TRAWSFYNYDD SITE

Report on Environmental Management at Trawsfynydd Site for December 2016 Site Stakeholders Group Meeting.

Issue Date 22 November 2016

Introduction

The Radiological Protection and Environment section at Trawsfynydd is responsible for environmental management and for providing oversight of all work relating to the site's environmental permit.

Radioactive Substance Regulation work

A revision to the site's Environmental Permitting Regulations (EPR) permit was envisaged in 2016. This work is ongoing, therefore there are no changes to report.

Upgrades to the site's gaseous discharge vent monitoring systems has continued throughout the year. The upgraded system is intended to provide more flexibility for future decommissioning conditions by allowing optimum gaseous monitoring to be achieved. These upgrades are scheduled for completion in 2017.

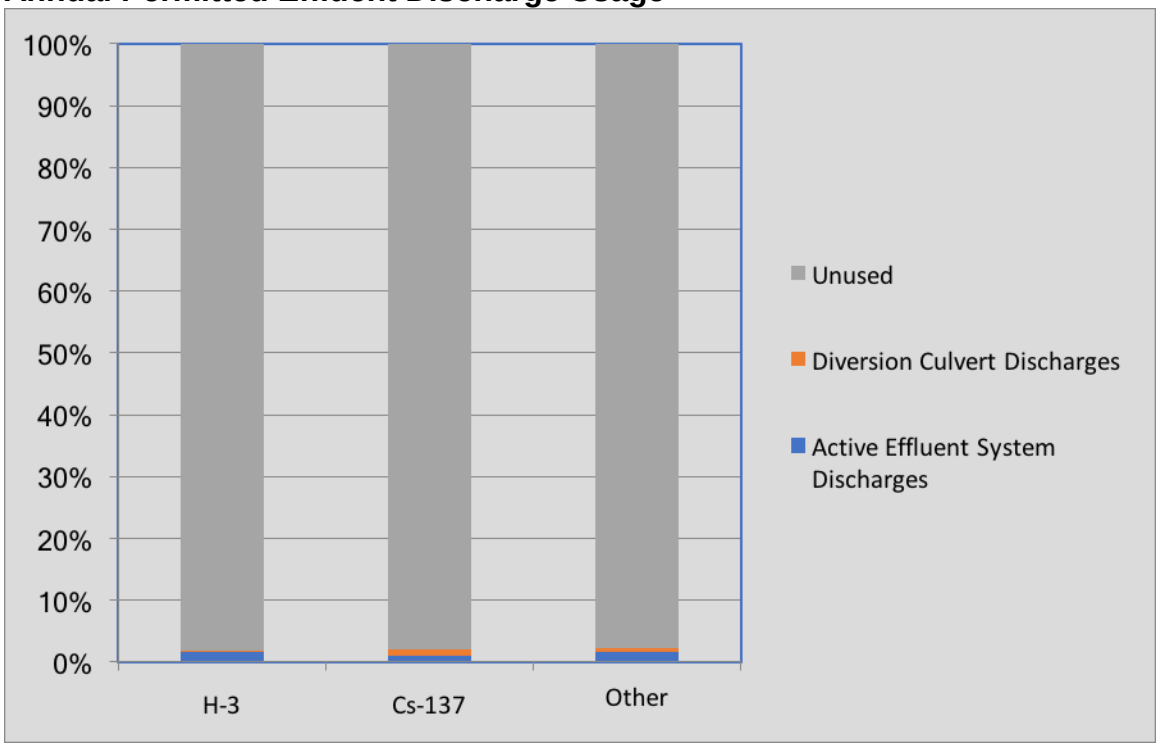
The Mobile Active Effluent Treatment Plant (MAETP) has entered routine operations and involved handing plant over to the Operations section. The MAETP will fully replace the Active Effluent Treatment Plant when all waste retrieval and packaging of wet ILW is completed. The remaining wet ILW waste is the content of our Main Sludge Vault (MSV). The final MSV sludge retrieval project has started this year and is due to be completed in 2017.

A separate report detailing the site's liquid effluent discharges and environmental survey results will be made available at the December 2016 Site Stakeholder Group meeting.

