

Separation of services scheme at Baglan Bay 275 kV substation

Flood Consequence Assessment

National Grid

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Quality information

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1 Introduction

1.1 Commission

AECOM were commissioned by National Grid to undertake a Flood Consequence Assessment (FCA) to support the planning application required for the separation of services scheme at Baglan Bay 275 kV substation in Port Talbot.

The National Grid Reference (NGR) for the site is SS732924 and Nearest Post Code SA12 7AX.

1.2 Aims and Objectives

The aim of this FCA is to assess the existing and future flood risk posed to the proposed development based on publicly available information and to recommend mitigation (if required) to fulfil the requirements of the planning application.

In order to achieve this, the following objectives have been outlined:

- Collate and review existing flood risk data from Natural Resources Wales (NRW) and Lead Local Flood Authority.
- Assess and interpret available information to identify potential sources of flooding to the proposed development, in the present day and in the future.
- Recommend mitigation (if required) to fulfil the requirements of a planning application.
- Prepare an FCA (this report).

1.3 Proposed Development

The separation of services scheme at Baglan Bay 275 kV substation includes:

1. Static firefighting water tank and foundation with pipework to fire hydrants at both substation gates.
2. Hardstanding and supplies pillar for a temporary diesel generator.
3. Biodigester with pipeline into the existing surface water drainage system.
4. Installation of potable water pipeline route (approximately 1 km).

Proposals 1-3 are located within the National Grid Electricity Transmission (NGET) leasehold boundary and are permitted development.

Proposal 4, the proposed potable water pipeline route will connect the NGET site to the public water supply network. The route extends beyond the NGET leasehold boundary and therefore requires planning permission.

The proposed potable water pipeline route will be located below ground once operational with no changes to ground levels. Appendix A shows the proposed potable water pipeline route.

1.4 Report Structure

The Planning Policy and Guidance section (Section 2) includes reference to both the NGET site and the proposed potable water pipeline route to provide wider context.

The Flood Risk Review section (Section 3) then focuses on the proposed potable water pipeline route, which is subject to planning and requires an FCA due to its partial located in Flood Zone 2 (explained further in Section 2).

2 Planning Policy and Guidance

2.1 Planning Policy Wales

In terms of flood risk, Planning Policy Wales¹ (PPW) adopts a sequential approach, whereby development should first be directed away from flood hazard areas rather than mitigating the consequences of a development in flood risk areas. It also considers the impact of climate change on rainfall and river flows and the subsequent increase in flood risk this will have in the future in Wales. PPW also advises that planning authorities consult with NRW to ensure that new developments do not increase flood risk elsewhere and where possible reduce overall flood risk.

2.2 Technical Advice Note 15 (2025)

TAN15² provides technical guidance which supplements the policies set out in PPW in relation to flooding and coastal erosion. It provides a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed. It also provides advice on the consequences of the risks and adapting to and living with flood risk. The aim of TAN15 is to provide guidance to local planning authorities to reduce flood risk and develop away from high-risk areas.

TAN15 identifies the vulnerability of different development uses to flooding and classifies them accordingly. This is because certain flooding consequences may not be acceptable for particular development types. The proposals subject to this FCA fall under 'utilities infrastructure', which is classified as less vulnerable development.

The NRW Flood Map for Planning³ (Figure 2-1) shows that proposals which fall under permitted development within the NGET leasehold boundary are located within Flood Zone 1 (i.e. outside of Flood Zones 2 and 3) for Rivers and Sea. Flood Zone 1 is defined as land at very low risk of flooding which has less than 0.1% (plus climate change) chance of flooding in a given year.

