Cushnie Farm PWS- Groundwater Spring

3.5.11 The Cushnie Farm PWS is a spring source located in a topographic hollow around 400 m north of Cushnie Farm (**Plate 13.2.19: Cushnie Farm PWS, topography and indicative flow paths (blue arrows)**). Details about the PWS is based on reports from the local landowner and from Aberdeenshire Council PWS data. The spring supply has reportedly never dried up and was previously utilised as a domestic supply for five properties in the area. These properties have recently been connected to the Scottish Water Mains by the landowner, but the PWS is still used for general farm use.

3.5.12 The PWS is located ~180 m south of the proposed temporary access track to the proposed tower S28. OS 1:25k mapping and site survey indicates that there are no surface water flow pathways from the proposed track towards the spring PWS abstraction point. The sensitivity of the PWS is low (as it is for agricultural use) and the magnitude of change is negligible. Therefore, the significance of the effect of the Proposed Development on the PWS is **Negligible** and no additional mitigation is required.

3.5.13 Monitoring of the spring will be undertaken before, during and after construction. Monitoring will be undertaken from the spring or farm supply itself.

Plate 13.2.19: Cushnie Farm PWS, topography and indicative flow paths (blue arrows)

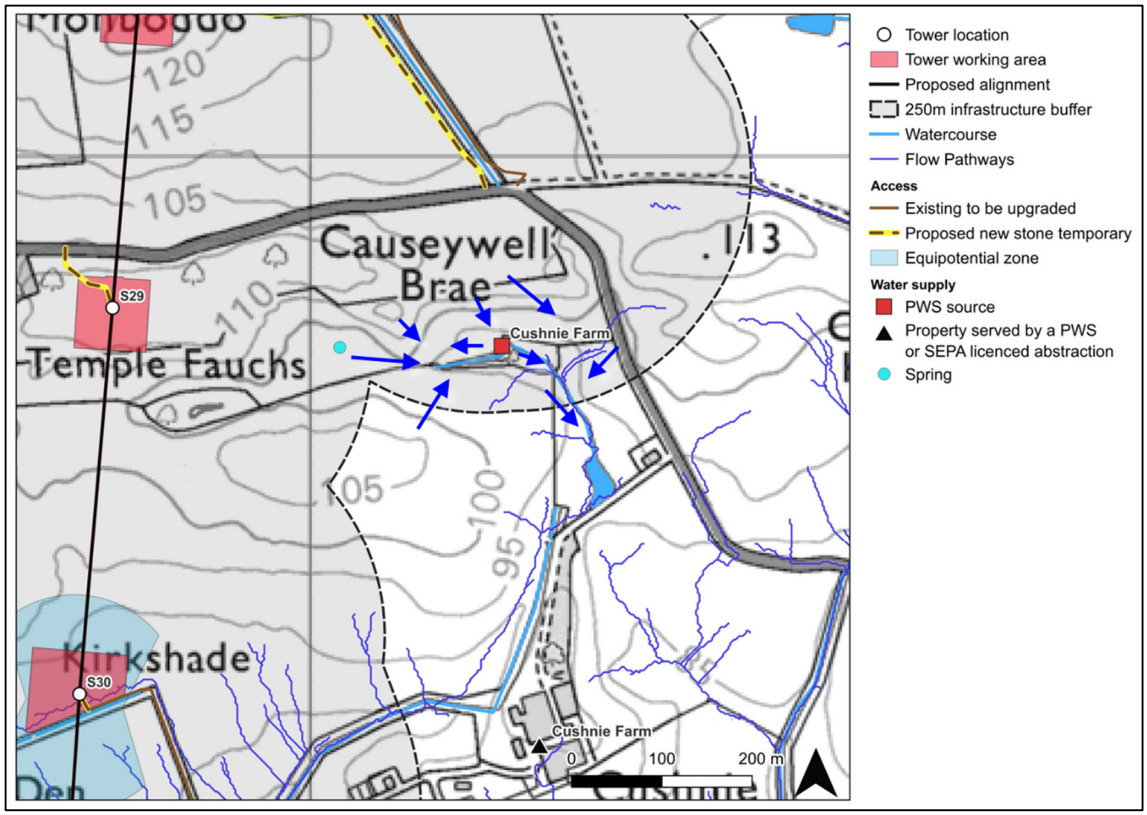


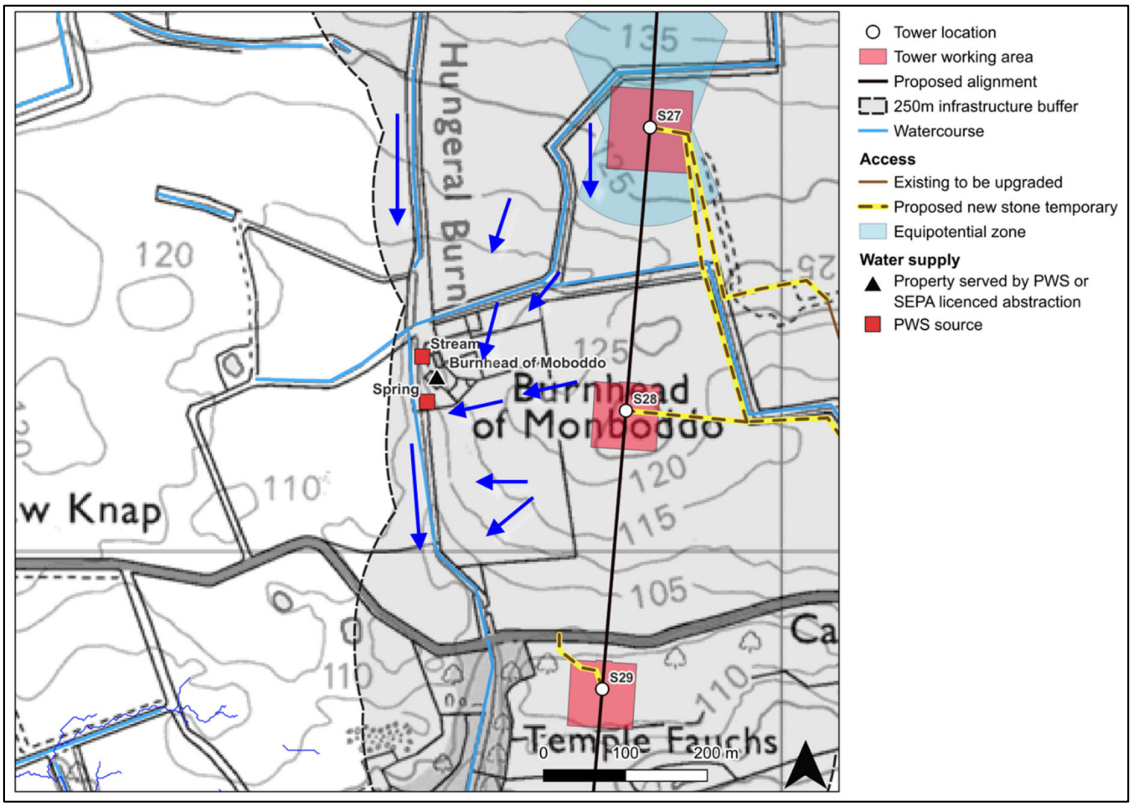
Photo 4: Cushnie Farm spring abstraction source, the spring water can be seen running through this depression

Burnhead of Monboddo PWS- Groundwater spring and surface water abstraction from Hungeral Burn

3.5.14 There are two PWS sources serving the property at Burnhead of Monboddo, a spring and a stream supply (**Plate 13.2.20: Spring and stream PWS at Burnhead of Monboddo, showing topography and indicative flow paths (blue arrows)**). The location of the spring is unknown by the resident, but historic mapping indicates that the spring is located close to the property, on the south side of the house, just east of the Hungeral Burn. The PWS is used for domestic, livestock and general farm use. The resident notes that the supply is very reliable and has never dried up. The PWS supplies only one property, Burnhead of Monboddo, with up to six people using this supply in the property.

3.5.15 Tower S28 working area would be located ~205 m to the east of the spring abstraction at the top of the hill at an elevation of ~126 mAOD. The spring is located downslope close to the Hungeral Burn at ~110 mAOD. There is a low likelihood that tower S28 may affect the quality of the supply at the spring through runoff affecting the PWS recharge. There is no LiDAR currently available, however OS 1:25k mapping indicates that there is likely a flow pathway towards the spring. Groundwater levels at the spring are likely predominantly controlled by water level in the Hungeral Burn, but there is also likely to be minimal recharge from the surrounding hill slopes. The magnitude of change is therefore considered to be low and the sensitivity of the PWS is medium. It is considered that tower S28 would not affect the quantity of water at the spring and the significance of effect on the spring PWS without additional mitigation is **Minor**.

Plate 13.2.20: Spring and stream PWS at Burnhead of Monboddo, showing topography and indicative flow paths (blue arrows)



3.5.16 The second source at Burnhead of Monboddo was noted as a stream supply from Hungeral Burn which was observed during site visits in 2024. There is evidence of this being installed on Google Maps Street View in October 2008, supporting the view that abstraction noted during the site visit is an additional source. PWS abstraction is located just north of the Burnhead of Monboddo property at the Hungeral Burn. This PWS likely serves the four horses noted by the resident, as the pipework appears to be connected to the stables.

3.5.17 Tower S28 working area would be located ~215 m east of this PWS abstraction. Additionally, towers S27, and S26 would lie within the catchment of the Hungeral Burn, upstream of the abstraction point. There is no available LiDAR for flow pathway analysis, but 1:25K OS contour mapping indicates that towers S28, S27 and S26 have potential to affect the quality of water at the PWS, via runoff. Ground level from these towers slope downhill into the Hungeral Burn, either directly or via minor tributaries of the Hungeral Burn, which feed in the Hungeral Burn just upstream of the abstraction point for the PWS.

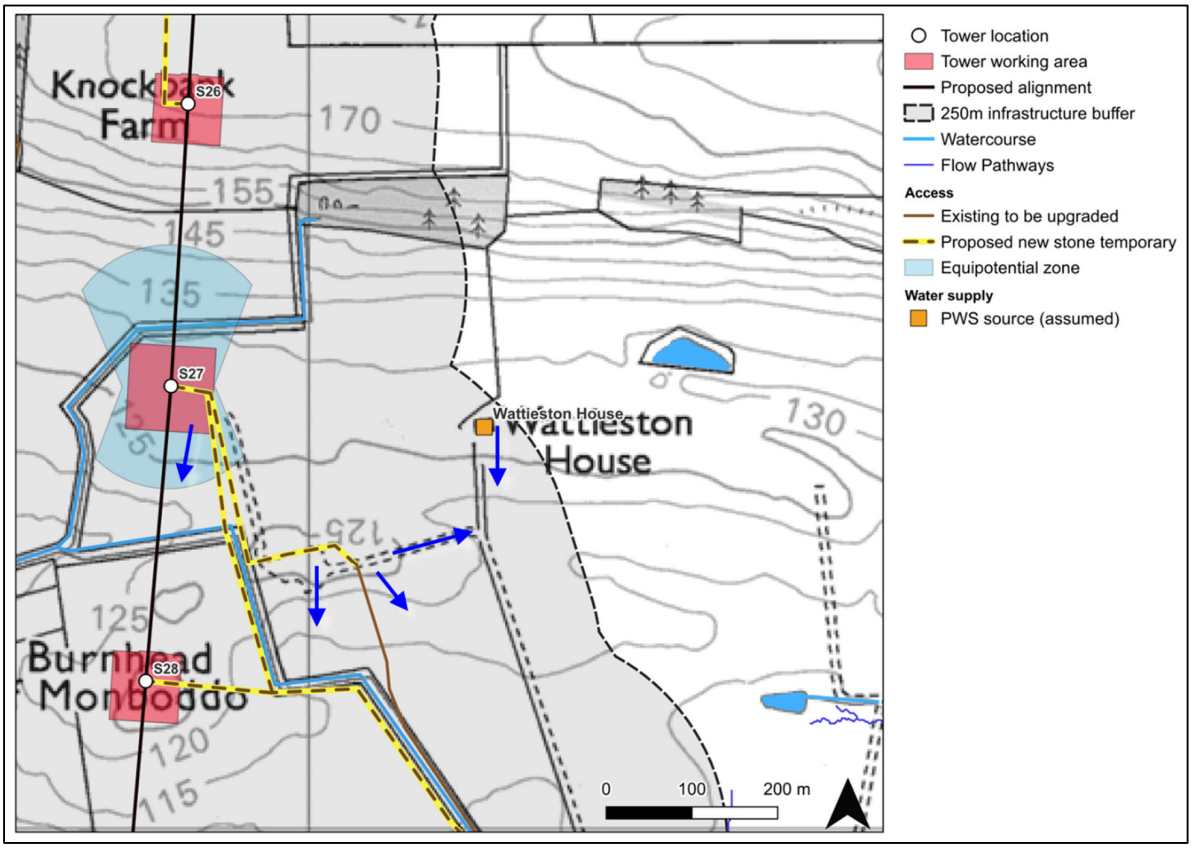
3.5.18 Several proposed trackway and access tracks in the area to Towers S28, S27 and EPZ positions have the potential to result in construction runoff to the smaller watercourses/tributaries upstream of Hungeral Burn and the PWS abstraction point. The sensitivity of the stream supply is low (as it is for livestock) and the magnitude of change is low. With applied mitigation measures in place, the significance of the effect on the stream PWS is **Minor**.