The site has invested in a new environmental laboratory, which was recently commissioned, and has taken over from the former laboratory in the Administration Block. With the revised Life Time Plan the site has identified the need to invest in the site's environment measuring systems to align with the extended period of operation. The investment has mainly been focused on the three systems used for radiological analysis and involved; servicing and upgrading the sensitive gamma spectrometry detectors, commissioning of a newer alpha & beta counting system and procuring a new liquid scintillation system.

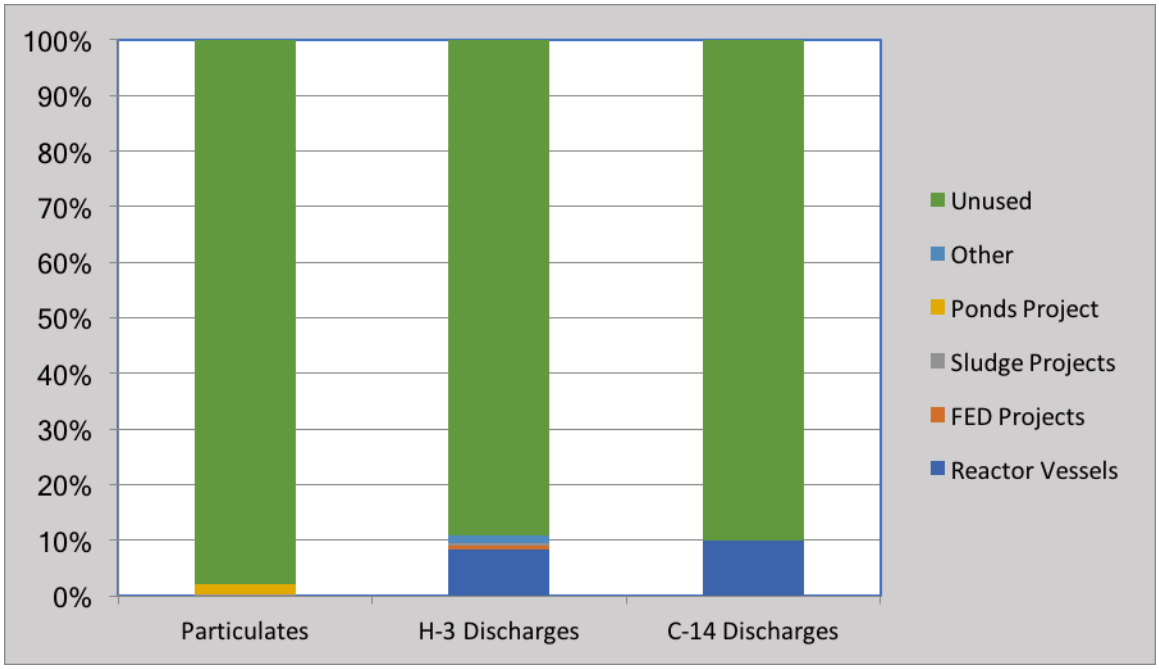
Site radioactive discharges continue to be optimised and minimised as required by the Site's EPR permit through application of *Best Available Techniques (BAT)* and *As Low as Reasonably Achievable (ALARA)* regulatory drivers. A demonstration of the application of BAT and ALARA is indicated by the low usage of our discharge limits in the graphs presented in Table 1 & 2.

Table 1 - 2015 Liquid Effluent Discharges to Llyn Trawsfynydd - Annual Permitted Effluent Discharge Usage



H-3 = Tritium; Cs-137 = Caesium - 137

Table 2 - 2015 Gaseous Discharges compared to Annual Permit Limits



There were no major environmental events at the Site during 2016 (Environment Agency Common Incident Classification Scheme or Compliance Classification Scheme category 1 or 2 events). There were two Category 4 events connected to waste sentencing which led to regulatory interest from Natural Resources Wales (NRW). These two incidents did not produce any environmental impact as existing site systems captured the incident before material left site. However, the incidents were identified at a final check rather than during preliminary controls and therefore improvements have been instigated to provide improved defence in depth. Both incidents had insignificant potential to harm the environment or the public, which is indicated by the low category of the events, but the response to these events demonstrates an eagerness to make continuous improvements to the site's arrangements.

