Overview

The EU Persistent Organic Pollutants Regulation (POP Regulation) was recast in June 2019 to require that "Member States shall identify and remove from use equipment (e.g. transformers, capacitors or other receptacles containing liquid stocks) containing more than 0,005 % (50 ppm0 PCBs and volumes greater than 0,05 dm3 (50 ml), as soon as possible but no later than 31 December 2025"[1].

DNOs were not provided with any specific allowances to fund PCB related activities in RIIO-ED1 and the EU POP Regulations were not implemented in the UK until May 2020. For similar reasons, there were no opportunities for DNOs to request additional funding through the RIIO-ED1 Mid-Period Review of Outputs. There are no other mechanisms available in the RIIO-ED1 framework to enable additional funding to be provided.

While deadline for compliance is the end of 2025 which falls into the RIIO-ED2 period, in order to meet obligations in 2025, there are clear benefits for some DNOs/DNO customers from starting activities in RIIO-ED1 to meet significant deliverability challenges. Note that the scale of increased asset changes required, and in particular pole mounted transformers (PMTs) changes, is not uniform across all DNOs with some DNOs facing much greater deliverability challenges than others if delivery if this mandatory activity is only fully mobilised in ED2.

There is therefore a need for a new mechanism to enable some DNO activities to be brought forward from RIIO-ED2 into RIIO-ED1 to accelerate delivery in line with the 2025 deadline, and to reduce the economic impact of the peak activities Summer 2023 to December 2025 in terms of unit costs of equipment and contracting resources.

In order to help meet the UK's December 2025 obligations, WPD South Wales requests an additional allowance of £3.32m (in 12/13 prices) under Ofgem's ED1 Green Recovery Scheme to begin to deliver the required outputs in the remaining RIIO-ED1 period. A detailed breakdown of costs and associated narrative is provided below the summary cost category table:

Cost category	**Cost £m in 12/13 prices**
Asset replacement (inc. PMTs/GMTs, pole replacement where required)	3.15
Data gathering activities (for both PMTs/GMTs)	0.12
Additional costs (if applicable)	0.05
Total	3.32

Please see accompanying file in RIGs format PCB accompanying table v3.0 (WPD_SWALES).xlsx
(Note that the RIGs format file does not allow the entry of the Additional costs included in the table above).

[1] REGULATION (EU) 2019/1021 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019 on persistent organic pollutants (recast). UK Regulation -The Persistent Organic Pollutants (Various Amendments) Regulations 2019, SI 2019/1099

Impact on RIIO-ED2

DNO to add own narrative on any impacts on their RIIO-ED2 plan

At an early stage in the development of the POPs programme, WPD recognised that there would be significant volumes of activity required to meet the deadline of 2025. As this activity was not included in the RIIO-ED1 allowances, one option was to delay starting the programme until RIIO-ED2 when it was clearer what allowances were being provided, but this would lead to a serious deliverability challenge and risk that the deadline of 2025 would not be met.

In recognition of the tight timescales and the level of activity required, WPD therefore elected to start work in the 2020/21 regulatory year (year 6 of RIIO-ED1), with the programme for managing PCB contamination spanning both RIIO-ED1 and RIIO-ED2.

We anticipate that around 55% of the programme expenditure will be incurred in RIIO-ED1, thus more than halving the costs that would have otherwise been incurred in RIIO-ED2 if we had deferred the start of the programme to RIIO-ED2.

Our RIIO-ED2 Business Plan forecasts reflect this programme, in both the RIIO-ED1 and RIIO-ED2 forecasts. This submission is consistent with the proposals in the Business Plan Data Templates for RIIO-ED2.

Asset Replacement

PMT replacement – Cohort Model

There are a significant number of PMTs on the DNOs' networks to test[2]/replace, therefore using an industry statistical model (The Model) developed by the ENA, approved by the Environment Agency (via RPS 246) and supported by the Welsh and Scottish Environmental Agencies, all DNOs are sampling transformers based on manufacturer and year and put into cohorts. A number of each cohort will be tested, if a certain percentage of the cohort comes back negative, i.e. it does not contain PCB it will be moved to 'green' and the transformers within that cohort do not need to be tested/replaced by the end of 2025 (i.e. they are statically clean and can remain in service).

The most recent iteration of the model (September 2021) has identified the following number of PMTs needing replaced for the 2025 deadline, for WPD South Wales:

Category for PMTs	Volume
Red (to be replaced)	1406
Amber(a sample need replaced to establish if cohort replacement is required or not)	2619
Green (does not need replacing – with output of current cohort modelling)	3477

In the RIIO-ED1 period, from 2020/21, WPD South Wales, will expect to deliver/have delivered the following volumes / cost (12/13 prices):

[2] PMTs are sealed units and in service testing is therefore not possible. Testing is conducted on disposal by an Environment Agency licensed waste disposal contractor

	2020/21	2021/22	2022/23
PMT replacement - Volumes	359	296	296
PMT replacement - Costs	1.26	0.95	0.95
Replacement Poles / Additional poles - Volumes	n/a	n/a	n/a
Replacement / Additional Poles – Costs	n/a	n/a	n/a

To demonstrate efficiency the cost for the PMTs and Poles is to be referenced to the Ofgem expert view of efficient unit costs determined in the Disaggregated Cost Benchmarking Model in the Final Determinations for ED1 (ED1 FD).

