole route of 75km could be laid in circa 75 days.
- Of course, if progress should be made somewhere between 1.4 km to 1.5km a day, the delivery of the ducting including closing over could be achieved even more quickly.

- GPS is used to vary the height of the cutting blade adjusting automatically to the ground surface. The unique design of the combined blade and guidance system means that pipes and cables are laid exactly in accordance with regulations – whatever the speed of travel. Inspections have proved that installations carried out by the Cable Plough can be of better and more uniform quality than that of open trench methods.
- The Cable Plough's operation means that its cutting blade is controlled in such a way that the insertion angle is adjusted to the curvature of the earth. This means that cables and pipes are carefully laid, with no strain or tension.
- The enormous pulling force of the mobile winches and the tractive force is a big advantage, together with the adjustable outriggers on the plough. Each installation project starts with the power-winch being safely sited ahead of the Cable Plough in an area where it can secure itself by dropping its anchor into the ground. However, in the case of roadside installations, the winch is capable of gripping to the asphalt without the need of its anchor. It is important that the tracked crawler is well grounded, but the flexibility and manoeuvrability of the machines, provides a potential to work on significant terrain and gradient.
- We have been comfortable using the equipment on gradients up to 45 degrees. Some of the photographs included in the accompanying schedule of photographs illustrate work undertaken on significant gradients.
- The adaptability of the cable plough enables it to cope with a variety of surfaces, whether flat, hilly, or undulating terrain. The photographs for the Boat of Garten project displayed on our website, of which some are included within the schedule of photographs which accompanies this statement, are indicative of what can be achieved in terms of gradient and terrain.
- The cable plough equipment is suitable for various soil conditions, including sand, gravel, and moor. Difficult ground conditions have been encountered and managed. The hydraulically adjustable ripper shoe allows the desired depth to be maintained continuously, even with changing soil conditions, which allows work to be carried out without interruption and avoids costly reworking.
- The machinery is capable of operating in wet and adverse areas, such as across marshland, through ditches and even into rivers. for small rivers or tributaries, as the cable plough is classed as trenchless, we can plough across the riverbed. We can negotiate water crossings up to a depth of 1 metre. If a river is wide or deep or protected, then horizontal direct drilling could be a supplement used to accompany the work of the cable plough.
- When encountering hard rock or rock layers, we have been able to break it out first before continuing to cable plough. It may also be possible to route around hard rock. We were involved in the Boat of Garten (Vista) project in February 2020, as subcontractor for Morgan Sindall which was the Tier 1

contractor. Ground conditions were particularly hard in places with boulder fields and fractured rock sections, and a covering of deep peat in others.

- If major pipework is encountered and has to be crossed, then depending on depth, the pipework can be capped with concrete and cable ploughed over, or alternatively a mini digger or drilling can be used so that cabling or ducting can run under it.
- Land drains are not always mapped, or a landowner's plan showing the position of land drains may not be accurate. If we cut through a land drain in the process of cable ploughing the exact location is recorded. A]er the duct or cable has been laid, the slit is folded back down, but a specialist drainage firm working with us will then attend to repair the break in the drainage pipe. If damaged during the passage of the cable plough, the ground beneath the drainage pipe, save for the small dimension of the blade, will have remained compacted, therefore providing good support for the land drain and aiding effective replacement connection. The contractor would excavate the small depth to address the cut but during the repair would not excavate underneath it, thereby retaining stability. In contrast, if a land drain is broken during open cut excavation, the section of replacement land drain could be situated on a base which may be insufficiently compact, causing water to hold or a blockage to occur within the replacement section, should the replaced pipe begin to sag because it is not sufficiently supported.
- The question is asked, what distance and for what duration can the machines be used for. The equipment we use, is such that we can continue, subject to avoiding or circumventing obstacles, such as excessive solid rock, for such length required to be cable ploughed. The equipment permits for extensive use in terms of duration or distance.
- Joint bays are created at each point at which cable lengths are to be joined together. The joint bays also facilitate access to the cable once laid.
- Joint bay positions can vary depending on terrain, depending on the lengths of cable used, and depending on the size and weight of cable drums which can be determined both by cable diameter, cable length and cable components specific to each individual project. We also encourage careful routing, not only to shorten the route so far as practicable but to consider the spacing and placement of joint bays as if created near to roads and gateways this can further reduce costs and facilitate ease of access.
- Joint bays are opened with an excavator for each circuit. They can vary in size but would likely average in the region of 13metres long by 2 metres wide. for a double circuit the joint bays may be slightly staggered.
- Roadside projects are possible using the cable plough, providing the roadside verges have not already been utilised for a variety or collection of service media. Because of its agility, the Cable Plough is ideal for carrying out roadside projects, as signs, fences and barriers can easily be negotiated and need not be moved. It can even follow curves in the road to a radius of 4m.

- The all-round flexibility of the equipment enables it to plough around or adjacent to a variety of obstacles, such as rocks, trees, barriers, hedges and walls - by lifting or moving the jibs and positioning the wheels, we can operate to one side of or around an object.
- A minor road can be opened up during the short period of time which is permitted and ploughed through before filling with sand and putting plates over, so the road is passable pending resurfacing. More major road crossings can be avoided by using horizontal directional drilling.
- My company uses machines manufactured by FOECK. The manufacturer could be a source of useful data by way of confirmation of my evidence as to the capacity and capabilities of its machines.
- ATP will lay cables direct into the ground using our equipment, but if the use of ducting is preferred, our equipment is used to lay the ducts, and we do not involve in the follow up work of pulling cable through the ducts. The work of pulling or pushing cables through the ducts once the ducts have been laid would be undertaken by a specialist in that field.
- The use of ducting provides some measure of future proofing, as there is an expectation that ducts would have a lifespan in the region of 100 years and relevant to replacement of cabling, if that should ever become necessary, old cables can be pulled out and new cables pulled or pushed through the ducts.
- Maintenance, repair or replacement of cables laid within ducts should not be necessary unless a section of cable or joint is defective -as cables are pre-tested before they are laid, to ensure that they are satisfactory, the chances of laying a bad conductor should be negated.
- MDP ducts come in 100m lengths which are joined and sealed together for ground insertion, and for that reason are preferrable to the use of PVC ducts which come in much shorter lengths.
- The design team for any given project would need to consider carefully and efficiently, the extent to which the ducting used, and the design of the cable to be used (XPLE coating for cable sheaths is becoming more common) may remove or reduce the need for imported backfill under and around the installation – factoring in also the TR value of the ground, the diameter of ducting used and the materials used in the casing of ducts such as MDP/Polythene ducts. It is important to encourage and achieve progressive design.

6. Impacts:

- We arrange an ecology study before starting work, engaging a reputable ecologist. The ecologist will monitor as appropriate as work proceeds. We can then take any mitigating measures required by the ecologist. Likewise archaeological sensitivity can be addressed.
- Dependent on-site survey, very little preparatory work may be required before commencing work.

- The cable plough process can reduce or avoid the need for removal of vegetation and can avoid altogether the removal of topsoil.
- No soil has to be excavated, thus avoiding soil structure changes and subsequent compaction.
- By cable ploughing directly without soil excavation, there is no removal or mixing of soil layers.
- No soil mixing means there is no soil contamination.
- The cable plough displaces, rather than excavating or lifting. This makes the process significantly more environmentally friendly and less disruptive.
- If there is a need to cross a hedgerow, the limited section of the hedge affected can be lifted completely and then re-instated completely within twenty-four hours.
- Compared to the plant used, and the duration of use, for pylon and overhead construction and for open cut methods, our equipment offers the opportunity for lower fuel consumption and a reduction in associated CO2 emissions. The manufacturers' specification suggests around 50 litres of diesel fuel consumed per 1,000 metres of laying distance. During the Sea Green project we recorded fuel consumption, using HVO diesel, at 58 litres per km per circuit. By comparison, installing the same distance with overhead lines and pylons, using alternative machines such as heavy cranes, and where the plant is in use for an extended period, can require far greater consumption of diesel fuel - laying cables with an excavator for open trenching could involve diesel use which is 10-15 times more than for cable ploughing.
- There is an extensive requirement for haul roads for the construction of pylons. The provision of haul roads, increases the carbon footprint, requires the production and carriage of stone, involves construction work, and the excavation and removal of waste. Of course, haul roads also mean additional cost. There is a need to secure access to each individual pylon site, which can result in a significant number of haul roads given that projects proposed for Wales set out the intention for pylons to be placed every 200-250 metres along the route. for undergrounding facilitated by cable ploughing, whilst there is a need to access joint bays at which cables will be pulled or pushed through and jointed, should spacing of individual joint bays average at around 1km, the number of access facilities compared to pylon sites every 200-250 metres would be reduced by a quarter to a fifth, whilst the reduction may be greater again, allowing for the nature of the equipment associated with cable ploughing and pulling through, and reflecting that the placement of pylons is more constrained because of obligations to try and mitigate visual impact, whereas in contrast an important part of undergrounding facilitated by cable ploughing is careful routeing and careful placement to encouraging the placement of joint bays near to established access points.