General Environmental Management

Magnox Ltd.'s corporate Environmental Management System continues to have BS EN ISO 14001 (2004) certification awarded by Lloyds Register Quality Assurance (LRQA).

As part of the Company's recent organisational restructuring, the infrastructure environment function has been integrated into a new Radiological Protection and Environment section within the Environment, Health, Safety, Security and Quality (EHSSQ) Department. EHSSQ is headed by the EHSSQ Manager who remains a Trawsfynydd Lead Team member. The Radiological Protection and Environment (RP&E) Section is managed by the Head of Radiological Protection and Environment and is staffed by an Environmental Adviser (Radiological), a Radiation Protection Engineer, Environmental Coordinator and supported by technical and administrative resource. Additionally, the programmes have their own specialised resource including an Environmental Coordinator and four Radiation Protection Engineers. The EHSSQ department continues to provide close support to the programmes until their specialised resource have gained the necessary level of skill and experience to work independently. Once the programmes can work independently the EHSSQ department will predominantly provide an independent assurance role. This transition should be complete in 2017.

The Site continues to monitor its impact on the environment as required by the Nuclear Decommissioning Authority and company arrangements. Much of the energy consumed is used in nuclear safety related plant and ongoing completion of decommissioning and demolition work. As plant become decommissioned the energy usage has lowered. The largest energy improvement in 2016 is as a result of vacating the old Administration and Workshop Block. Being an old and inefficient building; switching off of services to these buildings has resulted in a reduction of approximately 45MWh of energy usage per month (this equates to

40 tonnes of CO2 per month). The recent gradual decrease in total energy and carbon dioxide usage can be seen in the graphs shown in Table 3 & 4.