3.5.19 Additional site-specific measures will be set out in the CEMP to minimise the risk of surface water runoff draining from the construction site to the burn and PWS sources (eg swales, settlement ponds, silt fences etc). Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by an ECoW, and monitoring would be at tap of the supplied property. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new water supply for the affected property or provide a connection to the Scottish Water mains.

Wattieston House- assumed PWS

3.5.20 Wattieston House is likely to be served by a PWS however a lack of information from the resident and the nearby area means that this conclusion is uncertain. A questionnaire was sent to the resident but no response was received. This was followed up by a visit to the property to try to speak to the resident but the resident was not available. There are no Scottish Water assets indicated in the nearby area, with the nearest pipes running along Glenbervie Road 760 m northwest of the property. Nearby properties at Burnhead of Monboddo and Cushnie Farm are known to have PWS so it is likely that Wattieston is also supplied by a PWS. For the purposes of this assessment, the PWS is assumed to be at the property itself. This is shown in **Plate 13.2.21: Wattieston House assumed PWS, topography and indicative flow paths (blue arrows)**.

Plate 13.2.21: Wattieston House assumed PWS, topography and indicative flow paths (blue arrows).



3.5.21 Wattieston House is located 220 m northwest of a new temporary track connecting an existing track to tower S27. The property sits marginally upslope of the new track with an elevation difference of ~1 m. OS 1:25k contour mapping indicates that any potential sediment/runoff pollution arising from the construction of the track is likely to drain to the south or be routed along the existing tracks, away from the property, and will not impact the PWS. Excavations for the new track could have a slight, temporary impact of low magnitude on groundwater quantities feeding the assumed PWS by temporarily lowering the groundwater table in the vicinity of the property.

3.5.22 Further investigation into whether this property is served by the PWS will be required before groundworks commence. The sensitivity of the assumed PWS is medium. The significance of effect on the assumed PWS, if present, without additional mitigation is **Minor**.

3.5.23 Additional consultation will be undertaken to ascertain the exact location of the assumed PWS (if it does exist) serving this property. Monitoring of the assumed PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from the tap at the supplied property location. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during

construction. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new private water supply for the property or provide a connection to the Scottish Water mains.

Inches Cottage and Farm

3.5.24 Inches Farm PWS is a well located ~125 m north of the Inches Farm (Shown in **Plate 13.2.22: Inches Cottage and Farm PWS, topography and indicative flow paths (blue arrows)** and **Photo 5**). The PWS supplies at least 12 known properties in the Glenbervie area, including Glenbervie Church and Inches Farm which keeps around 200 animals. There is no additional information on the supply at the time of writing (eg depth of well) except that it is capable of supplying up to 18 m3/day and that Aberdeenshire Council holds sample data from 2023 and 2024 on the water quality.

Plate 13.2.22: Inches Cottage and Farm PWS, topography and indicative flow paths (blue arrows)

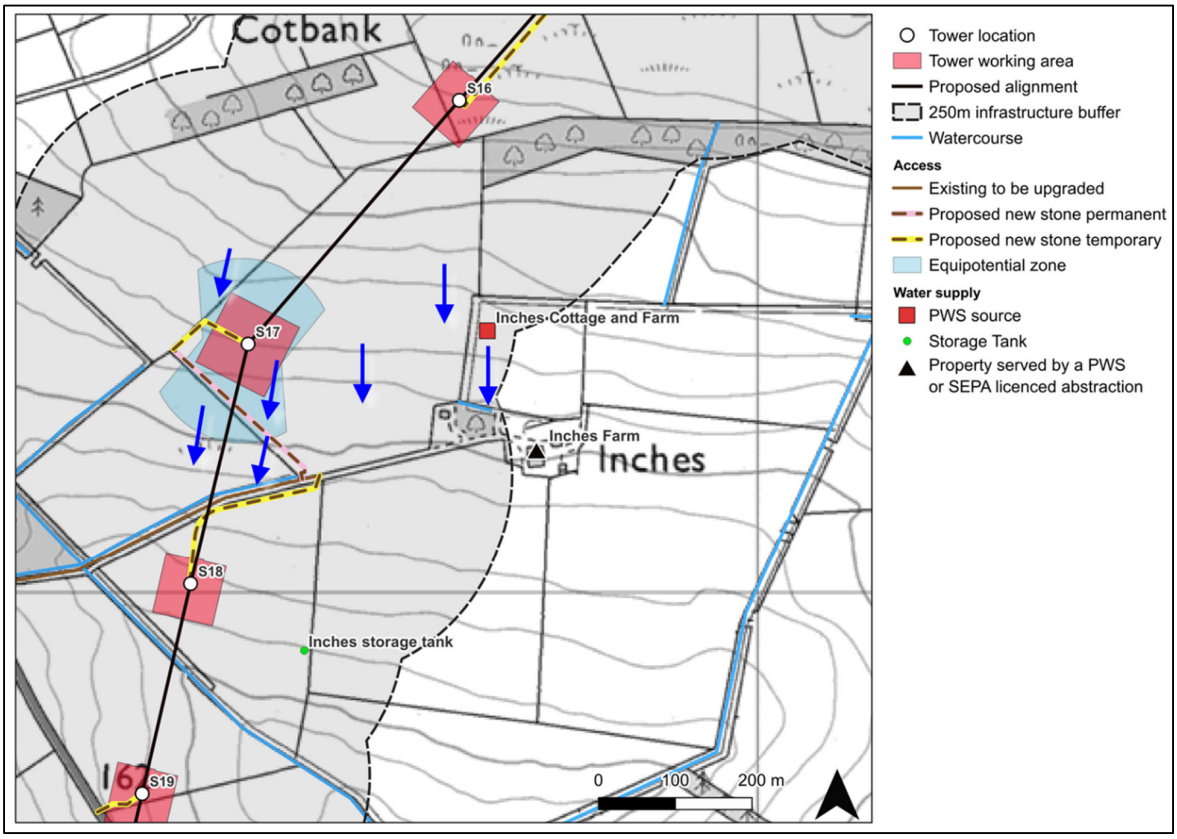


Photo 5: Inches Farm Well, which supplies numerous properties in Glenbervie, Inches Cottage and Farm

3.5.25 The well is situated 245 m east of the working area around tower S17 and 312 m from the tower itself. The tower and working area are located at approximately the same elevation as the PWS, meaning that there is potential for infrastructure excavations to penetrate the groundwater table, reducing the groundwater quantity/ groundwater level at the well. Groundwater levels have been noted to be high in this area by local residents. There is not any currently available data on groundwater levels but monitoring will be carried out prior to any construction activities. Excavation also has potential to affect groundwater quality adversely. Based on OS 1:25k mapping, there is also potential for sediment/runoff pollution from construction activities from tower S16 upslope of the well to affect groundwater quality at the PWS.

3.5.26 The well feeds into a storage tank which is located 480 m southwest of the well and downslope of the farm. Assuming the storage tank is raised above the ground and covered, surface water flow pathways draining to the tank from the proposed new access track to the north will be unlikely to affect the water quality. The exact location of the pipework is currently unknown. There is a very minimal risk of new track infrastructure compromising the pipework integrity based on the well and storage tank locations.

3.5.27 The magnitude of impact at the PWS is assessed to be medium. The sensitivity of the PWS is medium. The significance of the effect on the PWS before additional mitigation is **Moderate**.

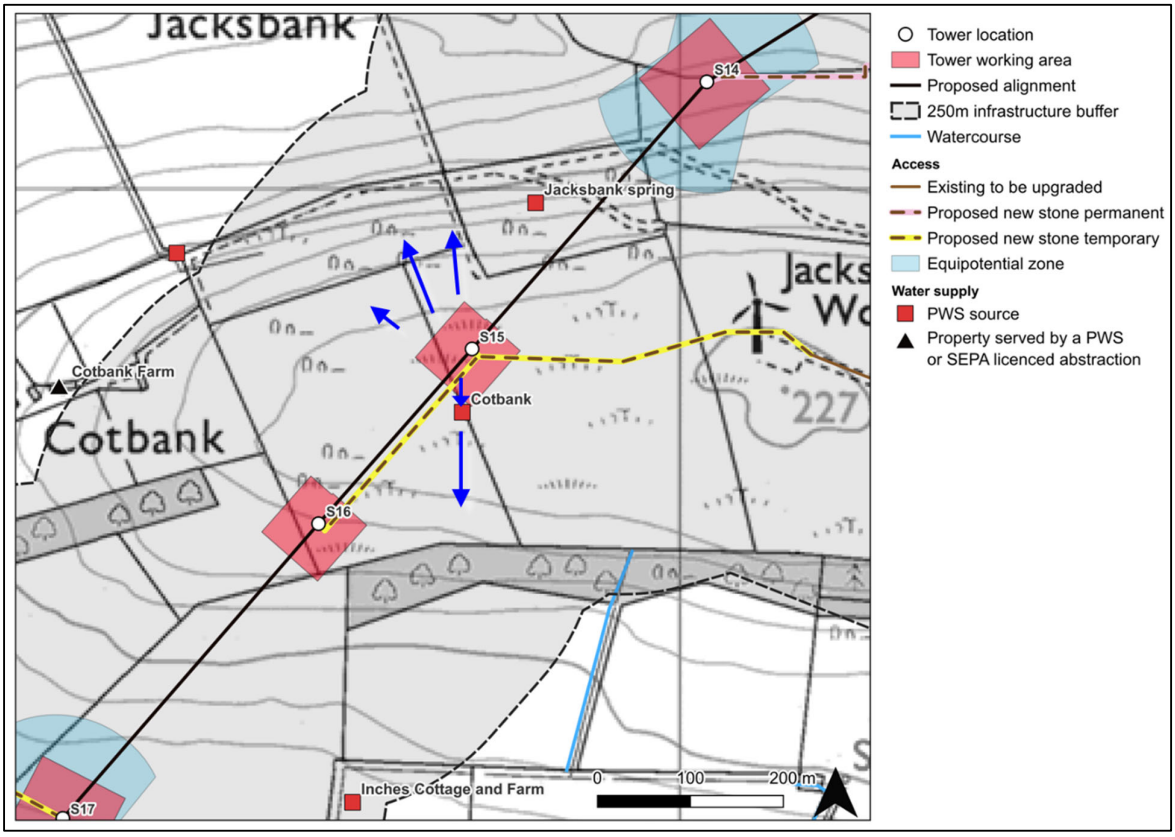
3.5.28 A detailed investigation of the pipework prior to construction will be carried out and cognisant during construction to ensure the pipes are avoided or managed accordingly. This will be set out in the CEMP. Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from the tap at the supplied property location. If locally raised groundwater levels are identified during site investigations for towers, suitable engineering construction measures will be employed or the towers will be microsited appropriately. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new private water supply for the supplied properties or provide a connection to the Scottish Water mains.

Cotbank PWS- Groundwater spring abstraction

3.5.29 Cotbank PWS is a subsurface spring and well that reportedly feeds several properties in the local area, which lie outwith the buffers of any infrastructure (**Plate 13.2.23: Cotbank PWS, showing topography and indicative flow paths (blue arrows)**). The properties served include nine houses, two farms and three steadings, serving up to 24 individuals. The spring water has been tested five times in the past 35 years. Abstraction rates are unknown. The PWS is utilised for domestic, livestock, general farm and commercial purposes. The resident reports that the underlying rock is '*rotten and prone to fracture*' and that the spring water has a high copper content from the

underlying geology. The resident reports a high groundwater table in the area, however there are no British Geological Survey (BGS) borehole records in the nearby area to confirm this. From discussions with residents, it is understood that Scottish Water has previously attempted to provide a mains connection to the area, but several residents noted that this failed to supply adequate pressure for any supply.

Plate 13.2.23: Cotbank PWS, showing topography and indicative flow paths (blue arrows)



3.5.30 The PWS spring abstraction point is located near the top of the local hill, to the west of Jacksbank Wind Farm. The spring is located ~10 m southwest of the proposed tower S15 and 62 m south of tower S15 itself. The PWS source is also around 160 m northeast of the tower S16 working area. A section of temporary track linking these two towers is located around 25 m northwest of the spring at its closest point. Flow pathways analysis and OS 1:25k mapping indicates that there no surface water flow paths from infrastructure towards the PWS abstraction point. There is, however, significant potential for the excavation required for towers S16 and S15 to affect the quantity and quality of groundwater supply at the PWS so the magnitude of change is considered medium. With the sensitivity of the PWS medium, the significance of effect on the PWS without additional mitigation is considered to be **Moderate**.

3.5.31 Additional site-specific measures will be set out in the CEMP to minimise the risk of surface water runoff draining from the construction site to the PWS source (eg swales, settlement ponds, silt fences etc). Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by an ECoW, and monitoring would be at the source location (ie the well). If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. The contractors will have a supply of bowsers ready to deploy to affected PWS, if required. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new water supply for the affected properties or provide a connection to the Scottish Water mains.

Jacksbank PWS- Groundwater spring and borehole abstractions

3.5.32 The properties around Jacksbank are served by two PWS: a spring and a borehole (**Plate 13.2.24: Jacksbank spring and borehole, showing topography and indicative flow pathways (blue arrows)**). The borehole

abstraction source area by the cottages is shown in **Photo 6** and the spring source area on the hillside in **Photo 7**. Between the two PWS sources, they serve four properties: Jacksbank Farm, Jacksbank House and 1 and 2 Jacksbank Cottages, all located to the north of the spring. One of the properties is tenanted. The sources supply 10 people and 200 cattle. The resident stated that the spring partially dries up in Summer.