- Whilst traditional methods of pipe and cable installation require a sizable trench to be dug and then refilled, the Cable Plough's efficient way of cutting a narrow slit into the soil causes only minimum disturbance to the land.
- With only a narrow cut into the ground, there is little damage and therefore no structural change to the geological formation of the earth. Considering also, the simple process for closing over, it does not take long for the area of land to return to its original and natural state.
- The techniques used by ATP enable the installation of cable across many areas where traditional trenching is not possible or is discouraged. This can include Sites of Special Scientific Interest (SSSI), Areas of Outstanding Natural Beauty (AONB), agricultural land where production is paramount and disruption unhelpful, National Parks, areas of peat, other areas which are particularly sensitive to ecological and environmental issues, or areas which are not accessible to large plant. ATP call this technique "Trench-less Technology."
- At a time when traditional open-cut methods of service laying are coming under increased scrutiny because of environmental and ground reinstatement issues, the Cable Plough's efficient and low-impact method means that any complications when restoring and subsequently handing back land are dramatically reduced.
- The use of cable ploughing can allow for a reduction in the easement width required for project operation. The land affected can be limited to circa the width of the cable plough. It is our preference that the easement width is a little wider. The third diagram within the schedule of diagrams which accompanies this statement shows the machine width as 3 metres and allows for buffer width of 1 metre on one side and a passing or emergency zone of 4 metres on the other side. Therefore, an easement width of just eight metres in total. The second diagram in the schedule of diagrams illustrates the limited route width allowing for the equipment to navigate a 90-degree turn - that diagram shows a normal corridor width of 10 metres. Therefore, the easement width required is between just 8m to 10 m, but the ground over which the cable plough machine and the lead winch passes can be limited to circa just 3 metres.
- Importantly, the sensitivity of the cable plough process can allow for shorter and more direct routes, as an alternative to longer and diversionary routes which may be required for pylons and open trenching. This provides for an obvious mitigation in terms of land, ecology and bio-diversity impacts.
- The use of cable ploughing technology not only minimises land impacts, but will not interfere with bird flight paths, will not prejudice Ministry of Defence flight exercises, will not prejudice visual amenity, will not prejudice visitor revenue and tourism, can avoid property devaluation, and can encourage community and landowner acceptance. It is important to assess carefully the method and operation of constructing and delivering pylons with overhead

lines to understand the impacts and timescales involved. What is actually involved can too often be conveniently overlooked or understated, and impact comparatives can be offered without a realisation or any focus on the actual disruption and adverse impacts from new overhead proposals involving pylons. There is ample information in the public domain, as to the impacts of open cut methods, as the consequences of open trenching are often highlighted as a diversion from the impacts attributable to overhead lines. However, information as to impacts associated with pylons can be found, and confirmation should also be available from transmission and distribution companies on request, so that a meaningful and honest comparison with cable ploughing methods can be conducted.

7. Costing factors:

- Route length – the mistake can be made of comparing a price per km for overhead lines and a price per km for underground cables, by multiplying the respective prices per km by the same route length, without factoring in that the route length for one method could be considerably shorter than the route length for another method. For example, an overhead line may have to follow an extended route in order to skirt away to reduce visual impact from a National Park, or to try and mitigate unacceptable visual impact more generally, particularly as there is an onus on a developer to try and mitigate by applying the Holford rules, whereas undergrounding by cable ploughing could permit for a far more direct and shorter route to be used. Therefore, the exercise of comparing the costs for overhead lines compared to the costs for underground cables, for any given project, should first involve a realistic determination and calculation, obtained with care, of the route length for overhead and separately the route length for underground, to determine if there is a differential, and if there is a differential, the multiple be applied to the rate per km relevant to undergrounding, will be different and distinct from the separate multiple to be applied to the rate per km for an overhead line. An overall costing obtained by applying comparative rates per km, could be seriously distorted if the same route length is assumed for each of the options, without proper exploration of the exact route length applicable for each option. Application of the correct route length to the rate per km for an option, could significantly alter or reduce the overall costs for that particular option.
- Just by way of example, it is apparent from a casual examination of the route plan for the proposed overhead development in Wales called the Towy Teifi scheme, that obvious reductions could be achieved as to the route length should the project become an underground project adopting the use of cable ploughing.
- If comparative figures per km are to be used for the purpose of assessing alternative and comparative costings, there is a need to ensure that the

figures adopted per km are all encompassing or are considered alongside and in the light of other relevant figures and costing information.

- The compound costs involved in a project can be £35,000 to £40,000 per week. Therefore, the faster the job, the more costs can be saved or avoided. As the cable plough cuts into the ground, installs and backfills in one operation, it can complete a considerable distance in a day. The equipment we use, together with our highly skilled teams to operate the equipment, leads to the fast and efficient laying of cables, The speed of progress, for so called 'build time' is important. Each project has compound costs including electricity, water, project managers, security, ecology and archaeological specialists.
- It was interesting to read, and to contrast with the speed of delivery offered by cable ploughing, an account within a report provided by a prospective developer of overhead lines with pylons in Wales, as to the likely build time for a proposed overhead project. The description records: 'The total duration of construction activity at any single tower site is approximately two weeks for tower foundations, a further two weeks for tower construction, and up to four weeks for conduction erection and stringing (this depends on the size of the tower and the number of conductors being strung). However, these timescales will not be consecutive as a gap of 4 weeks will be required for the foundation concrete to 'cure', - a further gap will be required for all the towers in a section to be erected before any wiring works can commence. The total construction period is expected to be approximately 4 months per tower'.
- Cable ploughing can offer a significant reduction in time money and risk. It can provide for a huge increase in productivity over and above traditional ways of working. for example, for projects we have undertaken, open trenching methods would have taken up to three weeks per one km distance, compared to one day or more per one km distance using cable plough.
- The more quickly that infrastructure can be delivered, connections can be achieved, minimising or avoiding significant constraint costs.
- To the extent that the cost of clean energy can reduce consumer bills, the sooner that appropriate connections can be completed the better.
- The financial cost, should an insensitive or inappropriate project be delayed by community or landowner opposition, is also an important consideration. Speed of delivery is important from the equipment and contractors engaged for delivery, but speed of delivery through community and landowner acceptance can also be a critical factor.
- Any costing comparative should reflect whole life costs, including projected costs relevant or consequential to the frequency and nature of anticipated maintenance and repair and speed of repair, and primary and secondary cost and loss due to potential outages, remembering that the increasing frequency and power of stormy weather can damage lines above the ground causing disruption, although appreciating the difficulty of putting a figure on the loss of business and loss of revenue experienced by tens of thousands le] without

electricity or internet connection as a result of damage to overhead lines. Loss of energy, longevity and de-commissioning, should also be factored in.

- • It is important to consider whether existing utilities which are on or above the surface, which would otherwise be in too close a proximity to new overhead high voltage lines, will require undergrounding, whether as a legal necessity or as a sensible precaution, and any additional or secondary costs should be factored into the overall costings for any project.
- The cost of fencing, required to protect a site of construction or installation, should be factored in when calculating overall project costs. Whereas excavation all along the route is involved using the open cut method, by contrast cable ploughing does not involve excavation so the sections cable ploughed, as cable ploughing is a trenchless method, do not need to be fenced. This can provide for a considerable saving and acceleration of process.
- Compensatory payments to landowners based on loss of value, loss of use during construction and restoration, loss of revenue from land, and permanent loss of use, can contribute significantly to the costs of a project and should not be overlooked in the exercise of evaluating and comparing overall costs.
- My perception of the merits of cable ploughing as a means of reducing land impacts and therefore minimising the requirement to pay compensation, is also helped as I have direct involvement in agriculture.
- As cable ploughing can minimise ground disturbance, and reduce impact, and as the time spent on a holding can be minimised due to the speed of operation offered by cable ploughing, and as cable ploughing requires a very limited operational width and therefore a limited easement width, and as cable ploughing can avoid unnecessary restriction of access to land which would otherwise be fenced off during an extended period of construction and otherwise followed by a substantial period of restoration, and as cable ploughing can avoid the separation and inaccessibility of one part of the holding (by a fenced off corridor) from the remainder of the holding, cable ploughing can reduce the period and extent of loss of use and loss of revenue and therefore can significantly cut or limit the amount of compensatory payments for these heads of loss.
- As restoration and hand back can be the same day or the next day, whereby the areas disturbed can be seeded and back in use quickly, whilst the land either side of the work strip can be accessed and available to the landowner with loss of use limited to one day, compensation payments can be slashed or rendered unnecessary.
- Compensatory claims can also be minimised or avoided by cable ploughing, as if more impactful methods are used over a longer duration, there is the potential for claims to recover compensation for lost subsidies, whilst if farmers are prevented from releasing slurry because of restricted access to, or restricted use of, sections of their land, loss could be compounded by an

obligation or necessity to reduce herds pending full restoration, which in turn can reduce incomes and place a pressure on the ability to service loans.