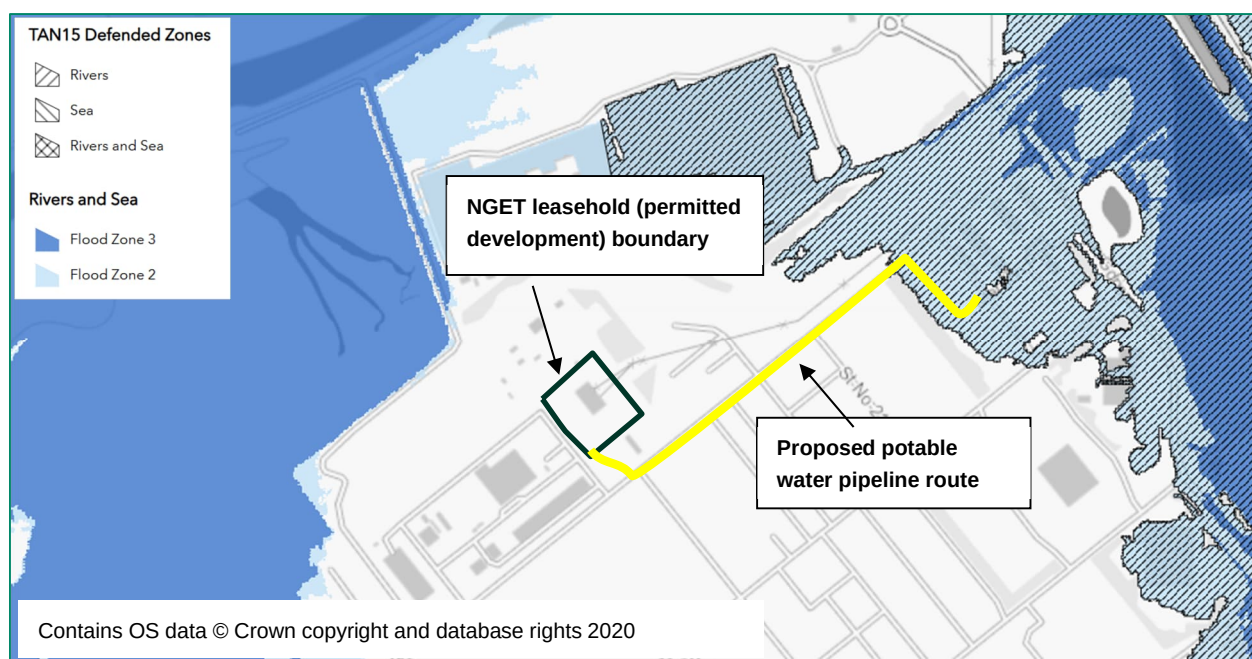


Figure 2-1: NRW Flood Map for Planning (Rivers and Sea) (August 2026)

¹ Available at <https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf> [accessed August 2026]

² Available at <https://www.gov.wales/sites/default/files/publications/2025-03/technical-advice-note-15-development-flooding-and-coastal-erosion.pdf> [accessed August 2026]

³ Available at <https://flood-map-for-planning.naturalresources.wales/> [accessed August 2026]

Figure 2-1 also shows that the proposed potable water pipeline route extends into Flood Zone 2. Flood Zone 2 in this location is associated with flooding from rivers and is therefore defined as land with a 0.1% to 1% chance of flooding in any year including the effects of climate change. It's also a TAN15 Defended Zone, land that benefits from Risk Management Authority flood defences with a minimum 1% Annual Exceedance Probability (AEP) Standard of Protection for rivers.

The proposed potable water pipeline route is not covered by permitted development and therefore requires planning approval. TAN15 states that an FCA is required for any development in Flood Zones 2 and/or 3.

Therefore, the focus of this FCA is on the proposed potable water pipeline route and provides an assessment of flood risk to and from this proposed development.

The FCA will seek to demonstrate that the proposed potable water pipeline route in Flood Zone 2 is acceptable in terms of flood risk and consequences and assess the risk posed by all sources of flooding.

2.2.1 Sustainable Drainage

Schedule 3 of the Flood and Water Management Act 2010⁴ has been implemented. This means that all new developments of more than 1 dwelling, or where the construction area is 100 m² or more, will need to provide sustainable drainage systems (SuDS) for managing surface water.

The construction area is defined as any part of the site which has drainage implications, including buildings, extensions, hard landscaping (e.g. paved areas, driveways) and parking areas. If these combined areas are greater than 100m² or more, then SuDS must be designed, submitted, and approved to meet the statutory standards.

The SuDS Statutory Guidance⁵ includes circumstances where SuDS approval is not required, namely:

- Permitted development covering an area of land under 100 m²
- Developments with drainage implications of a single dwelling and the area of land covered by the construction work is less than 100 m², or
- In the case of any other type of construction work, the area of land covered is less than 100 m²

The proposed development is considered exempt as hardstanding areas within the NGET leasehold boundary include:

1. Static firefighting water tank and foundation 6 m² x 6 m²
2. Hard standing for temporary diesel generator 6 m² x 6 m²

In total these areas add up to 72 m², so under the 100 m² threshold and therefore exempt in accordance with the SuDS Statutory Guidance. These areas are also existing hardstanding areas, so no additional surface water runoff and they will drain to the existing drainage system within the existing NGET site.

SuDS would not be required for the proposed potable water pipeline route as it is not introducing any new hardstanding areas. Excavations will be backfilled to previous conditions and therefore no new areas to drain to SuDS.

3 Flood Risk Review

The flood risk review below focuses on the proposed potable water pipeline route, which is located in Flood Zone 2 and outside of the NGET leasehold (permitted development) boundary.