Plate 13.2.24: Jacksbank spring and borehole, showing topography and indicative flow pathways (blue arrows)

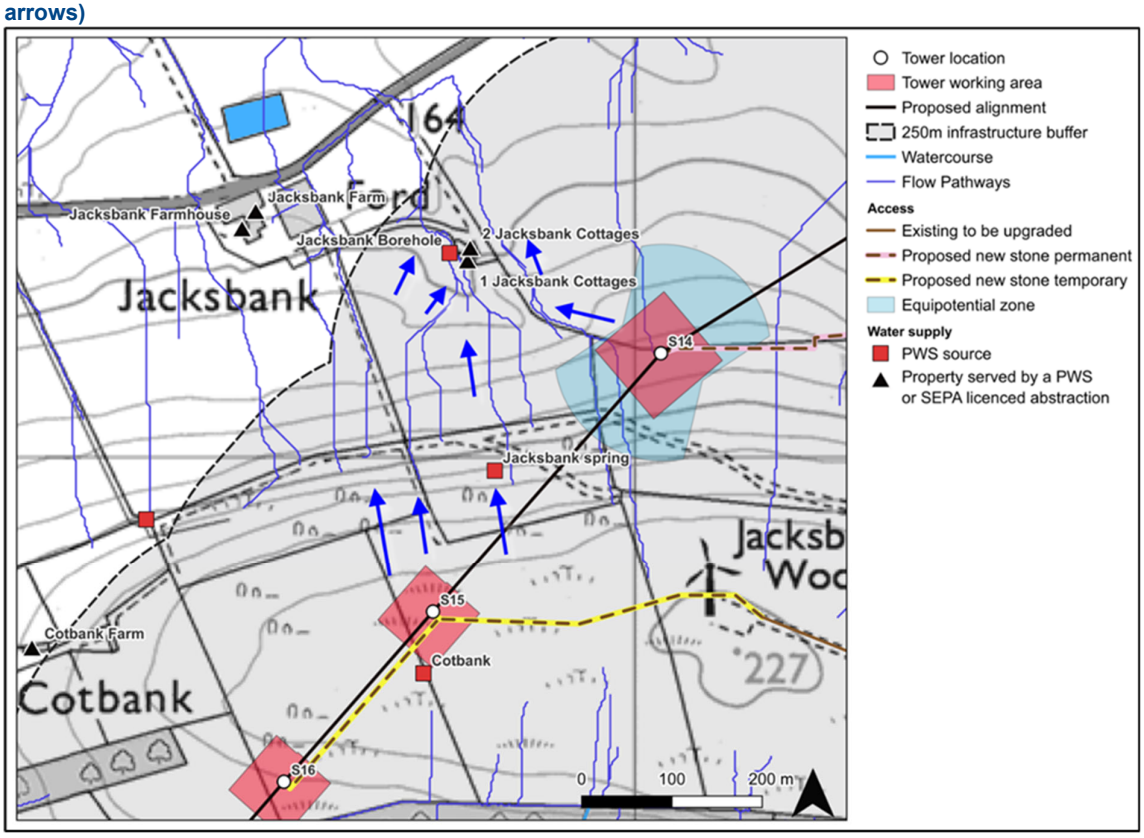


Photo 6: Jacksbank Cottages, the borehole abstraction is noted directly beside the north (left) cottage

Photo 7: The spring serving Jacksbank lies at the top of the line of dark vegetation, easily visible on the hillside

3.5.33 The spring is situated on the steep, northern slope of the hill to the east of Cotbank, with Jacksbank Farm lying to the north. The spring lies 130 m northeast of the proposed tower S15 working area and 170 m southwest of tower S14 working area. The spring is located at around 205 mAOD; tower S15 would be at a higher elevation at around 221 mAOD and tower S14 at a lower elevation of around 192 mAOD. Excavation activities at tower S15 are unlikely to impact groundwater levels at the spring as there is an elevation difference of ~20 m. However, excavation activities at tower S14 have the potential to temporarily impact groundwater levels at the spring. Surface water flow pathway analysis indicates that surface water will likely flow downslope to the east of the spring from tower S15 and not flow directly towards it. Tower S14 would be downslope of the spring, hence there are no risks from surface water runoff during construction of the tower. However, the temporary access track to tower S15 has the potential to impact the spring from surface water runoff during construction activities. The magnitude of impact on the PWS is considered to be low. The sensitivity of the PWS is medium, and the significance of effect on the spring source before additional mitigation is **Minor**.

3.5.34 The borehole is located ~190 m northwest of the proposed tower S14 working area. The resident noted that water is fed into a storage tank but did not provide its location. The borehole is adjacent to Jacksbank Cottages, and the resident noted that it serves both the Jacksbank Cottages 1 and 2, alongside the spring. The borehole does not run dry. Tower S14 would be situated upgradient of the borehole. Due to the elevation difference of ~18 m, groundwater levels are unlikely to be affected. Underlying topography and flow pathway analysis indicates that the tower would drain north and northwest, generally avoiding the PWS, but there is very limited potential for surface water runoff during construction to affect the groundwater recharge for the borehole. With the magnitude of change considered low and the sensitivity of the PWS medium, the significance of effect on the borehole source before additional mitigation is **Minor**.

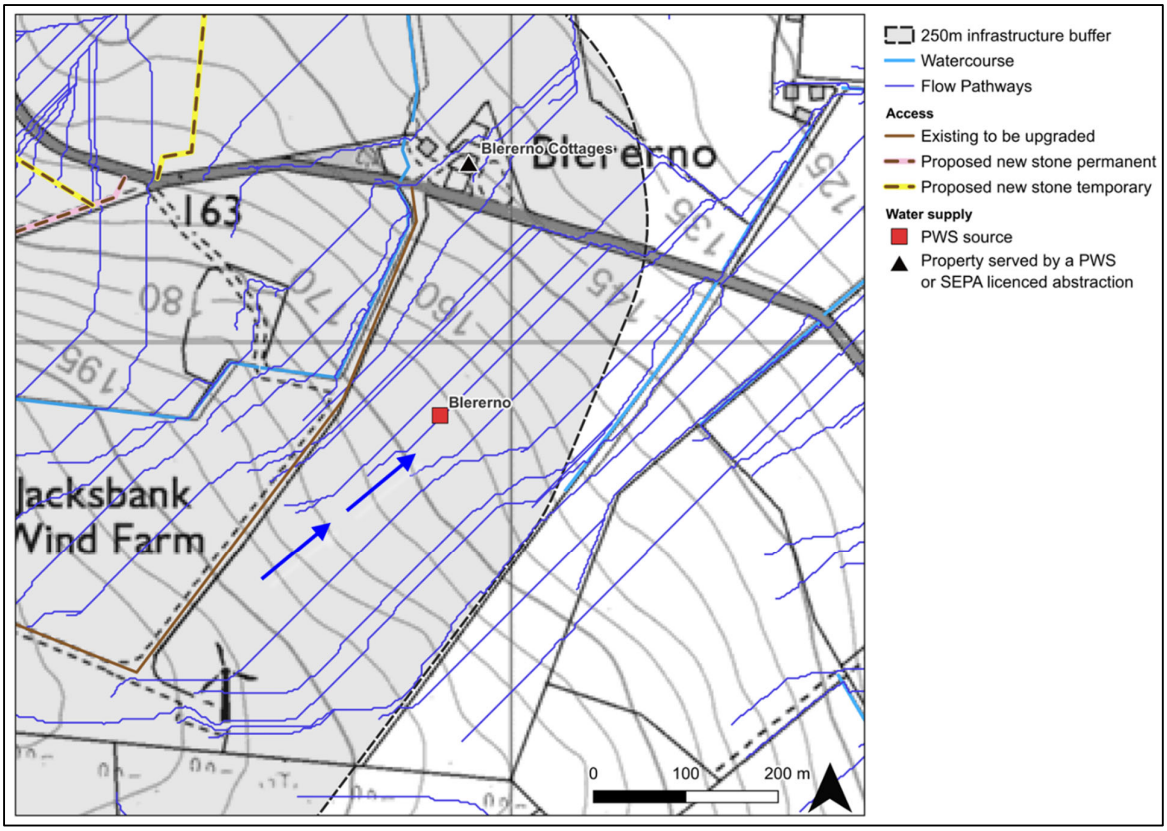
3.5.35 Additional site-specific measures will be set out in the CEMP to minimise the risk of surface water runoff draining from the construction site to the PWS source (eg swales, settlement ponds, silt fences etc). Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by an ECoW, and monitoring would likely be at the source locations. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the Additional Mitigation will include a

commitment from the Applicant to provide a new water supply for the affected property or provide a connection to the Scottish Water mains.

Blererno PWS- Groundwater Well

3.5.36 Blererno PWS is a well located in an agricultural field ~280 m south of the two properties it serves (Blererno Cottages) and 103 m east of an existing access track which would be upgraded (**Plate 13.2.25: Blererno PWS, showing topography and indicative flow pathways (blue arrows)**). The track currently gives access to Jacksbank wind farm. The PWS is situated on the northeastern slope of the hill on which Jacksbank wind farm is positioned. A supply reference for this source is provided by the Aberdeenshire Council (71650) however the Council's grid reference shows the PWS to be 76 m south of the grid reference provided by the resident. Based on satellite imagery, it appears that there may be two well structures, with one structure 22 m west of the coordinates given by the resident. It is equally possible the Council has the wrong coordinates. Regardless, both coordinates are a very similar distance from the track. The existing track to the west of the well runs perpendicular to the contours and therefore generally drains downslope.

Plate 13.2.25: Blererno PWS, showing topography and indicative flow pathways (blue arrows)



3.5.37 Flow pathway analysis using available LiDAR DTM (Digital Terrain Model) data does indicate surface flow pathways from the track further upslope, but this is considered unlikely to impact groundwater quality at the well. Since no excavation will be required for upgrading the track, there will be no effect on groundwater levels, resulting in an impact of negligible magnitude. The sensitivity of the PWS is medium and the significance of the effect on the well is **Negligible** and no additional mitigation will be required.

3.5.38 Monitoring of the well will be undertaken before, during and after construction. Monitoring will be undertaken from the well itself.

Fetteresso Substation PWS - Rainfall Capture

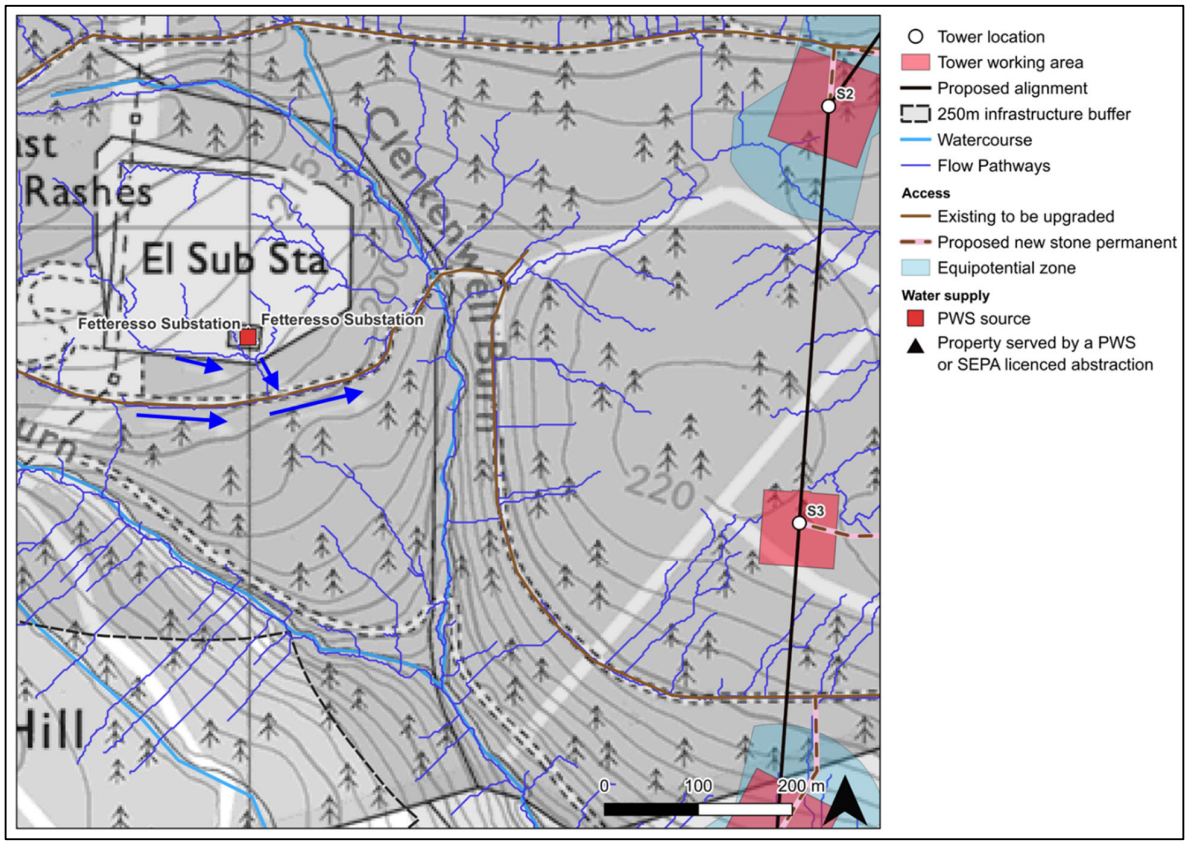
3.5.39 Fetteresso Substation is a rainfed PWS servicing the existing Fetteresso substation building, which is located 70 m north of existing track that will be upgraded and used for the Proposed Development (**Plate 13.2.26: Fetteresso Substation PWS, showing topography and indicative flow pathways (blue arrows).** The rainfall capture and

collection apparatus is located on the roof of the substation and subsequently there is no 'catchment' flowing towards it. A supply reference for this source is provided by the Aberdeenshire Council (175).