- Cable ploughing can therefore significantly minimise compensation payments otherwise payable to landowners. The speed of process, the minimised land impacts, reduced preparatory work, limited restoration works, and the speed of restoration, can help drive down the significant compensatory payments otherwise associated with pylons and with open cut methods.
- Likewise, payments to be made for land rights, reflecting loss of value, could be substantially less in consequence of cable ploughing, in addition to the savings to apply relevant to disruption, loss of use, loss of revenue, and for any other consequential loss.
- Cable ploughing could also provide a considerable saving for the public purse. The consideration of using taxpayers' money to fund compensatory payments to homeowners living in proximity to proposed new pylons, or to provide for contributions to compensation funds for communities, or to fund discounted electricity bills, could be rendered wholly unnecessary if pylons are not constructed and instead new infrastructure is placed underground in a way which minimises impacts and does not cause issues around visual impact.
- If property devaluation attributable to pylons because of visual impact and loss of amenity can be rendered negligible, or ruled out altogether, by cable ploughing new cables underground as an alternative to new overhead lines and pylons, it will avoid the need to compensate for property devaluation and will avoid the friction caused should any scheme in effect substantially under compensate.
- Cable ploughing offers a means to deliver the new infrastructure required in the acceleration to net zero by way of promoting and receiving community and homeowner acceptance and support.
- The 'traditional' methods of laying pipes and cables or erecting overhead lines can be extremely labour intensive and time consuming. Because of the way the cable plough operates, it requires less manual input than traditional methods, relevant to both installation and reinstatement, and therefore relevant to costings.
- Careful routeing is not only essential as a means of minimising costs by reducing route lengths in a practicable way. Careful and well considered routeing, with the assistance of a contractor who has familiarity with the terrain and the methods to be used, is an essential to avoid unnecessary costs more generally. Substantial costs can be saved by routeing, not only to ensure that the spacing and placement of joint bays is appropriate, and to ensure that obstacles can be avoided, if necessary, but also to ensure that road and river crossings are made where the contours and ground differentials and ground conditions are favourable towards reducing costs where possible. I have not been approached to provide a costing for the proposed Towy Teifi route, or in the context of providing a reliable costing and

saving on any unnecessary costs, to provide advice on routeing for undergrounding the Towy Teifi scheme, but should a costing estimate be requested and provided, the exercise could be somewhat artificial and unreliable should the developer decline to take up or frustrate any an offer to engage with the design and engineering personnel towards ensuring selection of the most cost effective route for cable ploughing.

- Careful and appropriate design is also extremely important, in addition to careful routeing, not just as a means of satisfying the technical considerations for a project, but to do so in a way which can avoid unnecessary impacts and avoid unnecessary costs or at least minimise impacts and costs so far as possible.
- Design drawings if badly designed can increase costings unnecessarily.
- When the consequence of bad design is to over complicate or overstate the technical requirements actually needed to achieve a satisfactory underground system, whether the overstatement or over complication is inadvertent, negligent, or a deliberate action on the part of the designer or developer to help keep to a particular agenda of giving preference to an alternative option, the outcome is that costings reflecting bad design will not provide a true reflection of costs, and will artificially inflate the costs of an underground option
- It is important in assessing any costing comparisons, to firstly explore as far as possible, the accuracy and suitability of the design drawings which have been costed. Relevant to cable ploughing rates, and the cost of opening and closing joint bays, if the frequency of joint bays or the number of cuts required from the cable plough is exaggerated or excessive by reason of the design drawings, then the cost estimate or tender could also be greater than it need be.
- More relevant generally to the costs of undergrounding, there are various factors which interplay with the design drawings which can affect the costings provided. These can include whether the route is to be ducted, the type of ducting to be used, including the diameter, weight, length and composition, the method to be used for pulling or pushing cables through the ducting, and the cables to be used. Cable specifications can vary greatly, reflecting the power/capacity (P) to be achieved and the voltage (V) to be used and therefore the amount of current/amperage(I) to be accommodated ($P=V \times I$). If the amperage required to achieve a certain capacity is increased to compensate for limitation in the voltage to be used in pursuit of a target capacity, then there could be an avoidable consequence for cable design and specification, which could impact on the diameter or components of the cabling to be used or which in turn could impact the number of cables or the number of circuits and the spacing and heat dissipation or conductivity or ducting or backfill or the number of cuts, which in turn can impact and inflate costings.

- Estimating the costs for a project I work from the drawings produced to me and the specifications with which I am presented. We carry out operations to correspond with the specific design drawings provided to us by the client. The reliability of those costings and whether they could be suitably reduced is dependent on whether the drawings are as progressive and as reliable and as appropriate as possible and whether the scheme itself for which design is supplied is appropriate.
- The ATP scale of charges per km for using our machinery to lay ducting, or to lay cable without ducting if preferred, is set out in a supplemental statement which I have completed, intended to be shared, subject to conditions, with the officers of Welsh Government serving as the Secretariat for the Independent Advisory Group on future Electricity Grid commissioned by Welsh Government, if that information would be relevant and used to further or complete any case study or costs comparative to be pursued by the Independent Advisory Group.
- There would be costs involved for a project facilitated by cable ploughing in addition to the ATP charging rates for opening, installation, and closing back.
- The cost of materials would include the price of the ducts (if ducts are to be used), the cable costs, and the cost of backfill if required. Cable costs can vary greatly, depending on the size, the specification, and the materials used. Conductors with either copper or aluminium conductors are available. Duct costs can vary depending on size and composition. Prices could likely be significantly less if larger volumes are procured for longer routes.
- The cost of additional services would include the cost of specialist companies, engaged for pulling or pushing the cables through ducts laid by the cable plough, for horizontal directional drilling if required for road and river crossings, and for joining the cables once situate in the joint bays.
- I would add one point for record. The 2012 report compiled by Parsons Brinckerhoff in conjunction with CCI and endorsed by the IET, seemingly took no account of cable ploughing and did not factor in the cost of cable ploughing or the reduced impacts offered by cable ploughing compared to open cut methods of undergrounding. It is to be expected that NESO or OFGEM or the transmission companies or the energy sector would have commissioned an up to date study and exploration of comparative costs and impacts, especially as the cost comparatives in the Parsons Brinckerhoff report are now some 13 years out of date, but in terms of any such study, despite the expertise of my company as cable ploughing specialists and the fact we are based here in the UK, and although cable ploughing has been employed for some time both in the UK and within other European countries, I have not been approached or requested to supply costings or costs information or technical information or information as to reduced impacts from cable ploughing.
- It should help to gather relevant information widely from manufacturers, energy companies, energy associations, contractors, sub-contractors, cable

designers, cable manufacturers, financiers, and funders, involved in cable plough and overhead projects in the UK and in Europe, with direct experience and knowledge. One note of caution - it would be important to assess the reliability of costings from past or current projects, as to whether those costs are fair and reasonable, and of course settled costs are not always indicative of what can be achieved for future projects.

- It must be remembered that costs figures given at a certain date or in in response to specific or defined requests, can and are likely to change or become outdated. Generalised cost comparatives, which are based on unsupported assumption or on incomplete or insufficient evidence may be dangerous and unreliable, but costings specific to one instance or which have become out of date also have to be handled and used with some caution.
- There are so many variables which can affect cost estimates at any given time. These can include the terms and conditions of the proposed contract, such as whether payments will be in instalments and how frequently instalments are to be made and whether in arrears and the extent of deferment, or costing estimates can reflect the risk involved including the risk of the client failing to honour its commitments, factoring in liquidity and any instability or lack of resources or an unmanageable extent of debt or an absence of experience without a proven track record of commercial reliability, or whether the client is otherwise likely to be problematic. Working with and for an established and reputable Tier 1 contractor can offer a considerable advantage.
- In addition to routeing, and design considerations, the location of the work can have a bearing, also the nature or consolidation of transport and ancillary costs. Logistics can play a part. Economy of scale could be relevant -size and scale and volume can affect pricing as can familiarity. Cost drivers can include fluctuating costs such as the cost of fuel, and the variable costs of raw materials or of manufactured products, and of supply and transport, whilst costs along the chain can depend on the availability and capacity and competition within the supply chain and the extent or pressure of demand.
- Overview costs at the outset of a proposal for development, and specific estimates used for tendering, could be materially different by the time planning consent has been obtained and development is ready to begin.
- It is important that cost, technical and impact comparisons, between proposed overhead lines with pylons and undergrounding, should be realistic, including an accurate assessment of what is required in the process of erecting overhead lines, and focusing by way of a comparative on the best or most favourable method of undergrounding available, otherwise comparatives could provide distorted and inaccurate data.
- Despite the nature and extent of the impacts attributable to open cut methods of undergrounding, and the potential advantages offered by cable ploughing,

open trenching has been the method selected by those seeking to hold out a comparative against the costs and impacts of overhead lines and pylons.

