

Cwmwernderi Reservoir

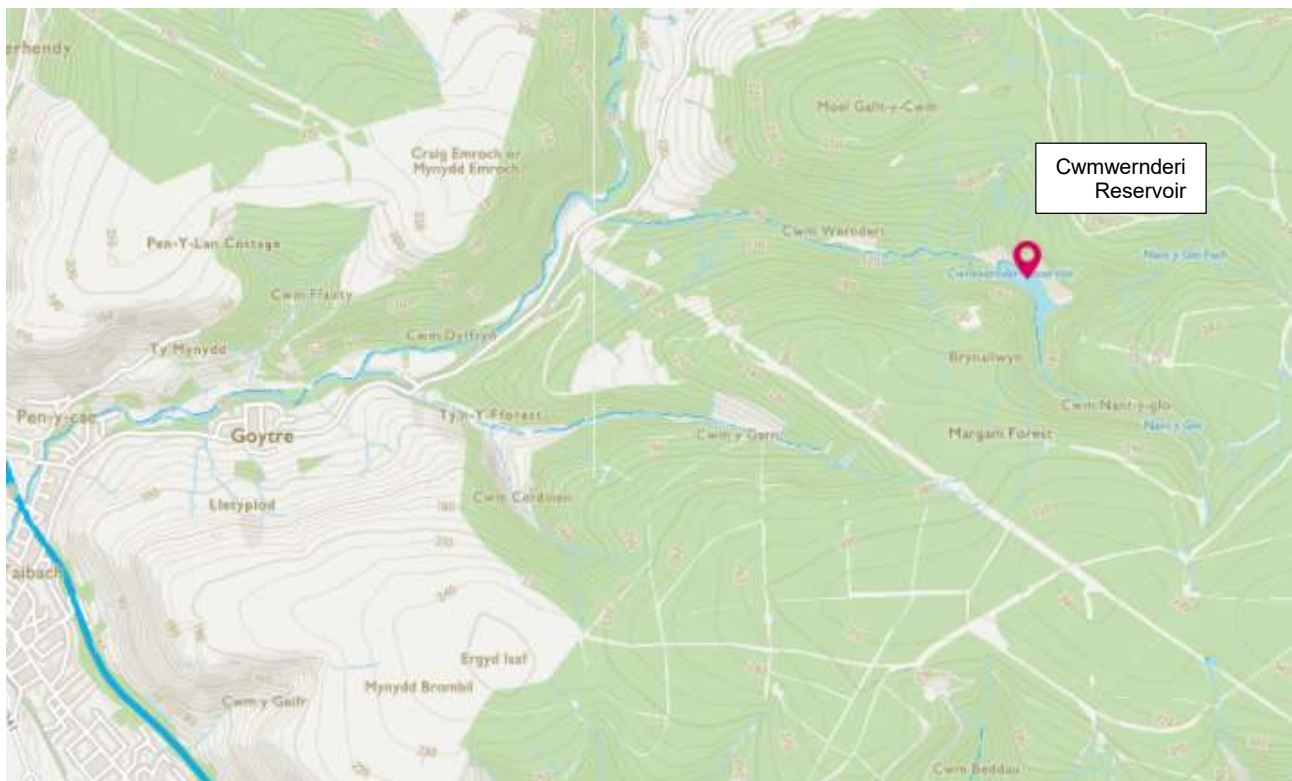
Subject	Cwmwernderi reservoir – Landowner’s consultation paper for compounds and proposed access track
To	Dŵr Cymru Welsh Water (DCWW)
From	Mott MacDonald Bentley (MMB)
Doc reference	B14504-123532-12-XX-RP-NA-EI0029
Date	23/08/2021

1 Introduction

1.1 Location

Cwmwernderi Reservoir is situated about 5km east of Port Talbot town centre, ordinance survey grid reference SS 81687 90174. The reservoir is formed by an earth embankment dam approximately 23m high and 75m long, which was completed in 1901. It has a capacity of 205,000m³ and a surface area of 24,300m² with a top water level of 148.87mAOD. The reservoir is currently used as flood defence for the neighbouring areas. It has not been used for water supply since 1975.