Table 3-1 in this section presents the outcomes of a high-level review of each potential flood source as required by the TAN15, and for each determines whether additional mitigation is required.

⁴ Available at: <https://www.legislation.gov.uk/ukpga/2010/29/schedule/3> [Accessed August 2026]

⁵ Available at: <https://www.gov.wales/sites/default/files/publications/2026-03/sustainable-drainage-suds-statutory-guidance.pdf> [Accessed August 2026]

Table 3-1: Flood risk presented by the different flood sources on the proposed development

Source of flooding	Flood risk to the proposed development	Flood Risk from the proposed development	Required mitigation
Fluvial	Proposed potable water pipeline route – located in Flood Zone 2 (area with a 0.1% to 1% chance of flooding due to rivers in any year including the effects of climate change). Local fluvial sources include the River Neath and Baglan Brook. Flood Zone 2 at this location is in a TAN15 Defended Zone, land that benefits from Risk Management Authority flood defences with a minimum 1% AEP Standard of Protection for rivers. The proposed potable water pipeline route will be below ground and it will therefore not be impacted by above ground fluvial sources. Overall the risk and consequence of fluvial flooding along the proposed potable water pipeline route is considered low. Source - Natural Resources Wales Flood Map for Planning⁴	Proposed potable water pipeline route – Very low risk. It is understood that once operational there will be no change to ground levels along the route and therefore no changes to fluvial flow pathways or increase in flooding elsewhere.	During construction it is recommended that the construction manager signs up to the NRW Flood Warning Service, to make sure construction staff are aware of flood risk to ensure personnel remain safe.
Tidal	Very low risk: proposed potable water pipeline route is located within Flood Zone 1 when considering flood risk posed by the sea (including the effects of climate change). Source - Natural Resources Wales Flood Map for Planning⁴ Baglan Bay Substation Topographical Survey indicates ground levels are generally between 7 m and 9 m Above Ordnance Datum (AOD).	Very low risk – proposed potable water pipeline route is in Flood Zone 1 when considering tidal flood risk. Therefore, no risk of impacting on tidal / sea flood flow pathways.	No mitigation required.

Source of flooding	Flood risk to the proposed development	Flood Risk from the proposed development	Required mitigation
Surface Water	Proposed potable water pipeline route – The majority of the route is in Flood Zone 1 (very low risk), however small sections are located in surface water Flood Zone 2 (areas with 0.1% to 1% chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change). The proposed potable water pipeline route will be below ground and it will not be impacted by above ground surface water sources. The risk and consequence of surface water flooding along the proposed potable water pipeline route is considered low. Source - Natural Resources Wales Flood Map for Planning⁴	Proposed potable water pipeline route – Very low risk. It is understood that once operational there will be no changes to ground levels along the proposed potable water pipeline route and therefore no changes to surface water flow pathways or increase to flooding elsewhere. The proposed potable water pipeline route will not introduce any new impermeable areas and therefore no increase in surface water runoff and flood risk is anticipated.	No mitigation required.
Groundwater	The proposed potable water pipeline route is located on sandy freely draining soils. The remainder of the potable water pipeline route is located on loamy and clayey soils with naturally high groundwater⁶. The Neath Port Talbot Strategic Flood Consequence Assessment⁷ (SFCA) states that in the south western area of the county, along the coastline, and within close proximity to watercourses, groundwater levels are predominantly between 0.5 m -0.025 m below the ground surface. Therefore, localised groundwater may be experienced in excavation works during construction of the potable water pipeline. The proposed potable water pipeline will be designed to prevent water ingress so will be protected in the event of coming into contact with groundwater.	In terms of change in groundwater flood risk, the proposed potable water pipeline route would have a negligible impact on groundwater flow locally with no increase in flood risk anticipated.	It is recommended that the management of groundwater during construction is considered as part of the Construction Environmental Management Plan (CEMP).

⁶ Available: <https://www.landis.org.uk/soilscapes/> [Accessed August 2026]

⁷ Available: <https://media.npt.gov.uk/media/xnwlvwbo/doc-11-strategic-flood-consequences-assessment.pdf> [Accessed August 2026]