- Cable ploughing has not been used as extensively in the UK as it could, simply because the client has not asked for it. Too often, there appears to be a rigidity which holds back exploration of what is now available, and closed minds are not open to the technological advancements which have been made or show reluctance to embrace the possibilities which exist.
- There have been occasions, when I have tendered for projects for new infrastructure, offering to install underground by way of cable ploughing, but have failed to secure the contract to cable plough, whether because of an absence of insight or an ill founded prejudice or because of resistance to change, and yet, having been denied the opportunity to cable plough a given project, ATP has then been awarded the contract for the open cutting of the same scheme, which not only was more impactful, but at a contract price significantly higher than the amount which ATP would have received if our tender to cable plough had been accepted.
- Equipment and expertise for the use of cable ploughing is available. There has been some take- up so far in the UK, and cable ploughing is being used to facilitate new underground projects for transmission in continental Europe, encouraged by influential top tier contractors such as TenneT operating in the Netherlands and in Germany. There may be some signs of change on the part of the UK transmission companies It seems our assistance in 2024, laying ducting to facilitate 400KV AC placed underground as part of a project in Hirwaun,, working for Morgan Sindall, the Tier 1 contractors engaged by the Drax Group, whilst on a small scale, was the first instance of the use of cable ploughing to facilitate the undergrounding in the UK of electricity cable at 400kV.Our understanding is that the methodology was National Grid approved.
- Appropriate national policy and direction would encourage changing perspectives and practice.
- Certainty of policy could drive down costs and encourage progressive thinking and design.

This statement is provided as a contribution to the evidence base which the Independent Advisory Group has indicated that it is compiling, and by way of supporting the initiative of the Welsh Government in commissioning the Independent Advisory Group. It is hoped that this statement will assist with the objectives and purpose expressed by the Independent Advisory Group. I would reserve right to share the statement more widely at my discretion in circumstances when it might be helpful to do so.

[redacted]

ATP Cable Plough

Mae'r datganiad yn cyfeirio at glipiau fideo, ffotograffau a diagramau darluniadol ac ategol. Ar hyn o bryd nid yw'r adnoddau hyn mewn fformat hygyrch i'w cyhoeddi ar y we gyda'r testun hwn. Nid yw tudalennau gwe ATP Cable Plough, www.ATPcableplough.com, lle mae llawer o'r delweddau yn cael eu cadw, ar gael i'r cyhoedd ar hyn o bryd (Ionawr 2026) ar ôl i'r cwmni gael ei werthu. Gellir dod o hyd i ddelweddau tebyg ar dudalennau gwe eraill y cwmni, a darperir dolenni i'r rhain yn ymatebion y cwmni yn ddiweddarach yn y ddogfen hon.

The statement refers to illustrative and supporting video clips, photographs and diagrams. Currently these resources are not in an accessible format for web publication with this text. The ATP Cable Plough webpages, www.ATPcableplough.com, where many of the images are held, are not currently (January 2026) publicly available following the sale of the company. Similar images may be found in other company webpages and links are provided in the company responses later in this document.

Cwestiynau gan y Grŵp Cynghori Annibynnol a gyflwynwyd i ATP Cable Plough / Independent Advisory Group questions to ATP Cable Plough

Gofynnodd aelodau'r Grŵp Cynghori Annibynnol a allen nhw ofyn ychydig o gwestiynau i ATP Cable Plough ar ôl adolygu'r dystiolaeth a gyflwynwyd. Mae'r rhain isod, gyda'r ymatebion gan ATP Cable Plough.

Members of the Independent Advisory Group asked for a few questions to be put to ATP Cable Plough after reviewing the evidence submission. These are below, with the responses from ATP Cable Plough.

Replies to enquiries about cable ploughing:

This document is provided by [redacted], Managing Director and owner of A Thomas Plant Hire Limited [ATP Cable Plough] in response to enquiries received on 14/3/25 on behalf of the Technical Group of the Independent Advisory Group on Future Energy Grid in Wales as to a statement of evidence 26/1/25 provided to the Independent Advisory Group.

Information relevant to some of the questions raised has already been clearly set out and is evident within the detailed statement of evidence dated 26/1/25. However, I remain committed to help and inform the Independent Advisory Group and to contribute to the evidence base which the Independent Advisory Group is compiling, and with this in mind, enquiries and statements set out in the email received 14/3/25 are reproduced below in italics followed in each case by my replies or comments.

1.Can ATP please clarify their experience of the design and/or installation of high voltage power cables using the cable plough technique for power cables operating at 132kV to 400kV. Including information on both the operating voltage, cable design configuration and installed length as well as information on the installation method(s) used – e.g. whether ducts or a direct buried installation method.

The statement of evidence makes very clear that ATP is not responsible for the design of the power cables which it lays or for the design of the power cables which are placed into the ducts laid by ATP to facilitate the undergrounding of cables.

Relevant to design, the statement of evidence confirmed:

•Estimating the costs for a project I work from the drawings produced to me and the specifications with which I am presented. We carry out operations to correspond with the specific design drawings provided to us by the client. The reliability of those

costings and whether they could be suitably reduced is dependent on whether the drawings are as progressive and as reliable and as appropriate as possible and whether the scheme itself for which design is supplied is appropriate.

•Careful and appropriate design is also extremely important, in addition to careful routeing, not just as a means of satisfying the technical considerations for a project, but to do so in a way which can avoid unnecessary impacts and avoid unnecessary costs or at least minimise impacts and costs so far as possible

• ‘The design team for any given project would need to consider carefully and efficiently, the extent to which the ducting used, and the design of the cable to be used …. may remove or reduce the need for imported backfill under and around the installation – factoring in also the TR value of the ground, the diameter of ducting used, and the materials used in the casing of ducts such as MDPE ducts. It is important to encourage and achieve progressive design’

Relevant to installation of ducts/cables the statement of evidence confirmed:

‘ATP will lay cables direct into the ground using our equipment, but if the use of ducting is preferred, our equipment is used to lay the ducts.

‘The design team for any given project would need to consider carefully and efficiently, the extent to which the ducting used, and the design of the cable to be used.’

ATP would not be design responsible on a project, but a prudent designer would wish to have access to a range of data which can inform and determine design, and ATP, if so engaged, would contribute with suggestions on suitable routeing and information as to technical difficulties or opportunities and feasibility as part of the design process. ATP engage with multiple clients to contribute to the route and feasibility of installations. Design for cable ploughing can follow the same parameters and mindset of HDD installations, for which imported backfill is eliminated by a combination of cable and duct specifications.

ATP has experience of projects involving the placement underground of high voltage cables. From 132KV upwards, projects in which we have been involved have with one exception involved the laying of ducting to facilitate placing new electricity cables underground. Within the UK we laid the ducting for 400KV as part of the Hirwaun project for Drax. The Teir 1 contractor was Murphys & Sons. We laid the ducting using cable ploughing for the 220KV project known as Sea Green and we laid the ducting for the 132KV double circuit project at Portishead. Nexans pulled and jointed the cabling for the Sea Green project. ATP pulled the cables for Portishead, although more usually this would be undertaken by a sub-contractor or by another company working alongside ATP, and Balfour Beatty jointed. Prysmian were involved in pulling through and jointing the cabling for the Sea Green project. More recently we have worked with TenneT in the Netherlands on two projects, laying ducting for 150KV,

and laying cables directly for 220KV. The 150KV was circa 1km and the 220KV was circa 2.8 km. The 400KV ducting was a short distance.

It is important to emphasise, that companies with their own commercial interests or who are simply disposed to using pylons or open cut because that is how it has been done in the past, have limited the opportunities to progress forwards with new proven alternatives. In the UK this tendency has limited the opportunity to apply cable ploughing methods to new projects. I gave the example in my statement of evidence of engagement in a project which involved open cut, although I had submitted as an alternative a tender to cable plough the project, and that the open cut was far more impactful, took far longer and cost a lot more (to my benefit) than the option of cable ploughing which would have been so much more beneficial for the client.

The opportunity to be more progressive and constructive is available, transmission companies and DNOs are beginning to embrace the technology and methods which can be used as the portfolio of works increases.

ATP can assure that the equipment and expertise exists to be able to use cable ploughing to lay ducting together with associated materials if required to facilitate higher voltage cables.

Undergrounding of high voltage lines has plentiful precedent, here in the UK and Europe, and what cable ploughing offers is an alternative method of placing underground, which offers quicker delivery and far less impact compared to open cut, and yet which can place the ducting with the spacing and depth necessary.

Cable ploughing of ducts is very well established, and the technology is proven. Our equipment would have no problem handling ducting required for 132KV, 220kV, 275KV, 400KV, or in delivering over long distances.

The availability and feasibility and advantages of cable plough methods is being increasingly recognised and acknowledged, to facilitate higher voltage cables included.