In addition, there may be requirements to install or upgrade associated equipment at the time of the works which are not included in the efficient unit cost above, e.g. installation or upgrade of earthing, upgrade of spur line protection to meet the spec of the uprated transformers (these do not have discrete unit costs in ED1 FD):

12/13 prices	2020/21	2021/22	2022/23
Earthing - Volumes	n/a	n/a	n/a
Earthing - Costs	n/a	n/a	n/a
Protection upgrades - Volumes	n/a	n/a	n/a
Protection upgrades - Costs	n/a	n/a	n/a
Others - Volumes	n/a	n/a	n/a
Others - Costs	n/a	n/a	n/a

Please add additional rows if required.

Individual DNO narrative to justify extra costs (not part of discrete unit costs)

The costs of the proposed programme have been derived by applying a standard unit cost to the forecast number of transformer replacements.

The standard unit cost includes purchase and installation of the new transformer, and removal and disposal of the existing transformer. We expect that in order to install the new transformer additional works, such as earthing upgrades and pole replacements, may be required at a proportion of sites. Our unit cost includes these additional works at the expected proportions of sites. The costs are factored into the PMT replacement costs rather than being identified separately.

We may undertake other works at the same time as the transformer change (e.g. pole change due to the condition of the pole), however these works will be separately costed and allocated to the driver of the works (e.g. condition based asset replacement). These are not included in the costs forecasts for POPs.

GMT replacement [DELETE section if not applicable] OR Update heading for other asset replacement categories outside PMTs

GMT testing and replacements are outside of the scope of the ENA statistical model.

12/13 prices	**2020/21**	**2021/22**	**2022/23**
GMT replacement Volumes	n/a	n/a	n/a
GMT replacement Costs	n/a	n/a	n/a

DNO to add own narrative to justify costs.

In WPD South Wales, PCB contamination in ground mounted transformers will be managed through oil testing and changing the oil. We do not proposed to replace any assets and therefore the volumes and costs associated with replacement of ground mounted transformers are zero.

[Data Gathering activities to inform replacements – Delete if not relevant]

[Additional data gathering actives have been conducted to inform both the PMT statistical model and other PCB work as set out below. Without these activities there would have been inefficiencies in the work conducted.]

Activity (add costs to table) 12/13 prices	**2020/21**	**2021/22**	**2022/23**
Data gathering – PMT (e.g. drones) – Volumes	541	627	0
Data gathering – PMT (e.g. drones) – Costs	0.003	0.003	0
Data gathering – GMT – Volumes	n/a	n/a	n/a
Data gathering – GMT – Costs	n/a	n/a	n/a
Persistent Organic Pollutant Oil Testing (PMTs) – Volumes	n/a	n/a	n/a
Persistent Organic Pollutant Oil Testing (PMTs) – Costs	n/a	n/a	n/a
Persistent Organic Pollutant Oil Testing (GMTs) – Volumes	1352	0	0
Persistent Organic Pollutant Oil Testing (GMTs) – Costs	0.04	0	0
Persistent Organic Pollutant Oil Changes (GMTs) – Volumes	18	10	20
Persistent Organic Pollutant Oil Changes (GMTs) – Costs	0.01	0.02	0.05

DNO to add own narrative to justify additional costs they are requesting are funded.

Data gathering – PMT (e.g. drones)

A dedicated inspection programme was initiated in 2020 to collect information for pole mounted transformers (such as manufacturer and model) where this data was missing from our asset data repository. This improved data has been used in the statistical model to enhance the information being used across the industry to identify likely contaminated units. In turn once the statistical model identifies that a particular cohort is affected, the data enables us to identify the specific units that need to be replaced.

Persistent Organic Pollutant Oil Testing (GMTs)
Persistent Organic Pollutant Oil Changes (GMTs)

We have implemented a programme for testing for contaminated oil in ground mounted transformers. This testing is due to complete in 2022. This will confirm the amount of oil changes that will need to be carried out. Having used the testing to establish which transformers are contaminated, the programme to replace contaminated oil will be carried out during RIIO-ED1 and RIIO-ED2 and is forecast to continue until the end of 2025.

Additional costs (Each DNO to complete if required for their submission)

To be justified by each DNO.

For example, the nature of individual projects to replace PMTs is such that there is likely to be significant project indirect costs, e.g. costs incurred due to land access, outage planning / live line job planning and integrated project planning. Note that unless generators are deployed each of these replacements will need pre-planned customer outages with associated QoS incentive impacts.

Activity (12/13 prices)	2020/21	2021/22	2022/23
Indirects associated with PMT replacement	0.02	0.02	0.02

DNO to add own narrative to justify additional costs if requested.