Figure 1.1: Site Location

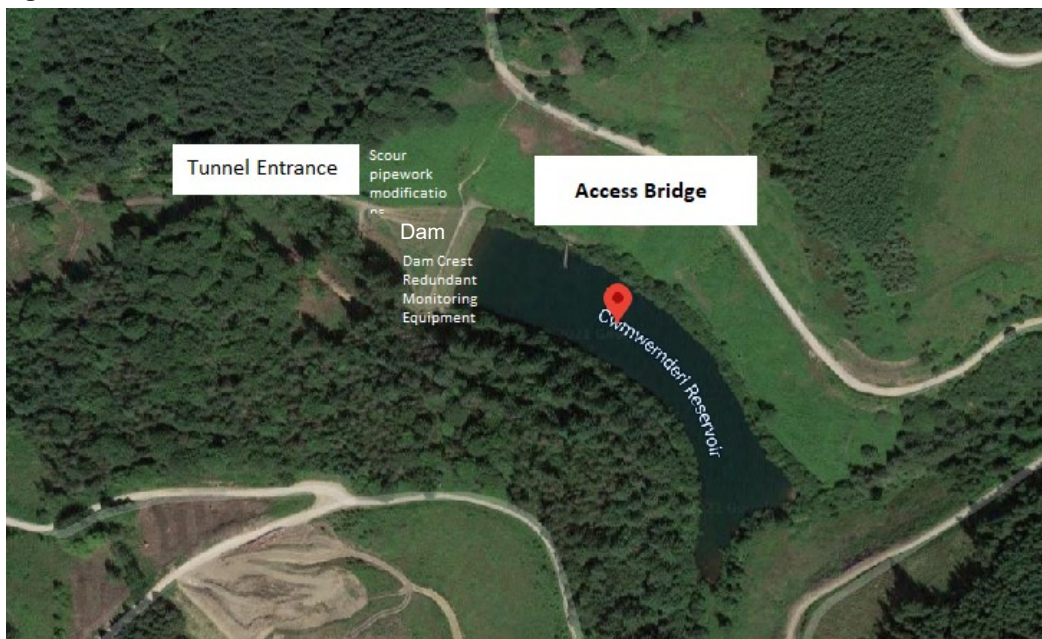


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1.2 Driver for works

Dŵr Cymru Welsh Water is undertaking works at Cwmwernderi reservoir. The scheme is being undertaken following a recommendation made in the interest of safety by an Inspecting Engineer under Section 10 of the Reservoirs Act 1975 dated July 2020. The works are required to improve the safety of the dam and reduce risk to public safety and the environment downstream. The works are statutory in nature, are required to be undertaken before July 2023 and are enforceable by the Natural Resources Wales (NRW). The works comprise of the removal of the existing draw off valve tower and associated access bridge and modifications to provide more reliable upstream control, replacement of the scour pipework within the existing tunnel including a new outlet structure and outlet chamber to adjacent watercourse.

Figure 1.2: Cwmwernderi Reservoir



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1.3 Regulatory Construction works

To meet Measures in the interest of Safety as recommended in the Section 10 report under Section 10(3) (c) of the Reservoirs Act 1975, the following construction works are to be completed by 6th of July 2023

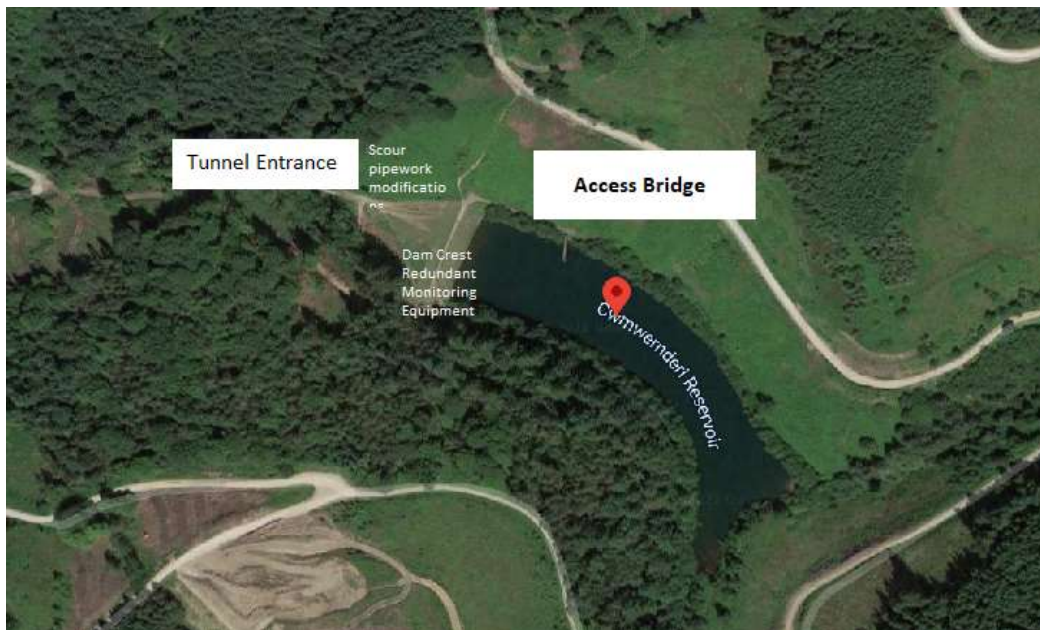
- Enabling works (temporary for duration) including upper and lower compounds, some access road improvements, passing bays, tree pruning. Access route shown on figure 3 above.
- Establishment of alternative bat habitat under mitigation licence.
- Set up of temporary over pumping to draw down and maintain reservoir water levels.
- Temporary access road over the existing Dam
- Removal of the existing draw off tower and bridge.
- Removal of all existing pipework with the scour tunnel
- Construction of new forebay/inlet area
- Construction of new tunnel plug
- Installation of new draw off pipework and valves.
- Construction of Tunnel outlet structure
- Construction of outlet dissipation chamber to water course