Without being able to give project specifics at this stage, I can confirm that ATP has been involved in considering and advising and providing competitive tendering for separate proposals in and outside of Wales - for 132KV, 150KV and 275KV respectively, and for a longer 400KV route involving twin circuits, whilst in respect of projects intended for Wales ATP remains prepared to give the assistance which is necessary to provide accurate costings based on informed and previous design specifications and to assist in the exercise of careful and appropriate routeing with careful consideration, which is essential if costings are to be reliable for projects intended within Wales.

Presumably the Independent Advisory Group Technical Group will also have made enquiries of other cable plough contractors as to the nature and extent of their experience and projects undertaken, and the Independent Advisory Group will have

explored the use of cable ploughing for the 700km Sued Link project in Germany involving HV DC which I believe is at 525KV, and for the Sud Ost link in Germany at 380KV which involves cable ploughing circa 45km.

2. Does ATP have experience in the design and installation of power cables for such[400KV] applications? Or just the installation of the cable ducts?

The experience of ATP at 400KV involves laying the ducting to facilitate the installation of the cabling.

In addition, we have reviewed various design drawings for 400KV open cut, which also involved laying ducts with the cabling to be pulled through at the jointing station. Our cable plough machinery can be used to lay power ducts as shown in specification drawings, whereby the ducts can be laid at a constant depth and at the same distance apart and within prescribed bedding, as shown in the design drawings for the installation of 400KV by way of open trenching".

Has ATP confirmed Installation of cables in ducts reduces the heat dissipation that can be achieved:

There is some overlap between this question and the first question as to the role of ATP in design-please see the replies in response to question one. In addition, the statement of evidence confirmed: 'The design team for any given project would need to consider carefully and efficiently, the extent to which the ducting used, and the design of the cable to be used …. may remove or reduce the need for imported backfill under and around the installation. For projects completed by ATP to date on ducted HV installations backfill has been eliminated in the design phase. The approach has been to adopt the principles of conducting HDD where backfill is not viable, but deratings are applied.

Presumably the Independent Advisory Group technical group will have noted or explored the use and purpose of ducting, including MDPE ducts, for considerable undergrounding of high voltage cables which has been undertaken in the UK and more widely within Europe.

Installation in ducts is therefore typically a limiting factor for underground cable circuit capacity design.

This is presented as a statement rather than a question- the statement seems inconsistent with the use of ducting for higher voltage cables for completed projects and of course rather than ducting being a limiting factor ducting can be considered as an enabler, protecting the cabling placed within the duct and offering future proofing. MDPE ducting seems to offer very good protection and an extensive lifespan, so that if replacement, especially upgrade of cabling becomes necessary, the ducting whether placed by open cut or cable ploughing or for the exercise of horizontal direct drilling, enables cable to be pulled out and replacement or upgrade cable to be pulled through the ducts which would remain in position. As mentioned

elsewhere in these replies, cable and circuit design can facilitate a combination of cable and ducting which can eliminate the need for imported backfill.

Has ATP confirmed that that the same cable circuit capacity could be achieved by their proposed duct installation technique as with a conventional open trenching method?

This question seems to confuse, implying that cable plough would only be used for ducting whereas open cut would only be used for the direct laying of cable without protection in ducts. The correct position is that open cut can be used for laying cable directly in the ground and also for laying ducts to facilitate the pulling of cable through the ducts, and that similarly cable ploughing can be used for laying cable directly into the ground and also for laying ducts to facilitate the pulling of cable through the ducts.

I have stressed, that review of design drawings for the installation of 400KV facilitated by open cut undergrounding, confirms that by using cable ploughing the same end result can be achieved in terms of the depth and spacing (and imported backfill could be provided if necessary),so what is installed and its finished placement is as per the specifications for 400KV as shown in the design drawings, save installation using cable ploughing as an alternative method of delivery and installation to open cut is much quicker, far less impactful, and can save money.

Or could larger diameter cables potentially be required for cable installation in ducts compared with a direct buried approach?

High voltage installations would be installed in MDPE SDR11 or SDR17 ducts and avoid the direct lay of cables in select bedding. The ducts will offer the mechanical protection. Cable sizes are to be determined by the design team. In the cost calculations cable size may increase but avoiding backfill for the ducts can provide substantial cost and productivity savings to a project. On the high voltage projects in which we have been involved the design has removed the need for backfill to be used and it has been sufficient to lay the ducts to facilitate the high voltage cables without imported backfill.

The intended depth of the ducting to be laid is another consideration, whereby the correct depth applicable in given ground conditions can be an important factor-the advantage which cable ploughing offers is that it allows for precision as to the depth at which ducts/cables are laid. In the Zeeland project recently undertaken, everything stayed constant at a cover plough depth of 1.8m cover over the circuit, so there was no requirement for modifications. The equipment being used for the circa 45km installation of ducting for the 380KV project is identical to the equipment used by ATP.

3. In the Cable Plough Statement, up to 1.5km installation per day is stated with a route of 75km potentially laid in circa 112 days. This appears to consider duct installation only and not the full power cable circuit installation.

The statement of evidence makes clear that the distance per day figure is for direct laying using our cable plough equipment, whether by direct laying of cable into the ground if that is what ATP is requested to do or for the direct laying of duct into the ground if that is what a project requires. It is a measurement of distance per day for the cable ploughing equipment. Whilst in the past ATP pulled through the cable for the Brechfa project, for the PYC project, and for the Portishead project (Balfour Beatty jointed in each case) the statement of evidence made clear that ATP would not routinely involve in the work of pulling cable through ducts or jointing and the statement made clear that the pulling through and jointing of cabling is distinct from using the cable plough equipment to place underground and was not within the estimate of distance per day. 90% of the time ATP do not contract the pulling of cables through the ducts.'

However, I appreciate the opportunity through this question to expand on two important aspects.

First, to enlarge on the speed and distance at which cable or ducts can be laid into the ground using the cable plough equipment. The figure of 1.5km was provided in the statement of evidence as a distance which is comfortably achievable but a greater distance per day is possible. It takes organisation and requires a team working ahead of the cable plough equipment but if any preparatory work is undertaken including the laying out and welding of ducting this increases the speed of passage and 2km plus a day becomes possible. Again, this would be project specific but the ability to proceed along a route quickly in terms of laying into the ground using the cable plough machinery is a major plus.

Second, to confirm that pulling through and jointing could be taking place as the cable plough proceeds along the route. The statement of evidence confirms that the cable plough performs its function and moves on with good progress, and that the slit is closed by the excavator following behind in tandem. Therefore, the pulling through for each stretch completed, from the position of the joint bay, can begin as soon as the cable plough has moved onto the next section ahead on the route, and once pulling through has taken place for any two continuous sections, the jointing work within the connecting joint bay can take place.

What experience does ATP have in the installation of high voltage power cable circuits (e.g. at 132kV, 275kV and 400kV) in ducts and/or direct buried? Both for short and long distances (e.g. the 75km example quoted)?

This duplicates with earlier questions-please see the replies provided earlier within this document.

Is ATP able to provide more comprehensive information on the total installation time likely to be required for both ducts and also power cabling?

The pulling through of cabling is not expected to make any significant difference to the time estimate for placement by cable ploughing. It is useful and necessary for the

cable plough to get a little way ahead on the route before the work of pulling through begins but as the cable plough is proceeding along the route, the work of pulling through can be taking place whilst cable ploughing is in operation ahead on the route. A competent cable pulling contractor would have no problem in keeping up with progress. Jointing is expected to take four to five days for six cables to be joined within a joint bay, but the bigger contractors could engage more than one team for jointing and more than one team for pulling through. For example, there could be cable pulling gangs to match the number of cable ploughs in operation on the route with three or four jointing teams employed. Therefore, just as different cable ploughs can be engaged to work simultaneously on different sections of a project route, different teams can be engaged to work simultaneously to help speed delivery.

Has the information presented by ATP in considering a 75 km installation application taken into account requirements for cable jointing and the maximum size and length of cable which could feasibly be pulled through a duct for each voltage level?

This duplicates with earlier questions-please see the replies provided earlier within this document.

And is the overall time required to complete cable installation via this method anticipated to be quicker compared with a conventional direct buried solution?

Most certainly-I would expect cable ploughing over a route of circa 75km or over a meaningful distance to be far quicker than either open cut undergrounding or overhead lines with pylons. A distance of 1.5 km completed a day, possibly up to 2km or more using the cable plough for cutting the slit, laying the ducting as appropriate, and closing back, compared to an estimated 100-150 metres per day for open cut. Also, relevant to speed of restoration, as cable ploughing can minimise land disruption the restoration period can be a fraction of what is expected from open cut, and this can be very relevant, together with limiting the period during which a landowner is denied access to the easement strip or unable to access land divided off by the easement strip, towards driving down the compensation which would otherwise be payable to landowners for injurious affection and loss of revenue because of pylons or open cut.

While the installation of ducts can potentially be carried out relatively quickly, this does not necessarily translate to a shorter overall installation time. For example, if installation in ducts were to extend and complicate the actual power cable installation process.