3.5.40 No flow pathway analysis is required as the PWS captures rainwater directly from rainfall and is located on the roof. Therefore, there is no potential for sediment/runoff pollution from construction activities and the PWS is not influenced by groundwater levels. The magnitude of change is therefore negligible and with the sensitivity considered medium, the significance of the effect on the PWS is **Negligible** and no additional mitigation will be required.

3.5.41 No monitoring of Fetteresso PWS is proposed, as the PWS is rainfed and is located on the roof, so it cannot be affected by the Proposed Development.

Plate 13.2.26: Fetteresso Substation PWS, showing topography and indicative flow pathways (blue arrows).

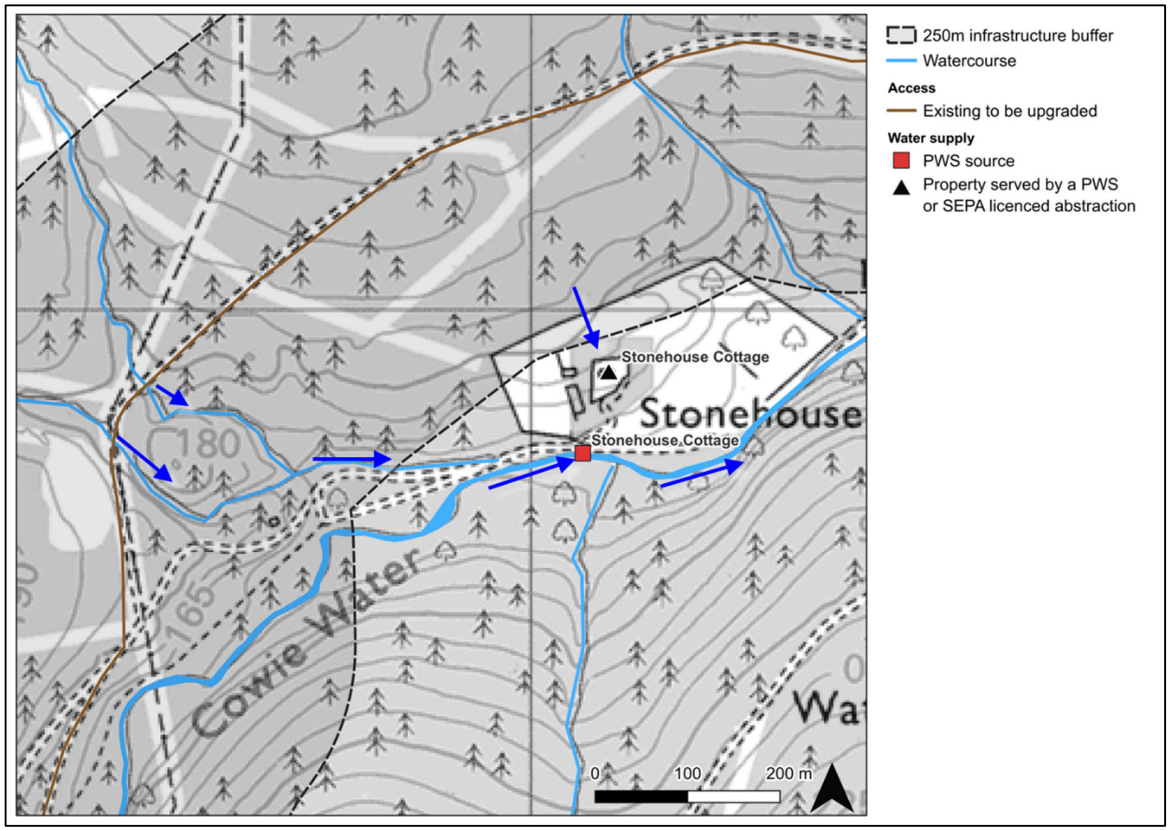


3.6 Section E

Stonehouse Cottage PWS – Surface Water abstraction from Cowie Water

3.6.1 Stonehouse Cottage PWS is a direct watercourse abstraction from the Cowie Water, ~500 m downstream (east) of the existing track, which will be used during construction (**Plate 13.2.27: Stonehouse Cottage PWS, showing topography and indicative flow pathways (blue arrows)**). The abstraction serves Stonehouse Cottage and has been utilised for 30 years, with no issues with water quality or quantity. Water quality is noted as consistently very clean. No other additional information such as abstraction rate was provided.

Plate 13.2.27: Stonehouse Cottage PWS, showing topography and indicative flow pathways (blue arrows)



3.6.2 Coordinates provided by the resident indicates that the PWS abstraction from the Cowie Water is located just south of Stonehouse Cottage, downstream of the confluence between the Cowie Water and the Dumer Burn. The existing track crosses three watercourse crossings (the East Dumer Burn, West Dumer Burn and Cowie Burn) – all of which are ~500 m upstream of the abstraction.

3.6.3 With Embedded and Applied Mitigation measures in place, the magnitude of the impact of increased sediment/silt runoff causing a deterioration in surface water quality in the Cowie Water downstream of the Proposed Development during construction will be temporary and of short duration and the magnitude of impact is considered to be negligible. Stoneshouse PWS relies on surface water abstraction and is considered to be of medium sensitivity. The significance to the effect during construction is assessed to be **Negligible**. Monitoring will be put in place to monitor any potential effects on the PWS. Monitoring will be undertaken by an ECoW and will be at the property tap. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) a temporary alternative water supply will be installed at the PWS, such as portable bowsers.

Tillybreak PWS – Surface Water abstraction from unnamed tributary to Cowie Water

3.6.4 Tillybreak PWS is a direct watercourse abstraction from a minor, unnamed tributary to the Cowie Water (**Plate 13.2.28: Tillybreak PWS, showing topography and indicative flow pathways (blue arrows) Photo 8**). The abstraction point is ~30 m south and downslope of existing track infrastructure for upgrade. The abstraction serves only Tillybreak and no other known properties. There is no other additional information available on the supply. The watercourse is minor with a small catchment area.

Plate 13.2.28: Tillybreak PWS, showing topography and indicative flow pathways (blue arrows)

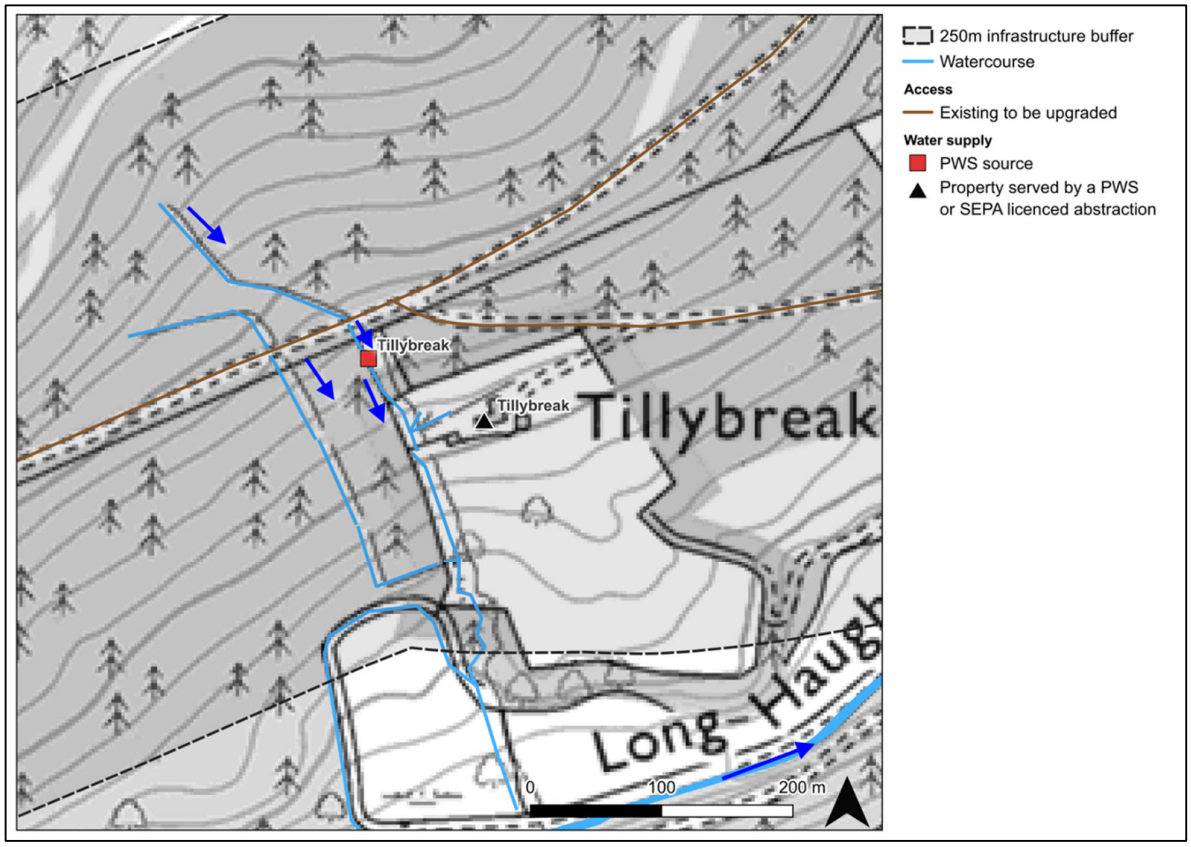


Photo 8: Abstraction source feeding into filtration system

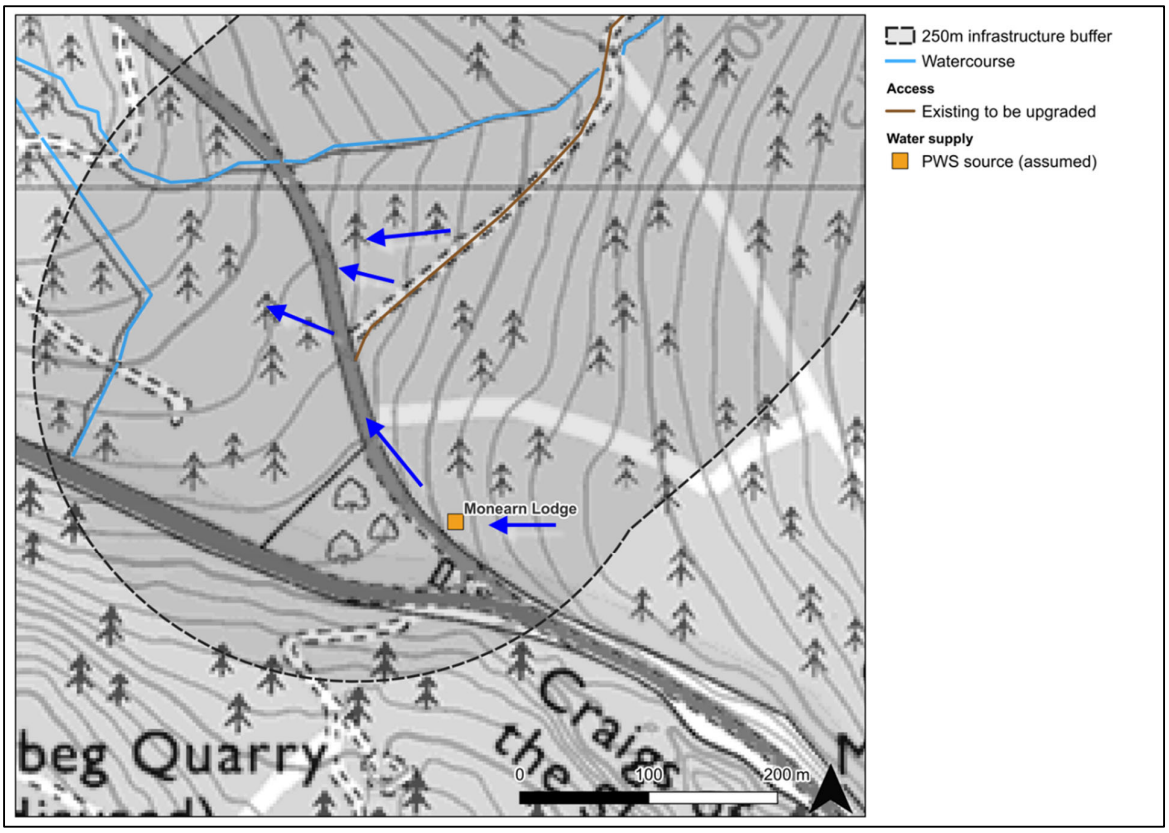
3.6.5 The abstraction point was observed during hydrology surveys and is downslope of the existing access track and existing track crossing. The existing track infrastructure drains towards the minor watercourse which feeds the PWS.