All plant and machinery will be left on site for the duration of the works within a secure compound area.

The working area will be defined by an agreed CDM boundary, working areas within the boundary will be fenced with anti-climb Heras fencing to deter un-authorised access.

Security personnel will be required for the duration of the works due to historic unauthorised access to the area. Security personnel will be present at the main compound outside of standard working hours. Access through the main existing NRW entrance gate will be manned during working hours by an MMB gate man (0730hrs-1730hrs).

Figure 1.3: Proposed construction works



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1.4 Programme

The project has been given a statutory completion deadline of 6th July 2023 under section 10 of the Reservoirs Act 1975.

The main construction works are due to commence in January 2022 and are expected to last 13 months.

2 Proposed Access Track

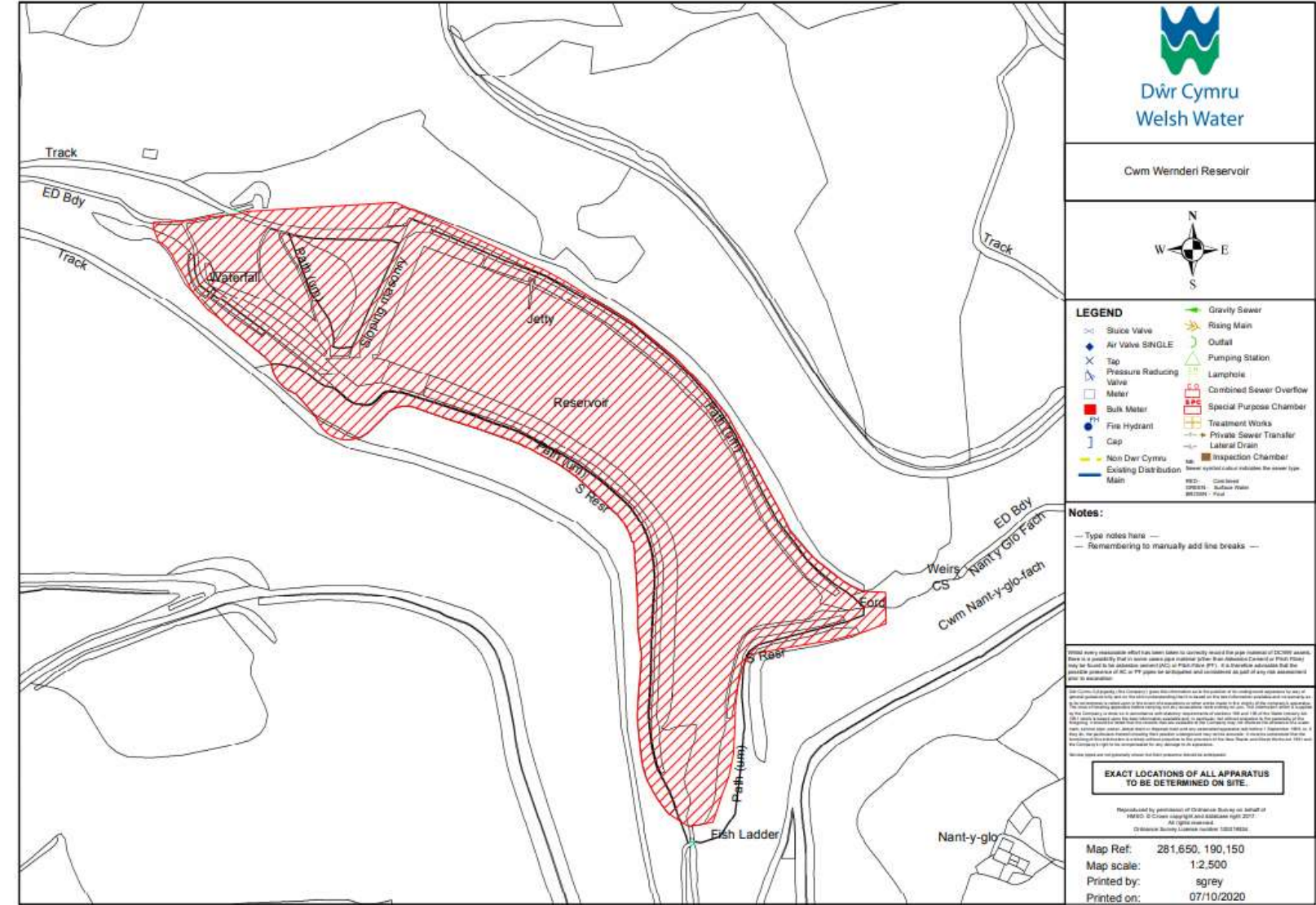
2.1 Land titles

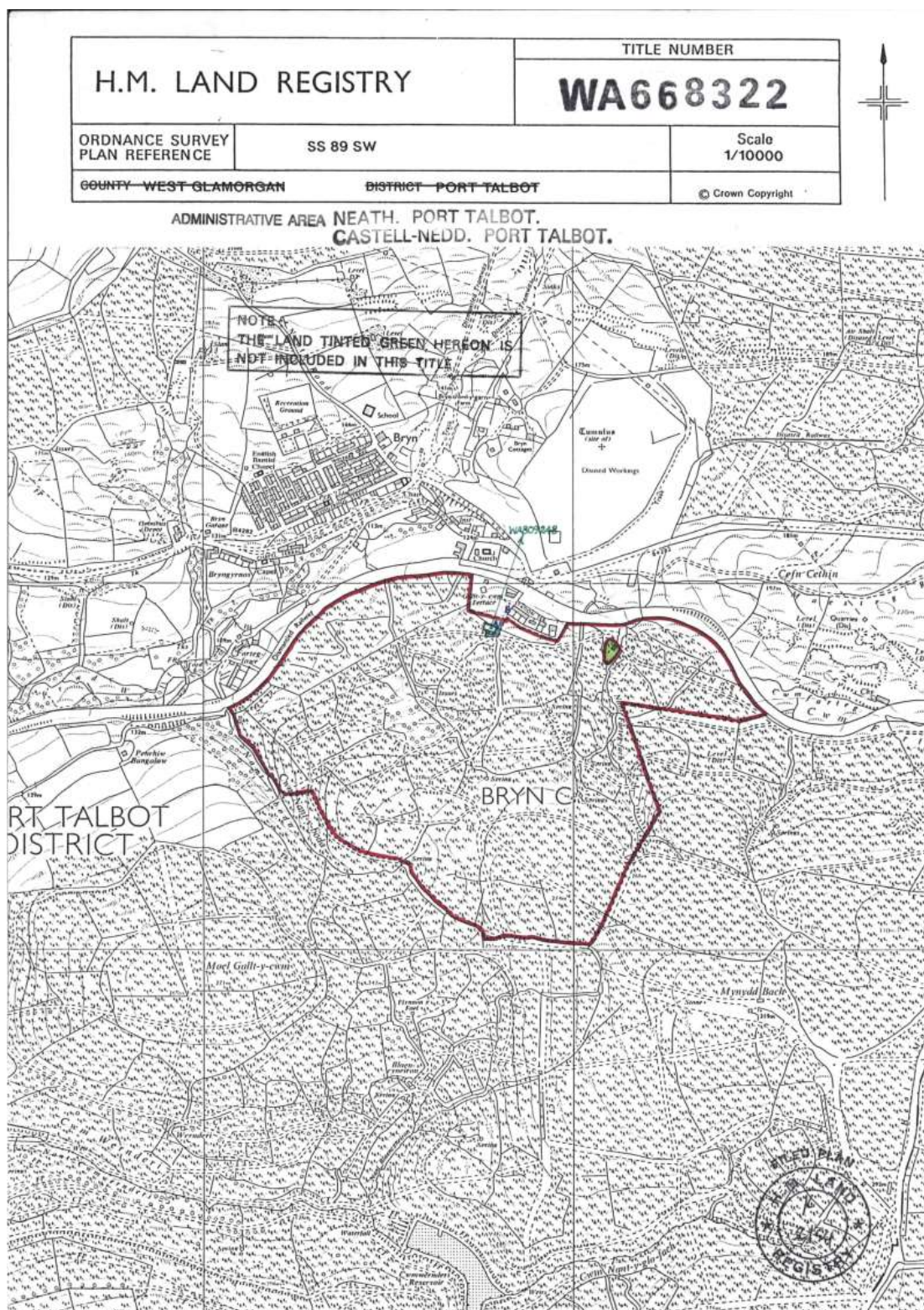
The access route encompasses land of the following landowners:

1. Natural Resources Wales (NRW) on behalf of National Assembly for Wales
2. Dŵr Cymru Welsh Water (DCWW)

Figure 2.1 depicts the land ownership along the proposed access track.

Figure 2.1: Land Ownership around the Reservoir





2.2 Proposed route

To access the reservoir, the proposed route shown in purple on Figure 3 is intended for the scheme for access and egress just off the B4282 Neath Road on the outskirts of Maesteg. All construction traffic to the proposed route would be kept to a minimum and consideration shown to the local residents.

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2.3 Construction traffic

2.3.1 Traffic movements

The anticipated traffic for the duration of construction works will comprise of construction plant, material deliveries and personnel vehicles. The tables below outline the type and weight of vehicles expected to deliver the regulatory works for the project in line with our proposed access and compound locations. Due to the stage of the project the below is our best estimation of vehicle type/frequency/volumes and can be subject to change though we would not expect this to be significant.

Vehicle Type	Length (m)	Height (m)	Width (m)	Gross Weight (T)
6m3 Concrete wagon (Triple axel) fully loaded	8.7	3.75	2.55	26
8m3 Concrete wagon (Quadruple axel) fully loaded	9.15	3.75	2.55	32
4-wheeler tipper (triple axel)	6.90	3.40	2.50	18
8-wheeler tipper (Quadruple axel)	9.5	3.50	2.50	32
Low Loader trailer (3 axels)	17.890	0.975	2.470	22
21t Tracked Excavator	9.7	2.97	2.88	22.12
Artic curtain sider (3 drive axels, 2 trailer axels)	16.60	3.50	2.50	44
Rigid lorry with Hiab (quadruple axel)	8.5	3.81	2.55	26