The additional costs identified above are the estimated indirect costs associated with the planning of projects to replace pole mounted transformers.

Each scheme will be different, however typically there will be indirect costs associated with technical planning and analysis, arranging land access, securing materials, raising and authorising sanctions for expenditure, scheduling and programming of works, contacting customers etc.

We have estimated that on average 1 ½ hours of indirect time will be associated with each transformer change.

Deliverability in ED1

The proposed additional programme that this submission seeks to funding for may represent deliverability challenges within the remaining period of ED1 (with reference to historic and current planned ED1 run rates). Any specific challenges and solutions identified by individual DNOs should be set out below, however the agreed approach is that these outputs will be subject to the same treatment as Green Recovery Projects in that any delivery that is delayed into ED2 will still be required to be delivered by DNOs at the ED1 unit cost set out above rather than the agreed ED2 unit cost. This inherently incentivises DNOs to seek funding for a programme that can be delivered within ED1.

DNO to add own narrative to explain ED1 deliverability challenges and how these will be overcome in ED1.

This submission reflects our original planned programme that spans RIIO-ED1 and RIIO-ED2, and the values are consistent with those included in our December 2021 RIIO-ED2 Business Plan. This submission does not represent any change to the proposed RIIO-ED1 programme identified in our RIIO-ED2 Business Plan.

It should be recognised that there are increased demands on the supply of pole mounted transformers due to increased replacement activity across the industry. This increases activity is driven by POPs requirements, losses programmes, reinforcement for load growth and any increases in condition based replacement. WPD's Procurement team identified this challenge early and have been working with manufacturers to ensure that we continue to secure the volume of assets on an on-going basis required to deliver our programmes or work. There are risks however that manufacturing capability may impact the availability of equipment.

Future Proofing

When pole mounted transformers are replaced under this programme there is an opportunity to future proof the transformers by upgrading the transformer to a larger size to accommodate future load growth expected to accommodate Low Carbon Technologies, which will have an added benefit in the immediate term of reducing network technical losses.

The agreed approach is that DNOs will consider each transformer being replaced in the context of it's Distribution Future Energy Scenarios referenced in ED2 plans and will consider upsizing the transformer accordingly.

Future Proofing	
DNOs to set out their justification and approach for future proofing decisions, including number of transformer upgrades included in proposal and additional MVA capacity created. Any analysis of future benefits to consumers should be included here – if appropriate supported by Cost Benefit Analysis (using ED2 CBA model). We have not included any additional costs associated with uprating specifically for future proofing as part of our proposed POPs programme. As outlined in our Losses Strategy, we are no longer installing the smallest sizes of pole mounted transformers in order to reduce network losses. The minimum size pole mounted transformers will now be 50kVA for single phase units and 100kVA for three phase units. The unit costs used have been built by assuming that the assets will be replaced with the nearest available unit in size, therefore the smallest units currently on our network will be replaced with larger capacity assets. As well as providing a losses benefit, these larger capacity transformers will also provide a capacity benefit, providing an amount of future proofing. In practice, when we replace pole mounted transformers, our planners review the local loading situation, and consider whether the substation is in an LCT hotspot. If necessary a transformer of higher capacity will be installed.	

ED2 Deliverability and Efficiency Challenges

The potential scale of PMT replacement programmes faced by some DNOs could present significant delivery challenges in ED2 which are also likely to present as upwards pressures on costs, whether this be from competition for overhead line contracting resources or increased demand on equipment manufacturers.

Accelerating a proportion of the industry PMT replacement programme into ED1 will reduce pressure on input costs for all DNOs by smoothing the industries delivery profile and reducing the peak demand on manufacturing and contractors during a more concentrated period (April 2023-December 2025).

Deliverability of Programme in ED2	
DNOs to include benefits of early commencement of their programme. DNOs should also set out their views on incremental supply chain and contracting challenges if the entire programme is delayed until ED2 and the potential for material cost increases. This should also reference the unit costs utilised for this submission versus those forecast in ED2 final plans submitted in December 2023. As described earlier, the WPD proposed programme spanning RIIO-ED1 and RIIO-ED2 recognises that achievement of the statutory deadline requires significant delivery of activity during RIIO-ED1. Delaying the programme to RIIO-ED2 would result in increased delivery challenges to the availability of both resources and materials during the first years of RIIO-ED2, thereby potentially risking non-compliance with legislation. Even with spreading the programme across RIIO-ED1 and RIIO-ED2, there are risks to the availability of materials (i.e. transformers) and therefore trying to deliver all the volumes in RIIO-ED2 would exacerbate this risk. The RIIO-ED2 Business Plan forecast includes the forecast RIIO-ED1 programme and therefore the volumes in RIIO-ED2 assume that the volumes proposed for RIIO-ED1 are delivered. The unit costs and volumes detailed in this submission are consistent with the RIIO-ED2 Business Plan submitted in December 2021.	