3.6.6 With Applied Mitigation measures in place, given the proximity of the abstraction offtake to the watercourse crossing, the magnitude of the effect of increased sediment/silt runoff and pollution causing a temporary deterioration in water quality at the PWS abstraction location during construction is considered to be low, temporary and of short duration. Tillybreak PWS relies on surface water abstraction and is considered to be of medium sensitivity and the effect during construction is assessed to be **Minor** (Not Significant). Site-specific additional mitigation (eg additional SuDS and silt traps/fences at the existing track crossing locations) and monitoring will be put in place to reduce any potential effects on the PWS. Monitoring will be undertaken by an ECoW, and monitoring will be at the property tap. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) a temporary alternative water supply will be installed at the PWS, such as portable bowsers.

Monearn Lodge PWS - Borehole

3.6.7 The PWS supplying Monearn Lodge is a borehole located 25 m north of the property on the opposite side of the road (**Plate 13.2.29: Monearn Lodge PWS, showing topography and indicative flow pathways (blue arrows)**). The borehole sits at the top of the road embankment, a few metres above the road level. There is no additional information on the supply at the time of writing.

Plate 13.2.29: Monearn Lodge PWS, showing topography and indicative flow pathways (blue arrows)



3.6.8 The PWS is 147 m southeast of an existing forestry track to be used during construction as part of the Proposed Development. The closest part of the track to the borehole sits at a lower elevation so the PWS would not be affected by any surface water runoff during any track upgrades, if required. Given that any proposed excavations are likely to be minor as part of track upgrades, it is unlikely that groundwater quantities of at the borehole will be impacted and the magnitude of impact is assessed to be negligible. The sensitivity of the receptor is medium.

3.6.9 The significance of the effect on the PWS is therefore considered to be **Negligible** (Not Significant).

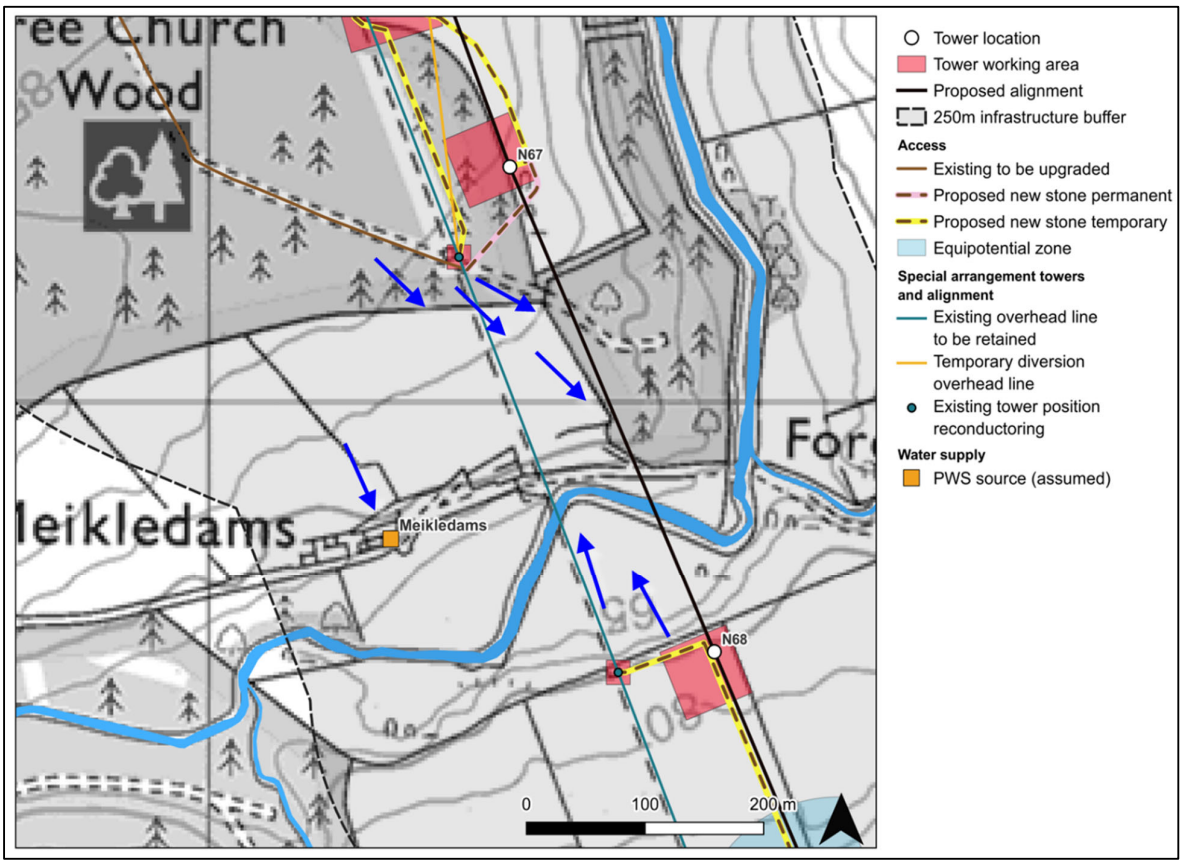
3.6.10 Monitoring of the borehole supply will be undertaken before, during and after construction. Monitoring will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from property tap. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity

decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction.

Meikledams – assumed PWS

3.6.11 Meikledams is likely to be served by a PWS however a lack of information from the resident and the nearby area means that this conclusion is uncertain. A questionnaire was sent to the resident but no response was received. This was followed up by several visits to the property to try to speak to the resident but the resident was not available. The property is located 630 m from the nearest Scottish Water mains to the south and the nearest property is 600 m away so there is a high likelihood of a PWS being present, despite Aberdeenshire Council data not indicating a PWS at this location. For the purposes of this assessment, the PWS is assumed to be at the property itself. This is shown in (**Plate 13.2.30: Meikledams assumed PWS, showing topography and indicative flow pathways (blue arrows)**).

Plate 13.2.30: Meikledams assumed PWS, showing topography and indicative flow pathways (blue arrows).



3.6.12 The property is located on the opposite side of the Sheeoch Burn to the infrastructure around proposed tower N68 and the existing tower XS488, meaning that it will not be affected during construction. The property also lies ~245 m south of an existing track to be upgraded in Free Church Wood, close to tower N67. The property is situated downslope of the track however OS 1:25k contour mapping indicates that any sediment/runoff pollution will drain in a southeasterly direction, away from the property. The elevation difference between the property and the track is ~15 m. Given that any proposed excavations are likely to be minor as part of track upgrades, it is unlikely that groundwater quantities of any potential supply will be affected and the magnitude of change is therefore considered negligible.

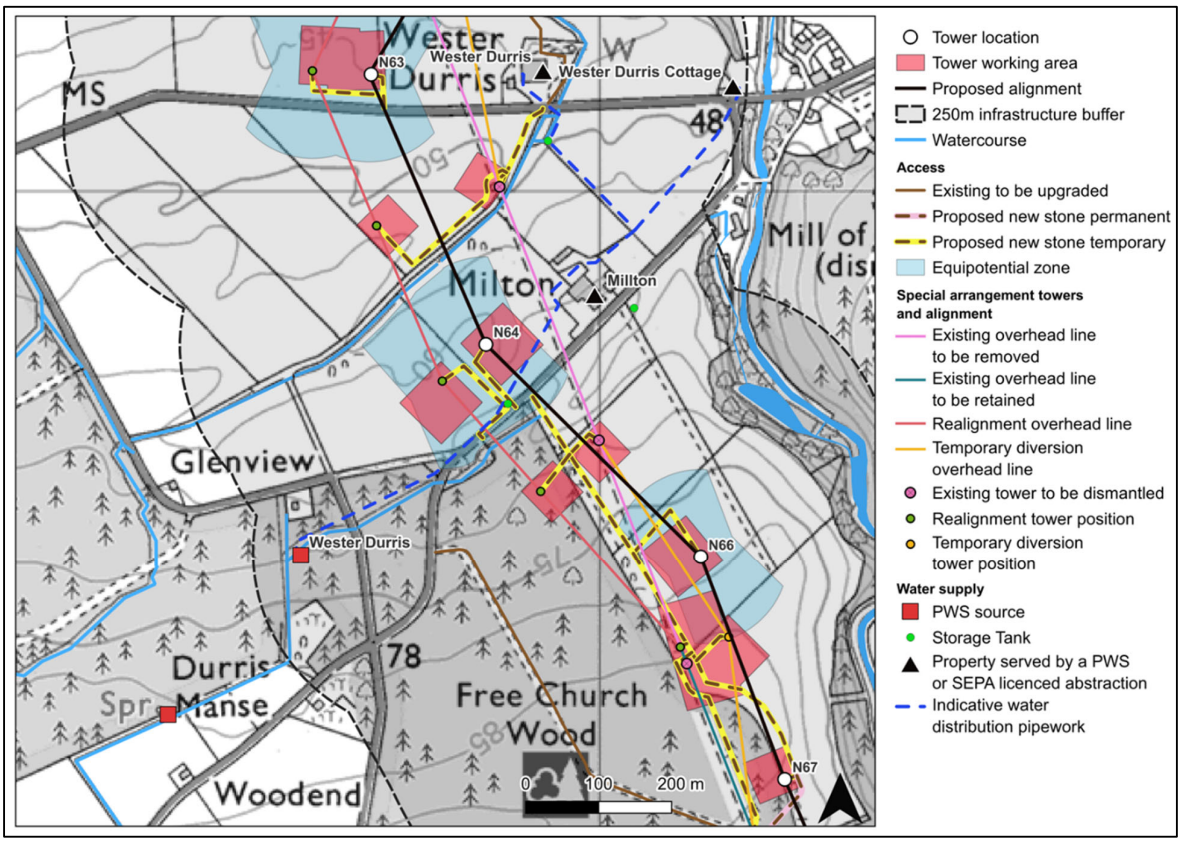
3.6.13 Further investigation into whether this property is served by a PWS will be required before groundworks commence. With the sensitivity of the assumed PWS assessed as medium, the effect on the PWS, if present, without additional mitigation is considered to be **Negligible**.

3.6.14 Additional consultation will be undertaken to ascertain the exact location (if it does exist) of the assumed PWS serving this property. Monitoring of the assumed PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from the tap at the supplied property location. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction.

Wester Durris PWS – Groundwater Spring

3.6.15 The PWS in the Wester Durris area is a spring supplying three known properties: Wester Durris, Wester Durris Cottage and Milton Farm (**Plate 13.2.31: Wester Durris PWS, showing topography**). The indicative water supply distribution pipework is also shown in the figure.

Plate 13.2.31: Wester Durris PWS, showing topography



3.6.16 Wester Durris PWS is located 190 m west of a track to be upgraded and 243 m southwest of tower 492R, part of the realignment around Kirkton of Durris. OS 1:25k contour mapping indicates that the Proposed Development sits at a lower elevation to the PWS and drains in a northerly direction so the PWS will not be affected by surface water runoff. Given that any proposed excavations are likely to be minor as part of track upgrades, it is unlikely that groundwater quantities of any potential supply will be affected. There is very minimal potential for dewatering of the spring source from excavations at tower 492R, but this is highly unlikely as there is a watercourse separating the spring source and tower working area. This watercourse likely contributes significantly to controlling local groundwater levels and any levels lowered by tower excavations are more likely to be on the north side of the watercourse. Given this context, it is considered very unlikely that groundwater quantities will be affected and the magnitude of change is considered negligible to low.

3.6.17 With the PWS being of medium sensitivity, the significance of effect on the PWS source is therefore considered to be **Negligible** to **Minor**, depending on the depth of excavation at the access track for upgrade.

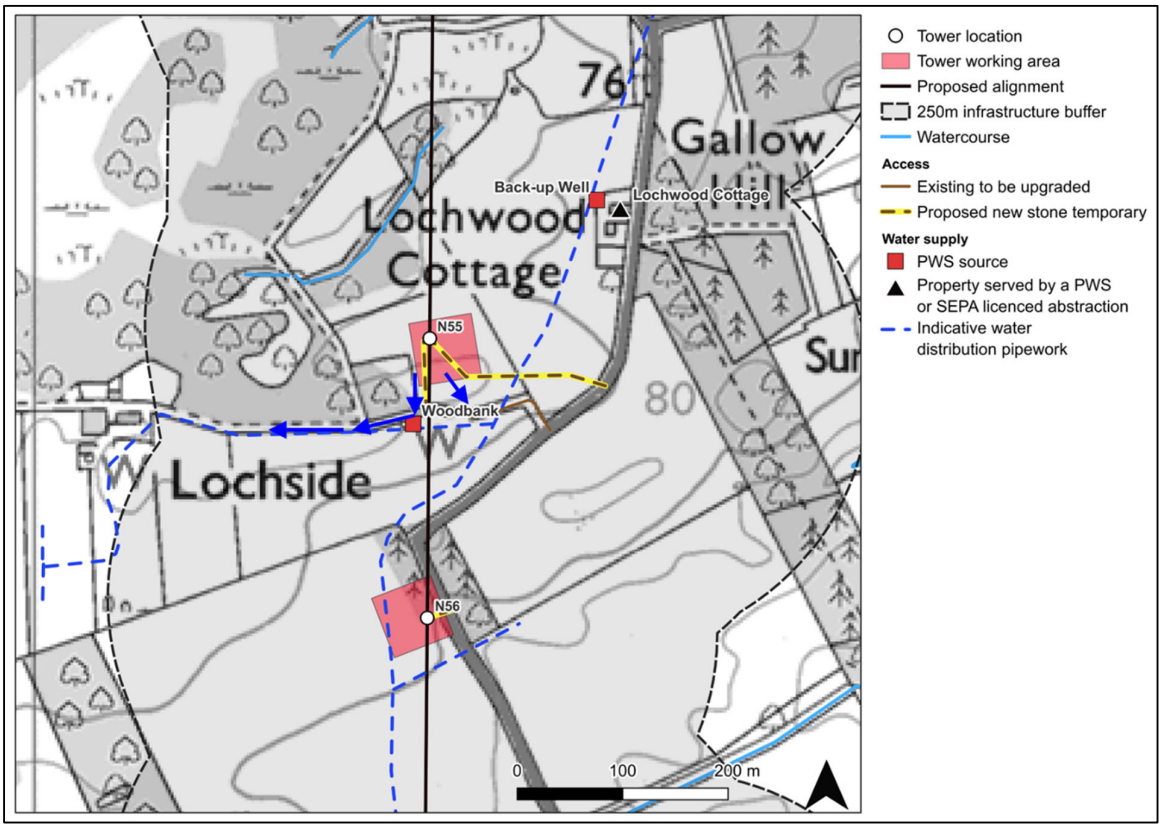
3.6.18 There is proposed infrastructure close to the indicative PWS pipework and investigation and cognisance of the distribution network should be undertaken before, and during construction to avoid damage to the supply pipework. Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from the tap at the supplied property location. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction.