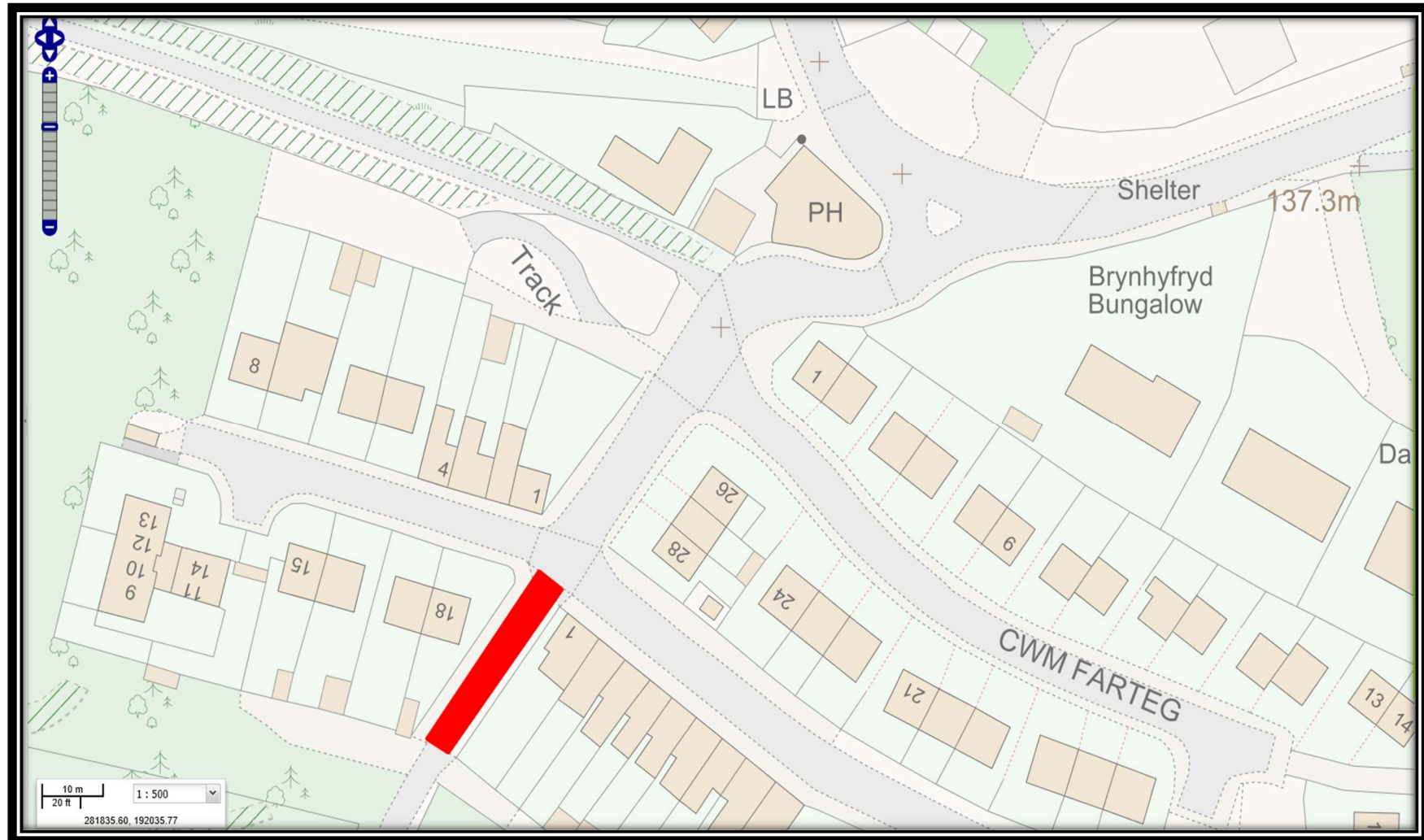
The volume and frequency of construction traffic movements is outlined below.

Material	Expected Volume	Transport Movements	Estimated Duration	Ave movements
Aggregate	9600m3	900	3monthd	1 / day
Concrete	340m3	60	12months	1-2 / day
Pipework	190m	5	1month	1-2 / day
Reinforcement	32t	4	8months	4 deliveries
Site Traffic (cars and vans)	3000nr	3000	13months	10-15 / day
Disposal	60m3	18	3months	1-2 per week

2.4 Other constraints

An 18t weight restriction previously imposed on the Station Terrace Road to Galltcwm Terrace, Bryn, has been temporarily lifted, by the Port Talbot Council for a duration of 30 months and has come into force on the 12th of April 2021.

Figure 2.3: RC890 TEMPORARY REVOKATION OF WEIGHT LIMIT ORDER STATION TERRACE, BRYN



3 Proposed works

3.1.1 Compound location

3.1.1.1 Option 1

Due to the nature of the scheme (large project design and build) it is necessary to have a site office/welfare arrangement that meets the Health and Safety at Work Act and that also complies with our internal company Operational Safety Standards to limit risk to Health, Safety & Welfare on employees, contractors and third parties. Based on these requirements, the most suitable location (Option 1 shown in Figure 3.1) for this arrangement is for the main compound to be located immediately downstream of the dam which in the event of an emergency would be the best place for our site management team to be to manage an event most efficiently. As a single operational compound, an area of approx. 4000sqm would be required. The primary reasons for this are:

- The construction work involves a substantial aspect of High Risk confined space working. As such, emergency arrangements are required to be as close to the work area as reasonably practicable (First Aid responders, Gas Monitors, defibrillator, emergency incident co-ordinator, emergency contacts)
- The shortest distance for communications between High-Risk work area and the Site Management team in case of the requirement to manage an emergency/injury, this is to reduce the over reliance on communication radios.
- Minimising exposure of 3rd parties and the public to undue risk from construction activities. This is to limit Health & Safety risks, environmental disruption (dust, noise etc.) and nuisance.
- Easily accessible welfare arrangements for the workforce – toilets, washing facilities, showering facilities (in case of contact with hazardous substances) drying room (for drying/changing works clothes) eating/drinking areas.
- Minimising carbon footprint by reducing double handling of materials/equipment in smaller loads.
- The compound would be on the existing DCWW land and therefore negate the requirement for planning permission and would be covered under permitted development.