This is presented as a statement rather than as a question. Neither is it correct. To correct this statement, please see the information presented within replies earlier in this document.

4. *What experience does ATP have with the installation of cables and/or ducts across differing types of ground conditions? A wide range of ground conditions are likely to be encountered across Wales including rock.*

ATP has a wide range of experience-this was confirmed in the statement of evidence. The statement confirmed:

• The enormous pulling force of the mobile winches and the tractive force is a big advantage, together with the adjustable outriggers on the plough. Each installation project starts with the power-winch being safely sited ahead of the Cable Plough in an area where it can secure itself by dropping its anchor into the ground. However, in the case of roadside installations, the winch is capable of gripping to the asphalt without the need of its anchor. It is important that the tracked crawler is well grounded, but the flexibility and manoeuvrability of the machines, provides a potential to work on significant terrain and gradient.

•We have been comfortable using the equipment on gradients up to 45 degrees. Some of the photographs included in the accompanying schedule of photographs illustrate work undertaken on significant gradients.

• The adaptability of the cable plough enables it to cope with a variety of surfaces, whether flat, hilly, or undulating terrain. The photographs for the Boat of Garten project displayed on our web- site, of which some are included within the schedule of photographs which accompanies this statement, are indicative of what can be achieved in terms of gradient and terrain.

•The cable plough equipment is suitable for various soil conditions, including sand, gravel, and moor. Difficult ground conditions have been encountered and managed. The hydraulically adjustable ripper shoe allows the desired depth to be maintained continuously, even with changing soil conditions, which allows work to be carried out without interruption and avoids costly reworking.

•The machinery is capable of operating in wet and adverse areas, such as across marshland, through ditches and even into rivers. For small rivers or tributaries, as the cable plough is classed as trenchless, we can plough across the riverbed. We can negotiate water crossings up to a depth of 1 metre. If a river is wide or deep or protected, then horizontal direct drilling could be a supplement used to accompany the work of the cable plough.

•When encountering hard rock or rock layers, we have been able to break it out first before continuing to cable plough. It may also be possible to route around hard rock. We were involved in the Boat of Garten (Vista) project in February 2020, as subcontractor for Morgan Sindall which was the Tier 1 contractor. Ground conditions were particularly hard in places with boulder fields and fractured rock sections, and a covering of deep peat in others.'

If it will offer assurance, contemplating possible routes for the proposed North Wales to South Wales link, and the routes proposed for more recent proposals for 132KV lines within Wales, I would anticipate that the best part if not all of the route could be cable ploughed, and as touched on above, more difficult conditions can be

addressed - careful routeing is an important factor, and likely the holistic planning which is now being considered can taper in to anticipated geological factors.

Can ATP demonstrate successful track record in the installation of power cabling in ducts for high voltage applications above 33kV using the cable plough technique where the installation has been accepted by a major utility company.

Yes- replies provided earlier in this document are relevant.

For SSE Renewables' Seagreen project which is quoted as a reference, the company advised as holding responsibility for the design, supply and installation of the c. 19.5 km of onshore and offshore cabling was Nexans. If ATP was engaged as a sub-contractor by Nexans to support the delivery of part of the overall project scope, this doesn't necessarily mean that ATP has had the opportunity to develop a comprehensive perspective on the overall cable design, supply installation and costs.

This is presented as a statement rather than as a question.

ATP sub-contracted to Roadbridge / Nexans for the work of pulling through and jointing, not the other way around as suggested.

In any event, the statement of evidence provided did not hold out in the way suggested by the statement.

Cable design and supply installation has been addressed in replies to earlier enquiries.

As to costs, the statement of evidence set out a number of considerations relevant to the costs of a project. The importance of routeing for each option, mistakes which can provide for inaccurate calculation of costs per kilometre, speed of delivery from cable ploughing as a means of driving down compound costs, minimised constraint costs, reduced costs in consequence of landowner co-operation, avoiding the need to underground existing utilities, and driving down fencing costs and compensatory payments to landowners by cable ploughing, avoiding property devaluation and damage to the economy, and saving the public purse from the need for compensatory payments for loss of value . In the statement of evidence, I did not hold out an overview of costings from projects in which I have been involved, and neither would I do so. I am only too aware that costs figures given at a certain date are likely to change or become outdated. I am also aware, and made clear in my statement of evidence, that generalised cost comparatives, which are based on unsupported assumption or insufficient evidence can be dangerous and unreliable, but also costings specific to one project can be quite different to the costings which are unique and tailored to the particular circumstances of another project. I made the point in my statement of evidence, that there are many variables which can affect cost estimates at any given time.

Within my statement of evidence I made the offer: ‘The ATP scale of charges per km for using our machinery to lay ducting, or to lay cable without ducting if preferred, is set out in a supplemental statement which I have completed, intended to be shared, subject to conditions, with the officers of Welsh Government serving as the Secretariat for the Independent Advisory Group on Future Electricity Grid commissioned by Welsh Government, if that information would be relevant and used to further or complete any case study or costs comparative to be pursued by the Independent Advisory Group.’ If that offer becomes relevant to the work of the Independent Advisory Group, there may now be a need to update figures set out in that supplemental statement.

Is ATP able to provide insight into what sections of the route used a cable plough technique and why? And also, why cable installation in ducts rather than direct burial was selected as preferred?

Reduced impact and speed of delivery were essential reasons for the selection of cable ploughing for this project. The Sea Green project involved passing through the site of a world-renowned golf course. There was a need to reduce so far as possible the time spent on site, and there was a need to ensure that the surface was back in use as soon as possible. Therefore, cable ploughing was preferred to open trenching, and of course overhead lines with pylons was not a credible option. I am aware that there was some regret, considering the speed and minimised impact that cable plough offered on this project in very wet and inclement weather, that the same method had not been applied more extensively for the remainder of the route.

Ducts offer the mechanical protection to the cable. If ever there was a fault in the cable, the cable can be winched out and replaced with the ducting in place.

With ducts in place, cable pulling works can commence at any time and not driven by factory lead times by the manufacturer. It allows the plough section to be connected to any open excavation section and the HDD’s with ease. Some of our clients are now installing larger ducts than required for future expansion to the network in decades to come. It offers flexibility to the installation.

5.National Grid’s technical documentation (e.g. document INT 45349) indicates that installation in ducts is typically a more expensive method to direct burial (c.f. Section 7)…. The presented costs and implementation durations presented by ATP in the Cable Plough Statement are very different for direct burial versus ducting (using cable ploughing). Which does not entirely align with the information which has been published by National Grid.

This is a statement rather than a question, but to comment, the technical document is over 10 years old, dated, and whereas ATP discuss advantages and potential cost savings from the use of ducts, ATP also sets out considerable detail relevant to cable ploughing as an alternative to open cut methods, which unfortunately was not covered or considered at all within the 2015 technical guide.

Section 7 says ‘’Direct burial is normally the cheapest method for the installation of underground cables where restrictions on land use are not an issue. Where there is a requirement to cross major roads or through urban areas the costs of this type of major excavation in terms of traffic management, construction and legal restrains can be considerable.’ – when is restriction on land use not an issue. Even if not confined by buildings, Ofgem licence holders must observe the Schedule 9 obligations to mitigate impacts, and relevant to minimising land impacts for the landowner and minimising environmental, biodiversity, heritage and archaeological impacts, restricting land use should be a relevant consideration every time. Section 7 of the technical guide contains a diagram showing an expansive width and noting that during construction the working width of the land needed is typically 40–65m for open cut. In contrast the statement of evidence confirms that based on 400KV design drawings which I have reviewed, using cable ploughing a double circuit at 400KV could be laid within a strip of circa just 9.4 metres.

Section 7 does indicate ‘An alternative, but more expensive method to direct burial is installation using ducts. The advantage of a ducted installation is that the ducts can be installed in shorter sections along the cable route leaving shorter sections of exposed trench, reducing risk and disruption to the general public.’- to lay shorter ducts for the reasons associated with open trenching in the manner envisaged in the 2015 document would unnecessarily increase ducting and operational costs. Longer lengths of MDPE can be preferable to shorter PVC ducts, and there are no such issues when ducting is laid by cable ploughing.

Section 7 is found within the document ‘Undergrounding high voltage electricity transmission lines - the technical issues’, issued by National Grid. No further information or explanation was provided within Section 7 to explain or justify or support the statements made suggesting a costs differential between direct burial of cables and the laying of ducts. It was not substantiated. It is important to remember that the technical guide was issued on 4 January 2015, over 10 years ago. The document also omitted any mention of cable ploughing and failed to factor in cable ploughing as an alternative method to open trenching or to consider the costs savings which might be achieved by using alternative available technologies.

In my experience the laying of ducts for higher voltages is far more expedient, for the reasons outlined earlier in these replies, but also any saving by avoiding the cost of ducting can be outweighed by additional time on the job with all the associated costs which that can involve. That was our experience in laying 220KV cables by direct burial in the Netherlands recently. Also backfill costs can be greater with direct laying of cable which is higher voltage.