3.7 Section F

Woodbank PWS – Groundwater Well

3.7.1 A resident of Woodbank House provided the location of this well which is ~14 m west of the proposed temporary access track to tower N55 and 60 m south of the proposed working area of tower N55 (**Plate 13.2.32: Woodbank PWS, showing topography, indicative water distribution pipework and indicative flow pathways (blue arrows) and Photo 9**). However, they gave no information on whether the well is in use, or which properties it serves. No further information on the well such as abstraction rate or water quality is currently available. Upon visiting the location provided, there was no evidence of the well or pipe connections (**Photo 9**).

Plate 13.2.32: Woodbank PWS, showing topography, indicative water distribution pipework and indicative flow pathways (blue arrows)



3.7.2 Coordinates provided by the resident and OS 1:25k mapping indicates the well is located adjacent to the track leading to Lochside and is on the opposite side of the track to tower N55. The area around the proposed tower drains to the west and southwest towards the Loch of Park. With the track separating the tower from the well, any surface water runoff will be intercepted by the track and flow west. It is unlikely that surface water runoff will flow directly towards the well. The tower and well are at approximately the same elevation (70 mAOD) so any excavation at the tower could have a medium magnitude of change on groundwater levels at the well. The well is considered to be of low sensitivity (as it is not confirmed if the well is still there or used as a PWS). Hence, the significance of effect on groundwater levels within the well is considered to be **Minor**. Further investigation will be undertaken in advance of

construction to decide the appropriate monitoring and additional mitigation required. Based on information from the hydrology site visits it is considered unlikely that the well is still in use.

3.7.3 Monitoring of the well (if present) will be undertaken before, during and after construction. Monitoring will be undertaken from the well itself.

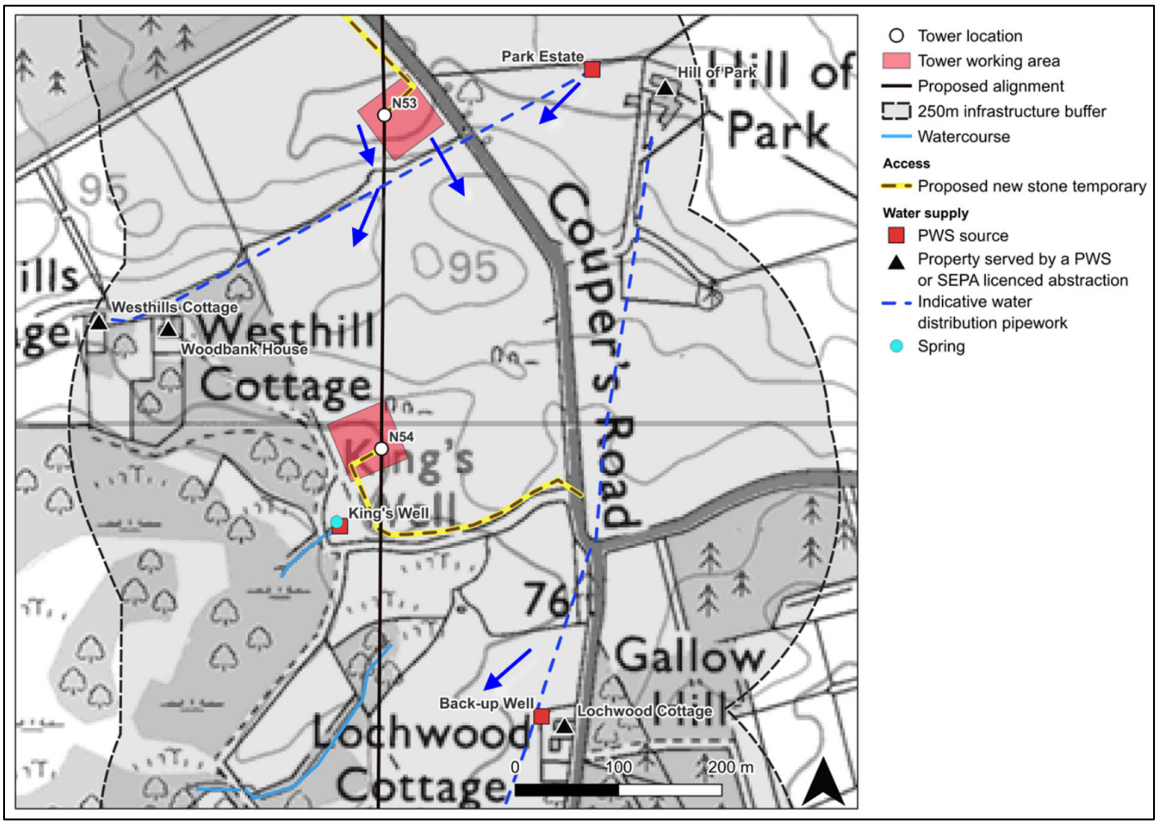
Photo 9: Location of the marked well, no sign of the well at the surface was evident during survey

Park Estate PWS, including Lochwood Cottage – Surface Water Collection/Spring/Borehole and Back-up Well

3.7.4 Lochwood Cottage is served principally by the PWS for the Park Estate and by a well at the cottage itself which is used as a backup supply (**Plate 13.2.33: Park Estate PWS, showing Lochwood Cottage back-up well, indicative water distribution pipework and indicative flow pathways (blue arrows)**). The principal supply at Park Estate is noted as either a spring or water collection from Coldstream plantation (conflicting information from various residents) and is fed to a storage tank located ~150 m east of the proposed tower N53 working area. The PWS is utilised for domestic use. Aberdeenshire Council data indicates the PWS source for Park Estate as a borehole (Supply reference: 35448) ~97 m south of the coordinates that the resident provided and it is considered that this relates to the same source. The Park Estate PWS also supplies Hill of Park House. The area surrounding the spring/borehole drains to the southwest direction towards Couper's Road based on 1:25k OS mapping.

3.7.5 An old estate map figure provided by a resident indicated approximate distribution connections to numerous properties in the area. The approximate route of the pipeline is shown on **Plate 13.2.33: Park Estate PWS, showing Lochwood Cottage back-up well, topography, indicative water distribution pipework and indicative flow pathways (blue arrows)**, based on information provided by the resident, however it would be prudent to further consult with the resident, Park Estate and Duncan Farms on the exact route of the pipeline to avoid damaging the connection between the PWS and the properties.

Plate 13.2.33: Park Estate PWS, showing Lochwood Cottage back-up well, topography, indicative water distribution pipework and indicative flow pathways (blue arrows).



3.7.6 The proposed tower N53, its associated working area and access track are situated downslope of the spring source and the tower at an elevation ~ 3 m lower than the spring/borehole. There is also a topographic hollow between the tower working area and the location of the spring. Therefore, any excavations around the tower and associated infrastructure would be unlikely to affect the groundwater supply to the spring and the magnitude of impact is considered to be temporary and low. The spring being is upslope of the Proposed Development and would not be impacted by surface water runoff during construction. The sensitivity of the spring is medium, hence the significance of effect on the PWS without additional mitigation is considered to be **Minor**.

3.7.7 A well at Lochwood Cottage is used by the property as a backup water supply. The well remains fully functional. No details on abstraction rates or the depth of the well were provided. The well is located 200 m south of the proposed access track for N54.

3.7.8 The surface of the PWS well abstraction is located at around 77 mAOD. The PWS would not be affected by surface water runoff from tower N55 due to the PWS being upslope of the tower, which lies at around 70 mAOD (**Plate 13.2.34: King's Well PWS, distribution network, topography and indicative flow pathways (blue arrows)**). Surface water flow paths from the access track to tower N54 generally flow downhill to the west to Loch of Park, away from the well, so runoff from here will not affect the PWS. However, tower N55 lies downslope of the well and tower excavation have the potential to temporarily impact groundwater levels and the quantity of supply to well, which was assessed as medium magnitude. The well is medium sensitivity and the significance of effect on the PWS (well) without additional mitigation is therefore considered to be **Moderate**.

3.7.9 A detailed investigation of the distribution network prior to construction will be carried out and cognisant during construction to ensure the pipes are avoided or managed accordingly. Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by an ECoW, and monitoring will be at the two source locations (ie the spring and the well or property tap). If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the supplied properties, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the

Additional Mitigation will include a commitment from the Applicant to provide a new water supply or provide a connection to the Scottish Water mains.

King's Well PWS – Groundwater Well/ Spring

3.7.10 The King's Well sits ~44 m south of the working area of tower N54 and ~33 m southwest of the proposed temporary access track to the tower (**Plate 13.2.34: King's Well PWS, distribution network, topography and indicative flow pathways** (blue arrows) and Photo 10). Information on this well was provided by the resident of Westhills Cottage and Lochwood Cottage, which the well may supply, although there remains uncertainty from residents whether the well serves as a supply. Westhills Cottage is 240 m northwest of the well and Lochwood Cottage is ~290 m southeast of the well. Westhills Cottage is also served by a spring/borehole at the Park Estate supply (as discussed above) and is fed to the cottage via a pipeline under Couper's Road. Lochwood Cottage is also served by the Park Estate's back-well (as discussed above), so it is considered unlikely that the King's Well is still in use as a domestic supply.

Plate 13.2.34: King's Well PWS, distribution network, topography and indicative flow pathways (blue arrows)

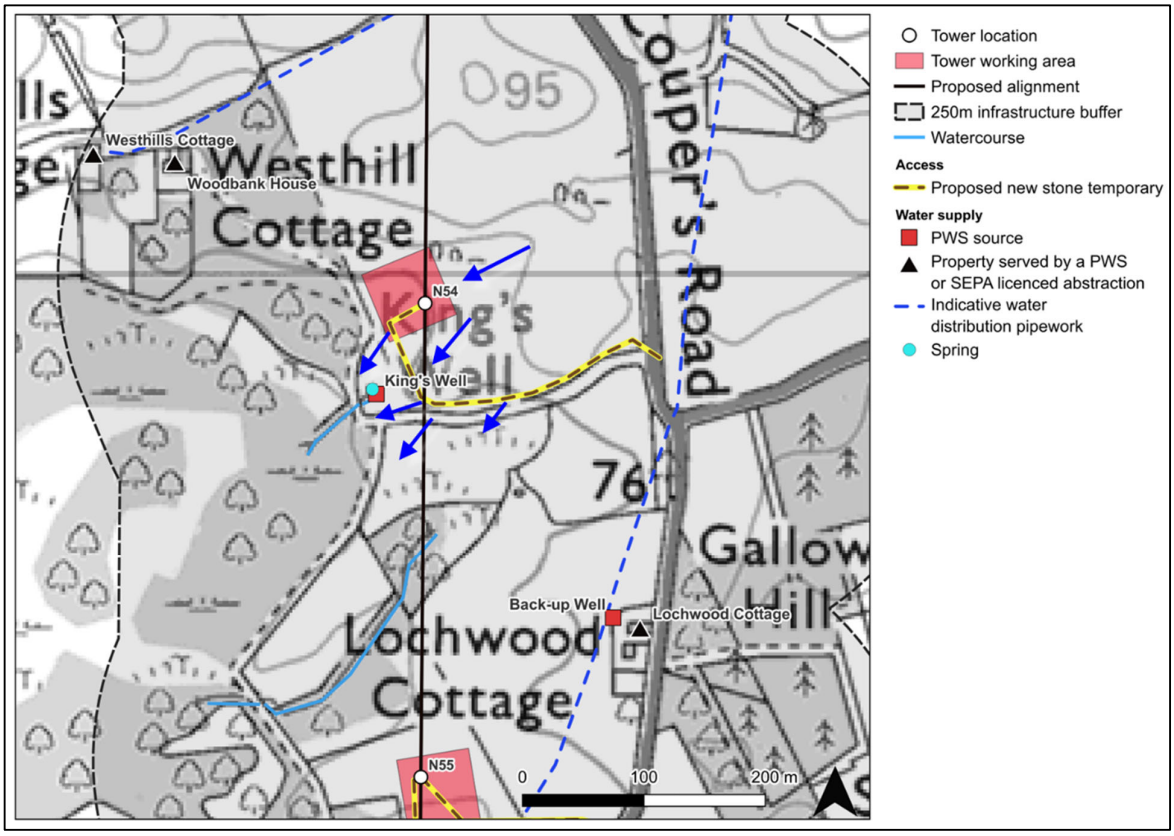


Photo 10: King's Well, a spring source was noted around 5 metres behind the well (northeast)

3.7.11 The well and the proposed tower are at a similar elevation, the well at around 72 mAOD and tower N54 around 73 mAOD, meaning that any excavations at the tower or at the temporary access track could potentially temporarily affect groundwater levels at the well. Based on topography and flow pathway analysis, surface water runoff from the track and tower could flow towards the well, although there is a stone wall around the well. The magnitude of change is considered to be medium and the sensitivity of the PWS, if still in use, is medium. The effect on the well without additional mitigation is considered to be of **Moderate** significance (if the King's Well serves as a PWS).