Table 3 – Energy Usage over recent years

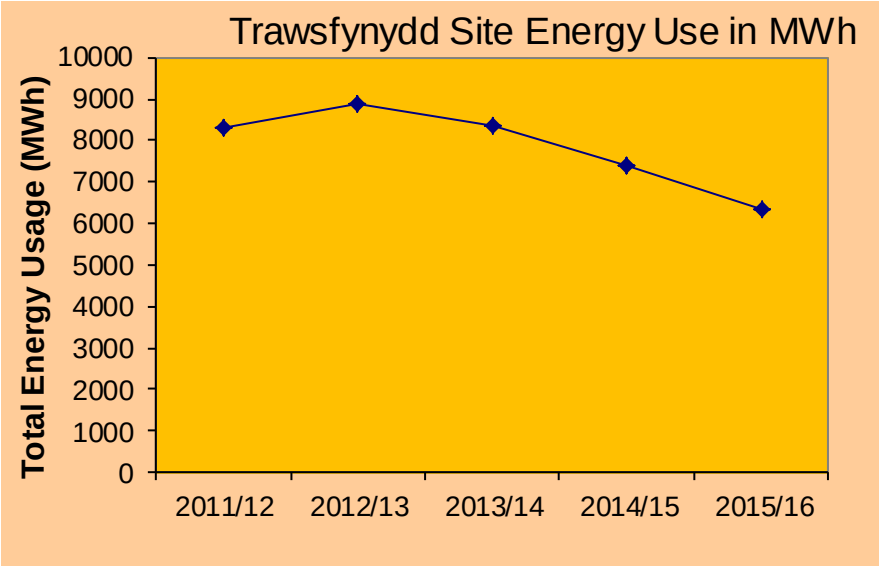
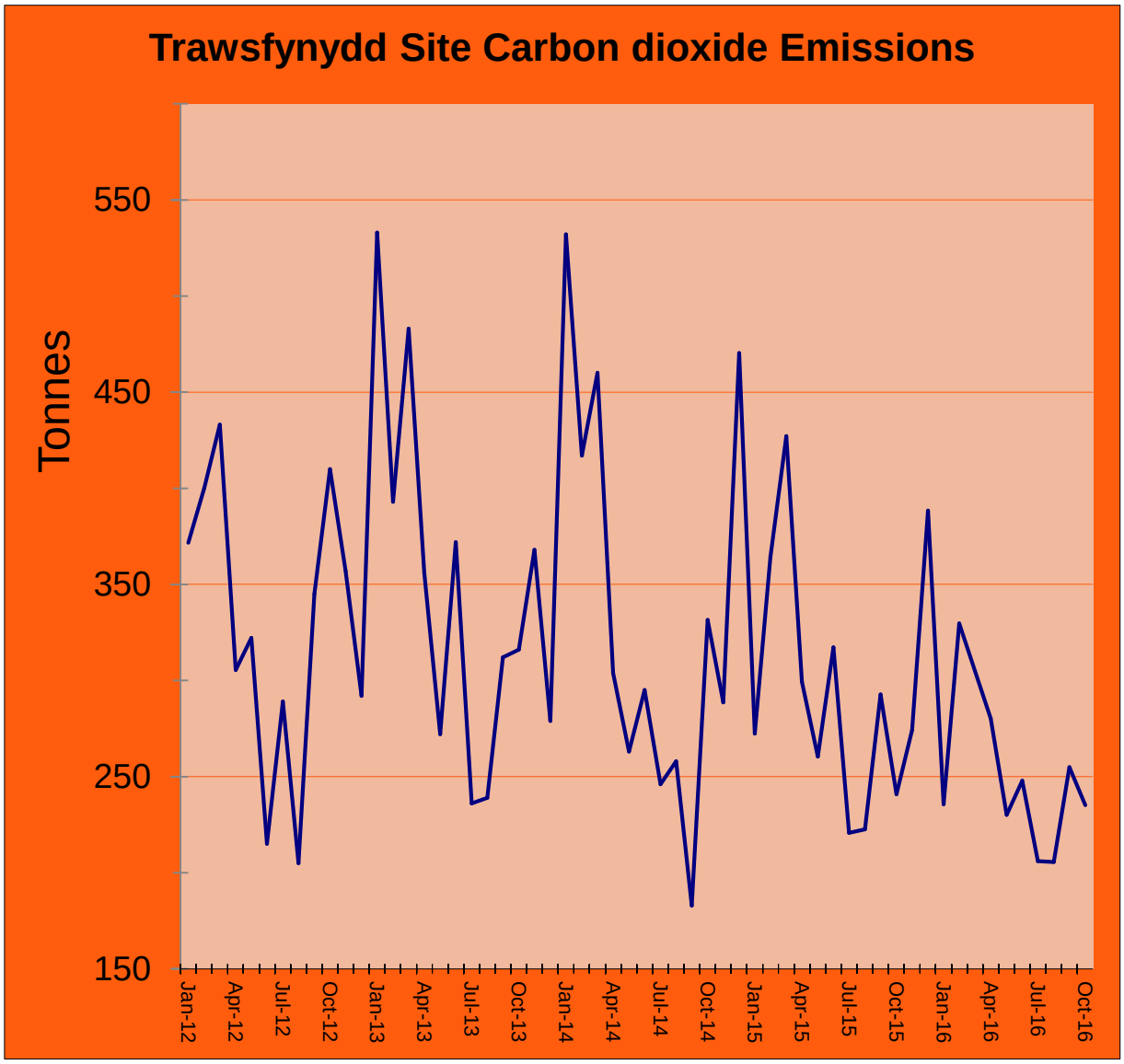


Table 4 – CO2 Emissions over recent years



The site's Biodiversity Action Plan (BAP) continues to be employed with the following achieved during 2016:

- Improvement to site Habitats achieved by;
    - Encouraging the growth of traditional meadow flowering plants for the benefit of wildlife (bees and other pollinating insect in particular) through continued enhancement of the grass cutting programme
    - Controlling and removing invasive plants such as rhododendron, Japanese knotweed and Montbretia from areas managed by the Site.
    - Managing the woodland areas within the power station boundary to encourage the development and retention of any standing deadwood and damaged trees

- Other BAP related work
    - BAT survey of Admin and Workshop Block and BAT and Habitat Survey of north of Site where some tree cutting was required for borehole installation

During 2017 it is planned that the site will continue to improve Site habitats through grounds management work.