Although cost is not mentioned in the Cable Plough Statement (beyond suggestion of a ‘significant reduction’ in time, money and risk), other statements made associated with cable ploughing has indicated an expectation that installation costs

would be cheaper than conventional burial methods and potentially on a par with overhead pylon installation.

This is presented as a statement and not as a question. It is not accurate as to the information about costs set out in the statement of evidence – please read the section on costs in the statement of evidence and please see the replies provided earlier in this document. The statement of evidence visited a number of important costs factors which could be reduced by cable ploughing, rather than just making a generalised comment on reduced costs.

The 'other statements' referred to could have made clear the potential which cable ploughing offers for significantly reduced impacts.

The question/statement does not make clear which 'other statements' it is referring to, but rather than commenting further on statements which have not been produced with the questions and which I have not seen, I will simply confirm that for the reasons outlined in the statement of evidence and earlier within these replies, there are certainly reductions to costs to be achieved by cable ploughing, reduced compensation for loss of land use being a prime example. Further, as made clear in the statement of evidence, there are so many variables which can affect cost estimates at any given time, costs figures given at a certain date can and are likely to change or become outdated, generalised cost comparatives which are based on unsupported assumption or on incomplete or insufficient evidence may be dangerous and unreliable, and costings specific to one set of circumstances have to be handled with some caution if attempting to apply to a different project with different features.

Is the ATP assessment making a like-for-like comparison? Or does the analysis potentially only consider part of the holistic cable installation requirements?

It is best to read the statement of evidence, and the replies provided earlier in this document as to the approach taken to costing comparatives.

6.I have one further question – our technical experts are particularly interested in the Seagreen project you were involved in, as a UK-based project that might serve as a very useful case study for the group or for Welsh Government. You worked with Nexans and SSE Renewables in that project – do you have contacts you could share we us within the project team for either or both organisations please, that we might ask more about the over-arching project and its design etc.?

ATP has established some excellent contacts and of course we would wish to protect and nurture the relationships which we have been able to develop. If there are specific questions or more general assistance which it will help to explore with contacts we have established, in relation to past projects in which we have involved or for a new case study , please let us know what is required and we can provide introduction or liaise to encourage co-operation and assistance, whether that is to help the Advisory Group or to assist the Welsh Government.

[redacted], ATP. 24/3/25

Mae ATP Cable Plough wedi cael ei werthu i GT Jones Contracting ers i'r deunydd uchod gael ei ddarparu.

ATP Cable Plough has been sold to GT Jones Contracting since the material above was provided.

Cwestiynau a gyflwynwyd i'r Diwydiant / Questions put to Industry

Anfonodd aelod o'r grŵp cynghori yr e-bost dilynol, ynghyd â'r datganiad cyntaf o dystiolaeth gan ATP Cable Plough at bum cwmni.

The following email, along with the first statement of evidence from ATP Cable Plough, was sent to five companies by a member of the advisory group.

I am a member of the Independent Advisory Group on Future Electricity Grid in Wales, commissioned and created by the Welsh Government.
The Advisory Group is looking at what undergrounding by cable ploughing can offer, as an alternative to overhead lines with pylons, and as an alternative to undergrounding by open cut methods.
The report of the Advisory Group will inform Welsh Government. It will help to inform the public debate. The Department of Energy Security and Net Zero (UK Government) has confirmed its interest in the work of the Advisory Group. The recommendations and principles which the Advisory Group are formulating can help inform policy on new electricity for conveying electricity, in Wales, in the UK more generally, and on a wider platform.
Would it be possible for your company to assist the work of the Advisory Group.

The Advisory Group has received a statement of evidence from [redacted], the Managing Director of the company ATP Cable Plough. With the permission of [redacted], a copy of the statement of evidence is attached, together with the photographs, video clips and diagrams referred to in the statement.

Would it be possible for you to read the statement and view the attachments. Could you then assist by responding to the following questions:

a) Are you aware of any amendment which can be made to correct or clarify any of the information provided in the statement?
b) Save for any correction or clarification which you may identify, is information provided in the statement correct and do you feel able to endorse and agree the statement?
c) Is there any information additional to that set out in the witness statement which you can provide, to help the Advisory Group gain a better understanding of cable ploughing, the methods and equipment involved, the technical possibilities, any technical limitations, comparative impacts from cable ploughing, and any relevant cost considerations?
d) Can you provide a little background information about your company including the number of years involvement in placing cables/ducts underground using cable plough equipment, and whether currently or previously your company has also involved in undergrounding using open cut/open trenching methods?
e) Would it be possible to list the projects which your company has undertaken, to facilitate underground installation of new cable for any voltage AC at 33KV or above, and involving HV DC. For each project listed, could you confirm the year,

the length laid using cable ploughing, whether duct laid or cable directly placed using the cable plough, the transmission or distribution owner, and the voltage?

f) If you are aware of projects involving the use of cable ploughing by any other company to help install ducts or cables for AC 33kv or above or HV DC could you identify the projects and who is involved.

Questions e) and f) are included as it could really help the Advisory Group to understand the extent to which cable ploughing is an established and proven method.

Your assistance and co-operation would be very much appreciated.

Ymatebion y diwydiant / Industry responses

1) Josef Schnell

From: [redacted]@josefschnell.de>
Sent: 13 February 2025 15:35
Subject: AW: Statement of evidence

Hello,

I´m sorry for the late answer.

thank you very much for your inquiry, we would like to answer your questions.

Also our Company Josef Schnell has been around since 1955.
We can now look back more than 70 years of experience with cable plough technology.

I also think that the cable plough technology needs to be brought forward.
The Cable ploughing I still an unknown topic.

For us there no more efficient solution for Laying cables or pipes.
- The high daily capacity
- Low fuel consumption
- No preparatory work which damages the natural environment

Are a small part of the advantages.

a) Are you aware of any amendment which can be made to correct or clarify any of the information provided in the statement?

From my point an excellent presentation and statement

b) Save for any correction or clarification which you may identify, is information provided in the statement correct and do you feel able to endorse and agree the statement?

We like to bring the ploughing technology forword

c) Is there any information additional to that set out in the witness statement which you can provide, to help the Advisory Group gain a better understanding of cable ploughing, the methods and equipment involved, the technical possibilities, any technical limitations, comparative impacts from cable ploughing, and any relevant cost considerations?

Attached is a presentation by josef Schnell

d) Can you provide a little background information about your company including the number of years involvement in placing cables/ducts underground using cable plough equipment, and whether currently or previously your company has also involved in undergrounding using open cut/open trenching methods?

We are the Josef Schnell company with 4 locations. For over 70 years we have embodied construction expertise, which has been carried on with the 3rd generation.

We are design the infrastructure of tomorrow.

e) Would it be possible to list the projects which your company has undertaken, to facilitate underground installation of new cable for any voltage AC at 33KV or above, and involving HV DC. For each project listed, could you confirm the year, the length laid using cable ploughing, whether duct laid or cable directly placed using the cable plough, the transmission or distribution owner, and the voltage?

Included in the presentation

Unfortunately my English is not the best, but I hope to be able to help you.
If you have any further questions please let me know.

Best regards
[redacted]
Oberbauleiter
Josef Schnell GmbH Bauunternehmung

Nid yw'r cyflwyniad cysylltiedig ar hyn o bryd mewn fformat hygyrch i'w gyhoeddi ar y we gyda'r testun hwn, fodd bynnag, gellir dod o hyd i ddelweddau a gwybodaeth ychwanegol ar dudalennau gwe'r cwmni.

The accompanying presentation is not currently in an accessible format for web publication with this text, however additional images and information can be found on the company webpages.

Josef Schnell

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2) IFK GmbH

From: [redacted]@ifk.at
Sent: 14 March 2025 07:51
Subject: AW: Statement of evidence

Hello

The information in the report is correct. We've laid approximately 500km of pipe in Germany using the same method. The only limitation is the installation depth of 2.30m.