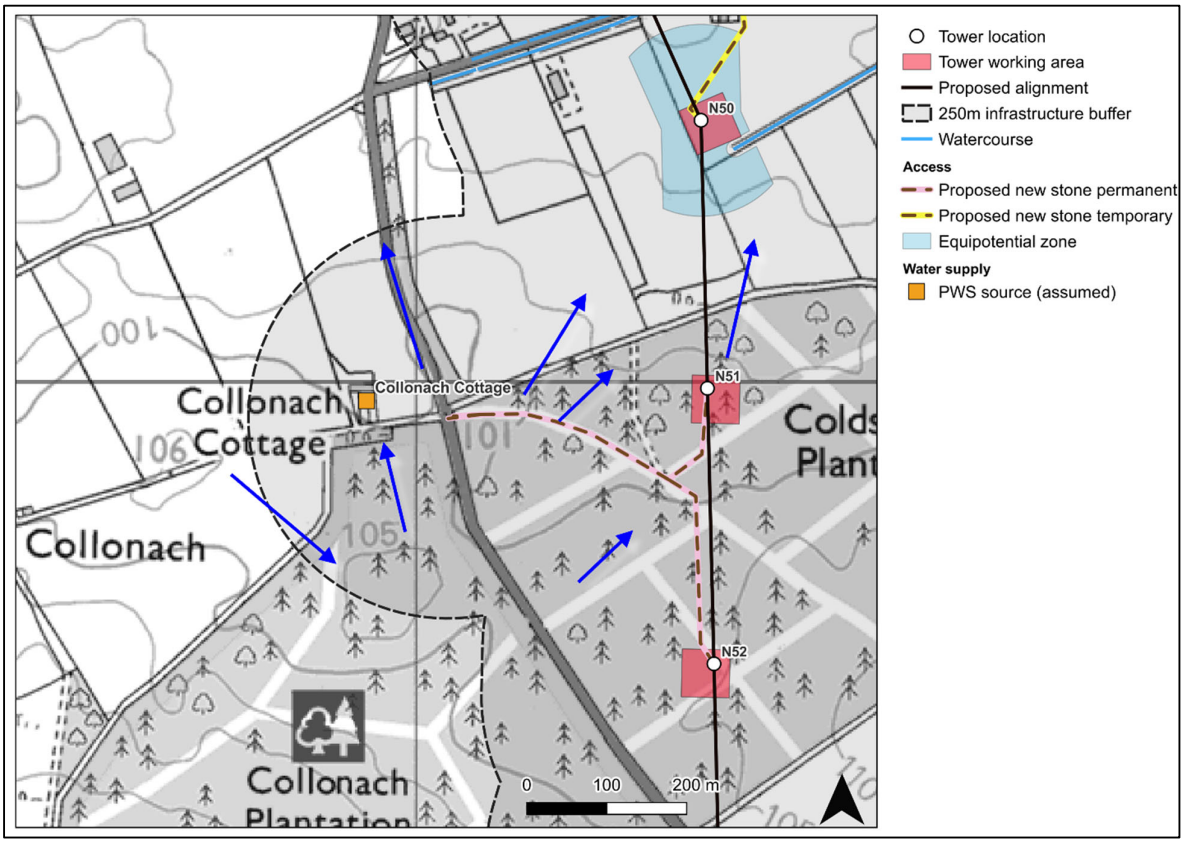
3.7.12 Further investigation is required to establish if the well is in use as a PWS, and then the appropriate monitoring and additional mitigation required will be decided.

3.7.13 Monitoring of the well will be undertaken before, during and after construction. Monitoring will be undertaken from the well itself.

Collonach Cottage – assumed PWS

3.7.14 Collonach Cottage has the potential to be served by a PWS however a lack of information from the resident and the nearby area means that this conclusion is uncertain. A questionnaire was sent to the resident but no response was received. This was followed up by several visits to the property to try to speak to the resident but the resident was not available. The nearest Scottish Water mains pipes run along the main road 390 m to the north but there is no indication of a connection to the property. Aberdeenshire Council data indicates that the property at Collonach Farmhouse further up the track is supplied by a PWS, suggesting that the mains pipes do not reach this far along Couper's Road. For the purposes of this assessment, the PWS is assumed to be at the property itself. This is shown in **Plate 13.2.35: Collonach Cottage assumed PWS, showing topography and indicative flow pathways (blue arrows)**.

Plate 13.2.35: Collonach Cottage assumed PWS, showing topography and indicative flow pathways (blue arrows).



3.7.15 Collonach Cottage is located 105 m west of a proposed new permanent access track which will connect towers N51 and N52 with Couper's Road. The property sits ~5 m lower than the track so any potential sediment/runoff pollution arising from the construction of the track is likely to be directed along Couper's Road to the north or spill onto the road which leads to the property. However, at this distance, any runoff is unlikely to reach the property. From Google Street View, there does not appear to be any structures in the field between the road and property which could indicate the presence of a PWS. If a PWS is present, it is likely to be behind the property and therefore further away from the proposed new track. There is however a slight potential for excavations for the new track to temporarily impact the groundwater table in the vicinity of the property. The magnitude of impact on the PWS was assessed to be low.

3.7.16 Further investigation into whether this property is served by a PWS will be required before groundworks commence. Additional consultation will be undertaken to ascertain the exact location of the assumed PWS serving this property. The sensitivity of the assumed PWS, if present, is medium and without additional mitigation the significance of effect is considered to be **Minor**.

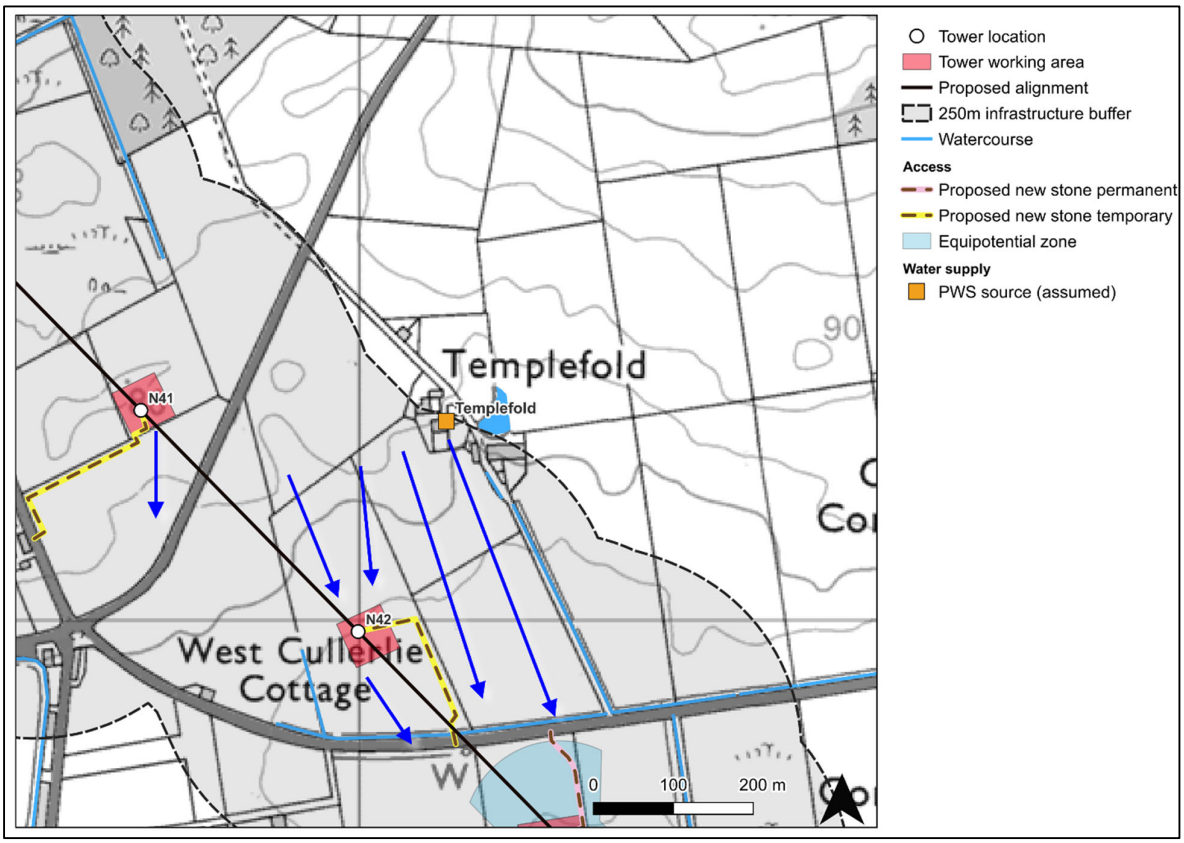
3.7.17 Additional consultation will be undertaken to ascertain the exact location of the assumed PWS serving this property. Monitoring of the assumed PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from the tap at the supplied property location. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new private water supply for the property or provide a connection to the Scottish Water mains.

Templefold – assumed PWS

3.7.18 Templefold has the potential to be served by a PWS however a lack of information from the resident and the nearby area means that this conclusion is uncertain. A questionnaire was sent to the resident but no response was received.

This was followed up by several visits to the property to try to speak to the resident but the resident was not available. The property is located 530 m from the nearest Scottish Water mains which appears to terminate at the five-way junction to the southwest of the property. The property at Northfield, 1.1 km north along the B9125, is known to be connected a mains supply from questionnaire returns, indicating that the mains pipe must run along the road, despite not being shown on the Scottish Water asset maps. It is therefore possible for Templefold to also have a connection as it sits just ~240 m back from the road. Aberdeenshire Council data does not indicate a supply here. For the purposes of this assessment, the property is assumed to have a PWS at the property itself. This is shown in **Plate 13.2.36: Templefold assumed PWS, showing topography and indicative flow pathways (blue arrows)**.

Plate 13.2.36: Templefold assumed PWS, showing topography and indicative flow pathways (blue arrows)).



3.7.19 The property is situated 230 m north of the working area around tower N42 and 240 m from the new temporary track leading to the tower. The property sits upslope of the Proposed Development, at an elevation difference of ~8 m. As the property sits upslope of the infrastructure, it will not be affected by sediment/pollution runoff arising during construction. Given that any proposed excavations are likely to be minor as part of track upgrades, it is unlikely that groundwater quantities of any potential supply will be affected. Excavation at the tower working area could potentially temporarily impact groundwater levels at the assumed PWS at the property, although this is considered to be low magnitude

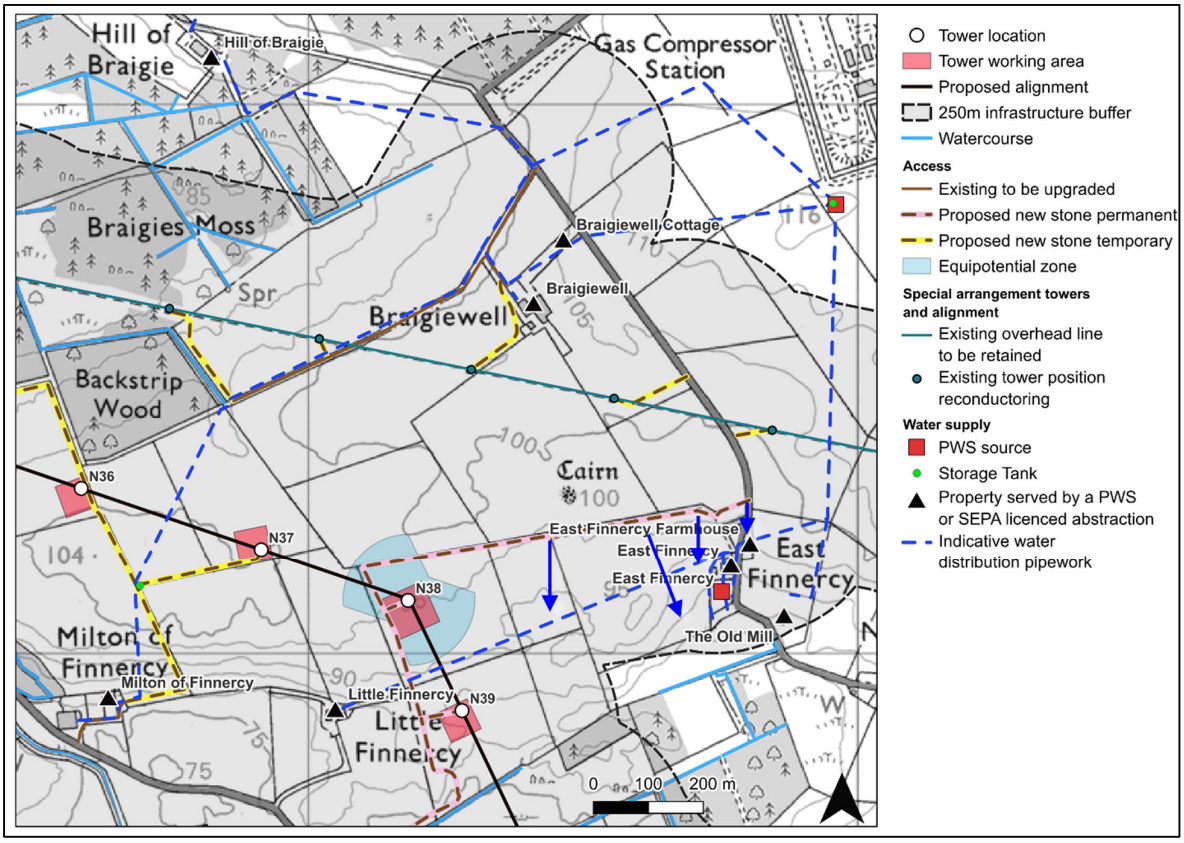
3.7.20 Further investigation into whether this property is served by a PWS will be required before groundworks commence. The sensitivity of the assumed PWS, if present, is medium, resulting in an effect of **Minor** significance.