Non – radioactive waste management

This financial year (2016-17) to date the site has produced 209 tonnes of waste of which 72% (88% if hazardous waste is excluded from the totals) was recycled. During the financial year 2015-16, 358 tonnes of waste were produced and 83% (91 % recycling rate with hazardous waste excluded) was recycled.

As is clear from the excellent recycling rates achieved, the Site continues to be very successful in pursuing waste hierarchy objectives and principles.

During 2016 there has been concerted effort to dispose of legacy hazardous materials such as chemicals, paints etc. to help prepare for the demolition of the Workshop complex. In total 61 tonnes of hazardous waste has been disposed of so far this in financial year. These hazardous wastes are not always recyclable and the large weights removed have impacted the total recycling rate for 2016-17 to date. However, the Admin Block and Workshop Complex demolition work should give a big boost to the Site's recycling rate by the end of the financial year as large quantities of reusable and recyclable wastes will be generated and managed in compliance with Waste Hierarchy principles

Non-active effluent

There have been no significant issues relating to non-active effluent discharges at the Site in 2016. The Asset Management programme continues to upgrade and maintain these systems as necessary. The upcoming Admin Block demolition project will be subject to close supervision to minimise the risks of impacting effluent quality in site drainage systems.

SAFLE TRAWSFYNYDD

Adroddiad ar Reolaeth Amgylcheddol ar safle Trawsfynydd ar gyfer Cyfarfod Grŵp Rhanddeiliaid y Safle Rhagfyr 2016.

Dyddiad Cyhoeddi 22 Tachwedd 2016

Cyflwyniad

Mae'r adran Gwarchod Radiolegol a'r Amgylchedd yn Nhrawsfynydd yn gyfrifol am reolaeth amgylcheddol ac am oruchwylio'r holl waith yn ymwneud â thrwydded amgylcheddol y safle.

Gwaith Rheoleiddio Sylweddau Ymbelydrol

Rhagwelwyd diwygio Rheoliadau Trwyddedu Amgylcheddol (EPR) y safle yn 2016. Mae'r gwaith hwn yn mynd rhagddo, felly nid oes unrhyw newidiadau i'w hadrodd.

Mae uwchraddio systemau monitro awyrell gollyngiadau nwyol y safle wedi parhau gydol y flwyddyn. Bwriedir i'r system wedi ei huwchraddio ddarparu mwy o hyblygrwydd ar gyfer amodau datgomisiynu yn y dyfodol drwy ganiatáu cyflawni'r monitro gorau ar ollyngiadau nwyol. Mae disgwyl i'r gwaith uwchraddio gael ei gwblhau yn 2017.