Source of flooding	Flood risk to the proposed development	Flood Risk from the proposed development	Required mitigation
	Therefore, overall the risk and consequence of groundwater flooding to the proposed development is considered low.		
Sewer	To inform the Neath Port Talbot SFCA DCWW (Welsh Water) provided historical flooding incidents to property relating to public foul, combined or surface water sewers. This information is only available at the electoral ward level and shows that Baglan Bay has 13 recorded incidents of sewer flooding to property. However, there is no recorded or anecdotal evidence of sewer flooding at the proposed development. The proposed potable water pipeline route will be designed to prevent water ingress so will be protected in the event of coming into contact with any sewer flooding. Source - Neath Port Talbot SFCA⁸	There will be no increase in sewer flooding as the proposed potable pipeline route is for potable water supply and separate to the foul / surface water sewerage system.	No mitigation required.
Artificial (Reservoirs)	Very Low – the proposed potable water pipeline route is not located within an area at risk of flooding from reservoirs when river levels are normal or when there is also flooding from rivers. The nearest inundation extent is located approximately 500 m north-west of the proposed potable water pipeline route. Source - Natural Resources Wales Flood Map for Planning²		No mitigation required.

4 Summary and Conclusion

This FCA has been prepared to support the planning application required for the separation of services scheme at Baglan Bay 275 kV substation in Port Talbot.

Development proposals located within the NGET leasehold boundary are permitted development and located in Flood Zone 1, land at very low risk of flooding (defined as land which has less than 0.1% (plus climate change) chance of flooding in any given year). This includes flooding from rivers, sea, surface water and small watercourses. There will be no increase to impermeable hardstanding areas within the NGET site and therefore no increase in surface water runoff or flood risk is anticipated.

The proposed potable water pipeline route extends beyond the NGET leasehold boundary perimeter and therefore requires planning permission. The proposed potable water pipeline route is predominantly located in Flood Zone 1, however a section of the route extends into Flood Zone 2, land at low risk of flooding from rivers and surface water (defined as land with a 0.1% to 1% (plus climate change) chance of flooding in any given year). Flood Zone 2 at this location is in a TAN15 Defended Zone, defences offer up to a 1% AEP Standard of Protection.

Other sources of flooding such as sewer, groundwater and artificial sources (reservoirs) have also been assessed as posing either a low or very low risk of flooding to the proposed potable water pipeline route.

With regards to flood risk from the proposed potable water pipeline route there will be no changes to ground levels along the route and therefore no impact on surface water flood flow pathways, which could impact third parties. The proposed potable water pipeline route would have a negligible impact on groundwater flow locally with no increase in flood risk anticipated.

No additional mitigation measures to be incorporated within the design of the potable pipeline are considered necessary as the pipeline is not expected to increase flood risk elsewhere or result in unacceptable flood consequences. During the construction phase it is recommended that the construction manager signs up to the local NRW flood warning service and groundwater management measures are considered as part of the CEMP.

In conclusion:

- The proposed development subject to planning comprises a buried potable water pipeline with no increase in impermeable area, no changes to ground levels and no obstruction to flood flow pathways.
- No additional mitigation measures are considered necessary as the pipeline is not expected to increase flood risk elsewhere or result in unacceptable flood consequences.
- Overall, the proposed development is considered acceptable in flood risk terms and complies with Planning Policy Wales and TAN15.

Appendix A –Proposed Development Plans



NOTES

- Access road safety rules to be included on CDM sign.
- Vehicle hazard lights and warning beacons must be switched on whilst driving on access road.
- Vehicle speeds must not exceed 10mph.
- 'Beware of Pedestrians' signage to be provided.
- For additional health and safety information refer to construction method statements.
- All CDM areas require agreement with National Grid SAP prior to establishment.
- CDM areas are shown indicatively and may be developed as project progresses.
- All works will be carried out in accordance with National Grid safety rules and procedures.
- Segregated Access route to be provided for pedestrians from amenities to work areas.
- Work areas must be segregated using suitable barriers.
- Temporary earthing during construction to be agreed with National Grid SAP.
- Extra care to be taken outside substation compound to ensure security of materials and equipment which are not to be left unattended. Welsh Government security is limited to road access and the site has a history of incidents involving salvaging and theft of materials.
- Background information based on AutoCAD Bing maps (2020).
- A working width of 3 m has been assumed for installation of underground services.

LEGEND

CDM Work Area

Car Parking and Laydown Area

Welfare Area

Haulage Access Route

Proposed Access Route

Proposed Equipment

Existing Layout

Substation Access Gate

Electrical Palisade Fence(ISS Specification)

Items Included Within CDM Area:

Fire Alarm

Fire Extinguisher

Muster Point

Skips

First Aid Facilities

Notice Board - Site Information

Notice Board - CDM Information

REFERENCE DRAWINGS

HAZARD PLAN	PDD-102592-LAY-0201
CIVIL LAYOUT	PDD-102592-LAY-0202
INDICATIVE POTABLE WATER CONNECTION ROUTE PLAN	PDD-102592-LAY-0203

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FOR INFORMATION

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