Figure 3.1: Main compound option 1



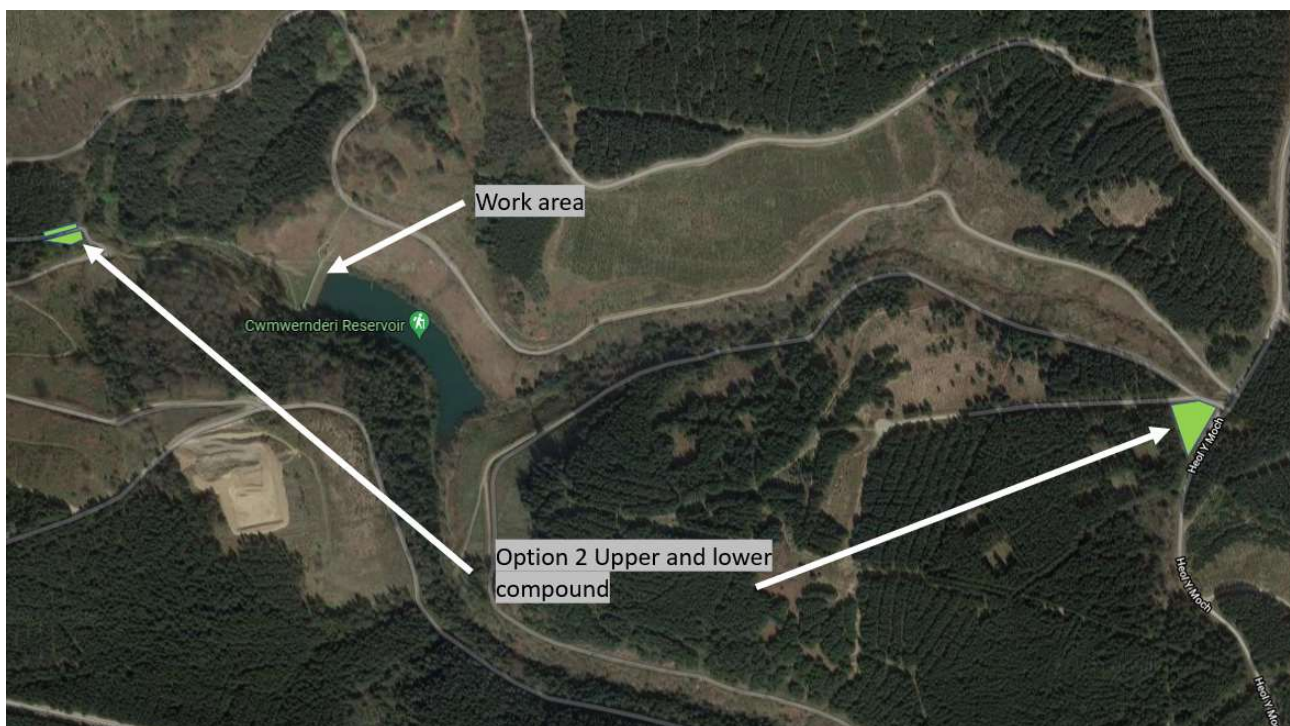
Following a review, it was decided that having all of the operational compound in this location is not possible due to the topography and environmental constraints. The severe gradients of the existing access track and adjacent hillside with significant tree coverage does not permit the preferred to be utilised, there is also presence of lesser horseshoe bats within the existing tunnel which would likely impact on the compound and permanent works. As such, splitting the operational compound is required and an additional area will be required to locate aspects of the operational compound.

3.1.1.2 Option 2

Option 2 utilises an area of recently felled plantation woodland habitat (Figure 3.2 Option 2) to accommodate our Health and Safety requirements. Although not fully satisfactory given it is located 2.9km away from the main work area, this is the closest area which is adequately sized, has suitable terrain and accessible to accommodate the main compound offices/welfare and gave the best chance of radio link between the High-Risk work area and site management office.