Best regards from Austria

Mit freundlichen Grüßen aus Salzburg, [redacted]

Video 380kV Verlegung Niederlande:
https://www.youtube.com/watch?v=fNBDK2iwgnY&t=4s
Video 110kV Verlegung Deutschland:
https://www.youtube.com/watch?v=oViDLhcifKo&t=9s
Video Verlegung Stahlleitung DA400: https://www.youtube.com/watch?v=NyxScM7-TFc&t=238s
Video Verlegung 2x 20kV System:
https://www.youtube.com/watch?v=giQvIH5Stsk&t=8s

[redacted]
Geschäftsführung IFK GmbH

Fa. IFK Gesellschaft mbH
Siezenheimerstraße 29a
5020 Salzburg
Internet: http://www.verlegepflug.at/ (IFK Pflugtechnik)
http://www.ifk.at/ (IFK Handel)
https://www.freshfx.at/ (New Media)
Facebook IFK (Facebook)

FN 68789 k , Gerichtsstand Salzburg
Informationspflicht zum Datenschutz (DSGVO) siehe www.ifk.at

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3) Föckersperger

From: [redacted]@foeck.com>
Sent: 14 March 2025 18:48
Subject: AW: Statement of evidence

Dear [redacted],

sorry for the late response. Please see the attached comments regarding your letter.

a. Point 4. Amendment: Technical information: Continental Europe, North- and Southamerika, Africa, Asia and Australia
Comment 01: while the blade cuts open the ground, the slot behind it is widened and the slot is supported with a so-called laying “ chute” until the cable or pipe has been laid on the ground through this chute. during this laying process, the laying chute is pressed downwards by the frictional forces and the bottom of the trench is thus smoothed out properly. As this installation shaft is hinged, the cable or pipe is never subjected to a transverse load. The

manufacturer (Foeck) develops these patented installation shafts to the highest quality according to customer specifications. For quality assurance purposes, each installation shaft has its own number, which the customer can use to find out from the manufacturer which cable/pipe diameter this tool is suitable for.

b. In any case, I also find the information you received from [redacted] to be accurate and absolutely worth mentioning. There are still many people who aren't familiar with this system or even don't want to get to know it because it's too quick and inexpensive, saving large sums of money that would otherwise be shared among construction companies. In my opinion, it would make sense to reward engineering and planning firms with a bonus for a more cost-effective and innovative solution compared to the open-pit construction method, rather than making the remuneration dependent on a percentage of the construction cost (at least that's the case in Germany).
c. As mentioned in the letter, it is very important to inspect the project with a plow-laying specialist before issuing a tender to determine what is actually plowable. Their assessment of this represents capital savings and is a tremendous help with further planning. Well-trained and experienced personnel with well-maintained and safe machines are essential and ensure maximum quality and performance. s a manufacturer, Foeck attaches great importance to the quality of the installation and handling of cables and pipes. For this reason, we have introduced a quality label that offers clients and cable manufacturers the opportunity to find out whether the "chute" installation tool is actually suitable for their product. In this way, we want to clearly distance ourselves from users who work with self-made installation tools, causing damage to the cable and thus damaging our reputation and thus that of the installation plow. Another key difference from our competitors with self-propelled plows is that, thanks to the combination of cable winch and installation plow, we do not use vibration for installation (static plow), thus working very gently on the cables. Vibration can cause disadvantages such as loosening the soil, damage to the cables, premature wear of the machine, excessive noise generation, harmful whole-body vibration, etc.
d. We've been in this business for over 66 years (as a service provider until 2010 and as a manufacturer since 1958), and more than 500,000 km of cables and pipes have been safely installed worldwide using our Foeck installation system. More than 80 systems (winch and ploughs) and over 190 machines worldwide have been built and designed in my company since 1958. We develop installation tools (chutes) according to client specifications for all cable and pipe diameters up to 630 mm. We review feasibility and submit a proposal to the customer.
e. Our current project is Tennet's South-East Link (2x 525 kVDC), where we are laying two pipe assemblies (3 pipes + cover plate with warning tape) simultaneously, 1.5 m apart, and 1.8 m underground. For a bigger distance we use a single-chute with GPS guiding and recording. Since we haven't offered plowing services ourselves since 2010, it's difficult to say where my customers are currently. In any case, 33 kV and 110 kV (with/without protective conduit) lines are currently being laid. The 525 kVDC (with protective conduit) project is currently underway in Germany. (See photos). MV 33kV is continously installed all over Europe and North Amerika for

example in Poland, Austria, Germany, Slowakia, Scotland, Romania, USA, Chile.

If you need any more or detailed information, please let me know.

Mit freundlichen Grüßen
Kindest regards

Dipl.Ing. (FH)
[redacted] [redacted]
CEO
[redacted]
Eberspointer Str.6
D-84189 Pauluszell

www.foeck.com

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4) Spiderplow

From: [redacted] <@spiderplow.com>
Sent: 24 February 2025 16:19
To: Gary Jones Solicitors <@garyjonessolicitors.co.uk>
Subject: Re: Fw: Statement of evidence

Dear Gary,

Sorry that it took so long as I've been travelling most part of the past two weeks!

Please let me respond to your queries as follows!

Are you aware of any amendment which can be made to correct or clarify any of the information provided in the statement?

b)Save for any correction or clarification which you may identify, is information provided in the statement correct and do you feel able to endorse and agree the statement?
Being in this plowing business with only these plow machines since 1994 and having started operations in Australia, the US, Canada, Chile, the Philippines, India, Nigeria, Botswana, South Africa, Namibia and Germany from where we serve all of the European countries, I feel professionally capable of confirming [redacted] statement to 100%

c)Is there any information additional to that set out in the witness statement which you can provide, to help the Advisory Group gain a better understanding of cable ploughing, the methods and equipment involved, the technical possibilities, any technical limitations, comparative impacts from cable ploughing, and any relevant cost considerations? **Please see attached one of our brochures that give a pretty good understanding about these machines!**

d)Can you provide a little background information about your company including the number of years involvement in placing cables/ducts underground using cable plough equipment, and whether currently or previously your company has also involved in undergrounding using open cut/open trenching methods?
Having acquired over 50 of these machines in the past 31 years and having installed thousands of miles of fiber optic cables, electricity cables, medium and high voltage systems, water & sewer pipes, oil- & gas pipelines worldwide, I can gladly confirm that these machines are the best ones to do that kind of jobs. I would not buy/ use any other machines. However, the best machine is only as good as what the operators are!!!

e)Would it be possible to list the projects which your company has undertaken, to facilitate underground installation of new cable for any voltage AC at 33KV or above, and involving HV DC. For each project listed, could you confirm the year, the length laid using cable ploughing, whether duct laid or cable directly placed using the cable plough, the transmission or distribution owner, and the voltage? **We plow medium voltage cable systems (even plow in one single plow run up to three systems with one foot of spacing in between), almost every day. Currently we are on the German TenneT Sued-Ost-Link, plowing two 280 mm conduits with 5 feet of spacing plus several conduits, warning ribbon and tracer wires for a 525 kV system!**

f)If you are aware of projects involving the use of cable ploughing by any other company to help install ducts or cables for AC 33kv or above or HV DC could you identify the projects and who is involved. **We would be glad to assist/ be involved!**

Questions e) and f) are included as it could really help the Advisory Group to understand the extent to which cable ploughing is an established and proven method.
I have attached a few pictures of projects we did in the past 31 years at different parts of tworld.

Please dont hesitate to contact me should you need any more information!

PS.: I could also send you a link on Wetransfer to receive larger files/ vireos/ pictures! Please advise!

Best Wishes!

[redacted]
Founder & CEO
Gründer & Geschäftsführer
Spiderplow Group of Companies

CHERRY CREEK PLAZA I, 600 S. Cherry Street, Denver, CO 80246 USA
Oberhofener Str. 47a; D-84453 Muehldorf; Germany

Nid yw'r delweddau cysylltiedig ar hyn o bryd mewn fformat hygyrch i'w cyhoeddi ar y we gyda'r testun hwn, fodd bynnag, gellir dod o hyd i ddelweddau a gwybodaeth ychwanegol ar dudalennau gwe'r cwmni.

The accompanying images are not currently in an accessible format for web publication with this text, however additional images and information can be found on the company webpages.

www.spiderplow.com

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5) Tennet

Cyrhaeddodd yr ymateb a ddarparwyd gan Tennet ar ôl i ddrafftio'r adroddiad ddechrau ac felly ni chafodd ei ystyried yn fanwl gan y Grŵp Cynghori Annibynnol.

The response provided by Tennet arrived after drafting of the report started and were therefore not considered in detail by the Independent Advisory Group.

Mae'r sylwadau yn rhannu profiad technegol personol Uwch Gynghorydd ar Geblau a Llinellau yn Tennet, gweithredwr Rhwydwaith Trawsyrru yn yr Almaen. Nid yw'r sylwadau o reidrwydd yn bolisi ffurfiol Tennet, nac yn farn y cwmni ar unrhyw ddatblygiadau nad ydyn nhw'n meddu arnyn nhw.

The comments are a sharing of the personal technical experience of a Senior Advisor on Cables and Lines at Tennet, a Transmission network operator in Germany. The comments are not necessarily Tennet's formal policy, or the company's views on any developments that are not their own.

Mae'r sylwadau'n cefnogi'r papur gan ATP Cable Plough, gan gyd-fynd ag adborth gan y cwmnïau eraill . Cynigiodd gyflwyno dealltwriaeth fanylach mewn cyfweliad, fodd bynnag, nid oedd y Grŵp yn ystyried tystiolaeth newydd ar yr adeg honno.

The remarks are supportive of the paper from ATP Cable Plough, aligning with feedback from the other companies above. He offered to provide a more detailed insight in interview, however the Group was not considering new evidence at this point.