3.7.21 Additional consultation will be undertaken to ascertain the exact location of the assumed PWS serving this property. Monitoring of the assumed PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from the tap at the supplied property location. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new private water supply for the property or provide a connection to the Scottish Water mains.

East Finnercy PWS – Groundwater Spring/Borehole

3.7.22 The East Finnercy PWS is a spring/borehole supply and is known to serve at least one property (Little Finnercy) (**Plate 13.2.37: East Finnercy PWS, showing indicative water distribution pipework, topography and indicative flow pathways (blue arrows)**), but there remains uncertainty regarding other properties supplied by this source. Aberdeenshire Council data (PWS source ref: 34535) notes that the East Finnercy supplies another six properties (The Old Mill, Cottage, Hill Of Braigie, East Finnercy, Braigiewell Cottage and Braigiewell). A meeting on-site with the Dunecht Estate management revealed the exact PWS source location and some supply connections, which are shown on **Figure 13.2.37**. The PWS is utilised for domestic use.

Plate 13.2.37: East Finnercy PWS, showing indicative water distribution pipework, topography and indicative flow pathways (blue arrows)



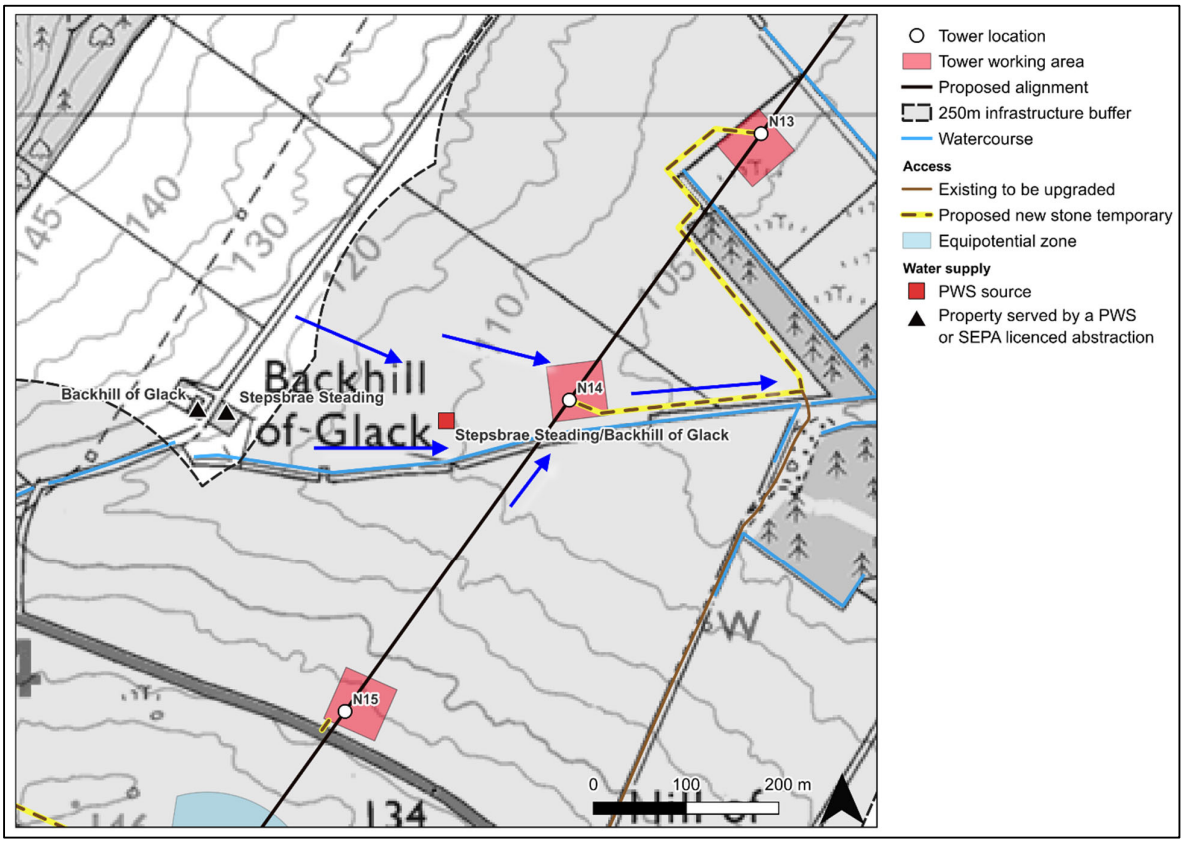
3.7.23 The PWS abstraction is located ~140 m south of the proposed permanent track at tower N38. The proposed track lies upslope of the PWS, and contour mapping indicates there is a slight potential for construction runoff from the track towards the PWS source, although given the distance from the track to the spring, the impact on water quality is considered to be of negligible magnitude. Excavations for the track are considered unlikely to affect groundwater quantity at the PWS, as the new track sits over 10 m higher (in elevation) than the PWS source and the magnitude of impact is considered negligible. With PWS being of medium sensitivity, the effect on the PWS is considered to be **Negligible**. However, there is a risk of disruption to the piped distribution network, as the proposed permanent access track passes over the indicated pipe network.

3.7.24 A detailed investigation of the distribution network prior to construction will be carried out and cognisant during construction to ensure the pipes are avoided or managed accordingly. Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by an ECoW, and monitoring will be at spring/borehole source. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction.

Stepsbrae Steading/Backhill of Glack- Groundwater Well/Borehole

3.7.25 Stepsbrae Steading/Backhill of Glack is a well/borehole supply utilised for domestic and livestock purposes, situated ~114 m southwest of proposed tower N14 (**Plate 13.2.38: Backhill of Glack PWS, showing topography and indicative flow pathways (blue arrows)**). It serves two properties (Backhill of Glack and Stepsbrae Steading) which are located ~240 m west, and upslope, of the source. Data provided by Aberdeenshire Council indicated a PWS source (reference: 498) ~149 m northwest of the coordinates the resident provided. This is the same supply and the resident's source location is taken to be correct. The resident noted that the supply is new and water quality is very good.

Plate 13.2.38: Stepsbrae Steading/Backhill of Glack PWS, showing topography and indicative flow pathways (blue arrows)



3.7.26 Tower N14 and its associated working area would be ~113 m downslope (east) of the well at an elevation difference of ~2 m. Therefore, excavations associated with the tower may have a temporary effect on groundwater levels and water supply at the well and the magnitude of effect is considered medium. The well would not be affected by surface water runoff as it is located upslope of the Proposed Development. The sensitivity of the PWS is medium, hence the significance of the effect on the PWS before additional mitigation is assessed to be **Moderate**.

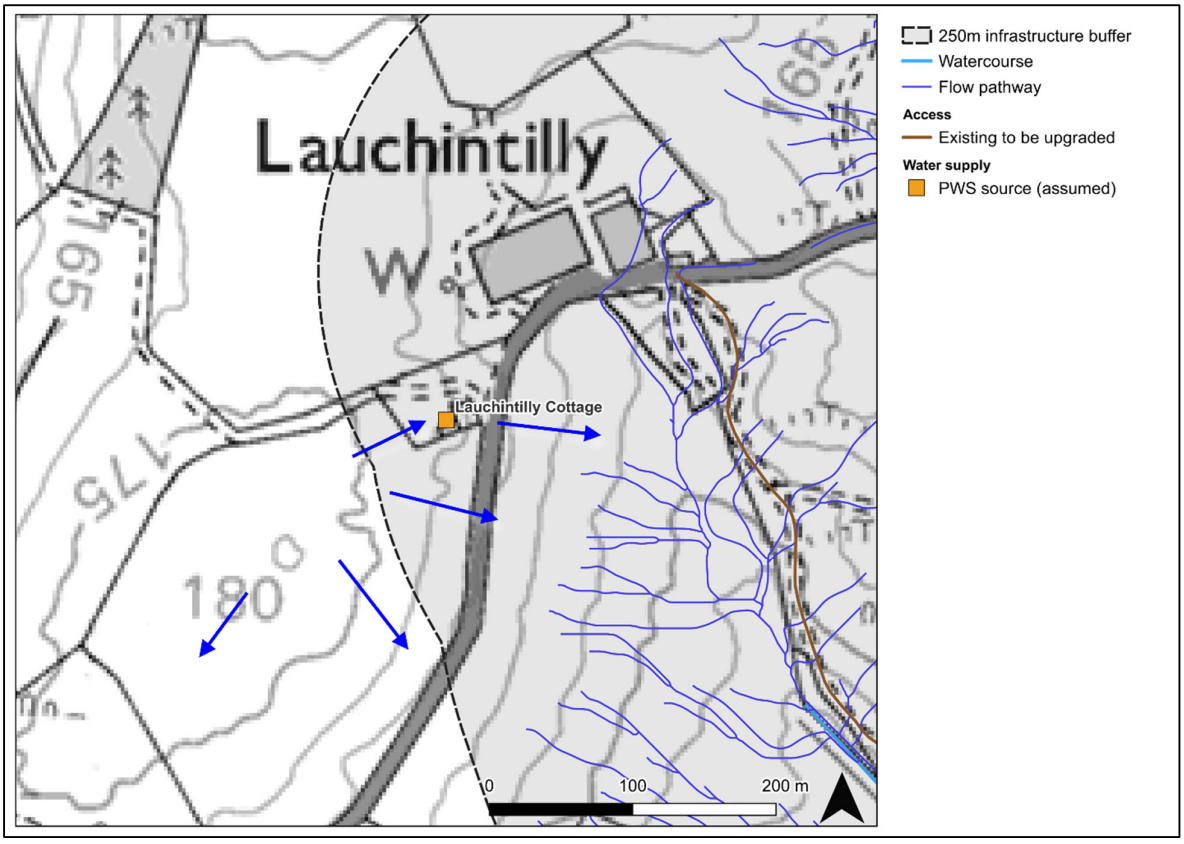
3.7.27 Monitoring of the PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by an ECoW, and monitoring would be at the well. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new water supply or provide a connection to the Scottish Water mains.

Lauchintilly Cottage – assumed PWS

3.7.28 Private Water Supply questionnaires were sent to the property, which was also visited during survey, however no response was received to the questionnaire, and no one was available at the time of visiting. The area is known to

have no Scottish Water mains supply and all nearby properties are served by PWS. It should be noted that the neighbouring property Lauchintilly, was visited and the farmer reported his supply was southeast of the property in an area just outwith the 250m buffer of infrastructure, nearby Barnyards of Drumnaheath (separate to the supply serving Barnyards of Drumnaheath). It is possible that Lauchintilly Cottage is supplied by the nearby Barnyards of Drumnaheath supply, but in the absence of certainty, it has been assumed that the supply is located at the property itself. This is shown in **Plate 13.2.39: Lauchintilly assumed PWS, showing topography and indicative flow pathways (blue arrows)**.

Plate 13.2.39: Lauchintilly assumed PWS, showing topography and indicative flow pathways (blue arrows).



3.7.29 Lauchintilly Cottage is located ~195 m west of proposed existing track to be used during construction of towers N9-N12. The property is ~10 m higher in elevation than the highest point of the track, which varies in elevation itself along its route. Subsequently there is no risk of surface water runoff from the track affecting water quality of any potential supply at the property. Given that any proposed excavations are likely to be minor as part of track upgrades (if required), it is unlikely that groundwater quantities of any potential supply will be affected and the magnitude of change is considered to be Negligible.

3.7.30 Therefore, with the sensitivity of the assumed PWS being medium, the significance of effect at the PWS is **Negligible**.

3.7.31 Additional consultation will be undertaken to ascertain the exact location of the assumed PWS serving this property. Monitoring of the assumed PWS will be undertaken before, during and after construction to check there is no contamination of the supply or change in quantity of supply. Monitoring will be undertaken by ECoW, and monitoring would likely be from the tap at the supplied property location. If the water quality deteriorates during construction (eg discoloured, high sediment content, hydrocarbons) or quantity decreases an alternative water supply will be installed at the PWS property, such as portable bowsers, to ensure minimal disruption of supply during construction. In the worst-case scenario, the Additional Mitigation will include a commitment from the Applicant to provide a new private water supply for the property or provide a connection to the Scottish Water mains.