Due to the nature of the work and programme constraints, there is still the requirement for a site workforce welfare/parking and materials storage area near to the working area which would be located downstream of the dam toe. This area is labelled as the 'lower' compound, which requires the felling of plantation woodland, however, is a reduced size in comparison with Option 1. An Arboriculture survey has been undertaken to BS5837 and this has assigned the trees a retention category of B i.e., trees of moderate quality. There trees are Sitka spruce grown for timber production. There is also a watercourse adjacent to the area; mitigation measures in the form of bunds/silt management will be in place to prevent pollution.

Figure 3.2: Option 2 Upper and Lower compound locations



3.1.1.3 Option 3

A third area to accommodate the main compound/office/welfare/materials storage has been considered (Figure 3.3). This would involve maintaining the 'lower' compound area as discussed in Option 2, while moving the 'upper' compound to near to Bryn village. The driver for this would be less ecological impact on the area than that of Option 2. Although less ecological impact, the additional distance (5.6km) between the work area and the site compound increases the risks to both Health & Safety and to the general public.

This location would also increase the distance of vehicle movements on site as the bulk deliveries would be delivered to the main compound, these would then have to be transported on smaller loads to the work area. The same impact would be present when removing redundant equipment from the Reservoir/tunnel.

Figure 3.3: Option 3 close to Bryn Village



3.1.2 Conclusion

Following a review of all the options presented, Option 2, although seen as a compromise, is the preferred arrangement. Option 1 is not seen as a feasible arrangement, and Option 3 is seen to decrease the ecological impact and increase the Health & Safety risks and risks to the general public.

Option 2 represents the safest most efficient way of delivering this scheme given the regulatory programme, health and safety, and security constraints.

3.1.3 Risk mitigation measures

Access will be controlled via the locked NRW access gate, speed restrictions will be in place along the route and sign posted as such. Suppliers have been consulted due to the nature of the track and all delivery vehicles will be appropriate to the limitations of the track. Full delivery details and restrictions will be provided to suppliers upon placement of their orders. During working hours, a gateman will be stationed at the NRW access gate to remind visitors/delivery drivers of the restrictions and behaviours expected when travelling through NRW land

Any vegetation clearance required as part of the proposed works will be carried out during the winter months (October to February inclusive), when the risk of disturbing nesting birds is lowest. If such works cannot avoid the breeding bird season, a nesting bird check will be conducted on site no more than 48 hours prior to any works being undertaken. If an occupied nest is discovered, it must be left undisturbed (>5m cordon) until the chicks have fledged the nest and an ecologist has confirmed that the nest is no longer in use.

It is considered likely that NRW will choose to replant the areas with Sitka spruce. We have yet to receive confirmation from NRW on their plans.

However, if NRW wished to increase the ecological value of the site, it is recommended that bluebell seeds and bulbs of local provenance are planted. This could either be alongside coppiced scrub species such as hazel (*Corylus avellana*) and elder (*Sambucus nigra*), or trees such as oak (*Quercus* sp.). Planting these species would prevent bramble from becoming dominant in the understory and provide food for insects, birds, and small mammals.

Common amphibians within the construction areas will be humanely removed or relocated prior to any works taking place.

Reptiles are typically active April to October (inclusive) (temperature dependent). Clearance of vegetation, log piles or tree stumps for both compound sites will be completed during this period under supervision of an ecologist. Any reptiles found will be moved to suitable adjacent habitat. Where felled trees are not utilised for forestry purposes, then they will be left as habitat piles adjacent to the site.

On completion of the works the cabins, fencing and stone will be removed, and the site will be left as felled plantation woodland.

It is proposed to install two bird boxes with the Welsh Water site to mitigate for the loss of suitable nesting habitat in the short-term and provide additional nesting opportunities in the long-term once the temporary compound has been removed and succession has commenced.

3.1.4 Reinstatement works post construction

Following completion of the works, the compound shall be reinstated to be in line with the original condition. The original condition will be assessed prior to commencement and reinstatement agreed in advance with landowner. All temporary passing bays will be removed and returned to existing condition. Any surplus materials will be removed from site and topsoil previously stockpiled in agreed location will be used to reinstated to the original level.

4 Conclusions

Following a thorough review of access route and compound options, the proposed access track offers reduced impact on the local amenity and provides the safest access to Cwmwernderi reservoir.

Although not an ideal scenario with regards to eliminating or reducing health and safety risks in line with the Health and safety at work Act 1974, it has been concluded that Option 2 with an upper and lower compound is the most feasible arrangement that give MMB the best chance of delivering a safe and efficient project within the regulatory completion period.

Figure 4.1 highlights the preferred access routes to site and the location of the favoured site compounds.

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