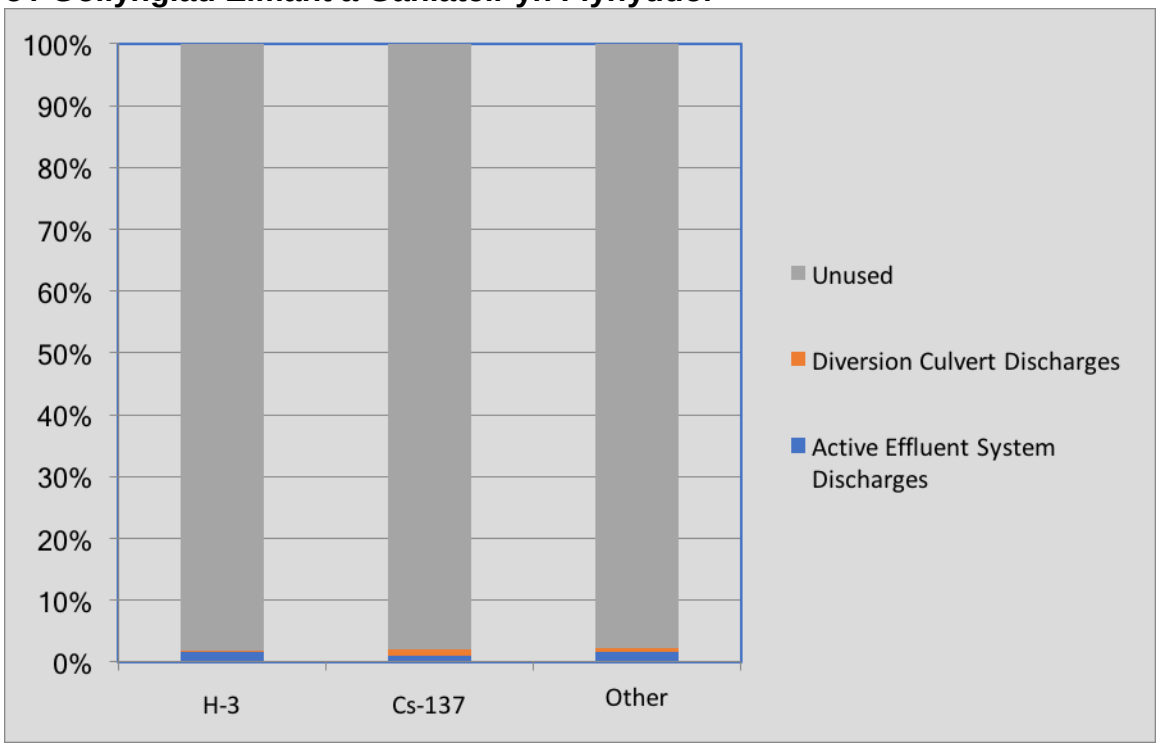
Mae'r Offer Trin Elifiant Actif Symudol (MAETP) wedi ymgymryd â gwaith arferol ac yn ymwneud â throsglwyddo offer i'r adran Gweithrediadau. Bydd yr MAETP yn cymryd lle'r Offer Trin Elifiant Actif pan gwblheir yr holl waith adfer gwastraff a phecynnu Gwastraff Lefel Ganolraddol (ILW) gwlyb. Y gwastraff ILW gwlyb sydd ar ôl yw cynnwys ein Prif Gladdgell Laid (MSV). Mae'r prosiect MSV adfer llaid terfynol wedi dechrau eleni ac mae i fod i gael ei gwblhau yn 2017.

Bydd adroddiad ar wahân yn rhoi manylion gollyngiadau elifion hylif y safle a chanlyniadau'r arolwg amgylcheddol yn cael ei ddarparu yng nghyfarfod Grŵp Rhanddeiliaid y Safle ym mis Rhagfyr 2016.

Mae'r safle wedi buddsoddi mewn labordy amgylcheddol newydd, a gomisiynwyd yn ddiweddar, ac mae wedi cymryd lle'r cyn labordy yn y Bloc Gweinyddol. Gyda'r Cynllun Oes diwygiedig mae'r safle wedi nodi'r angen i fuddsoddi yn systemau mesur amgylcheddol y safle i alinio gyda'r cyfnod gweithredu estynedig. Mae'r buddsoddiad wedi canolbwyntio'n bennaf ar y tair system a defnyddir ar gyfer dadansoddi radiolegol ac wedi cynnwys; uwchraddio a rhoi gwasanaeth i'r synwyryddion sbectrometreg gamma sensitif, comisiynu system cyfrifo alpha a beta mwy newydd, a chaffael system pefrio hylif newydd.

Mae gollyngiadau ymbelydrol ar y safle yn parhau i gael eu heithafu a'u lleihau fel sy'n ofynnol dan ganiatâd EPR y safle drwy gymhwyso'r gyrwyr rheoleiddiol *Technegau Gorau sydd ar Gael (BAT)* a *Chyn Ised ag y Gellir ei Gyflawni'n Rhesymol (ALARA).* Dangosir fel y cymhwysir BAT ac ALARA gan defnydd isel o'n cyfyngiadau rhyddhau yn Nhabl 1 & 2.

Tabl 1 - 2015 Gollyngiadau Elifion Hylif i Lyn Trawsfynydd - Defnydd o'r Gollyngiad Elifiant a Ganiateir yn Flynyddol



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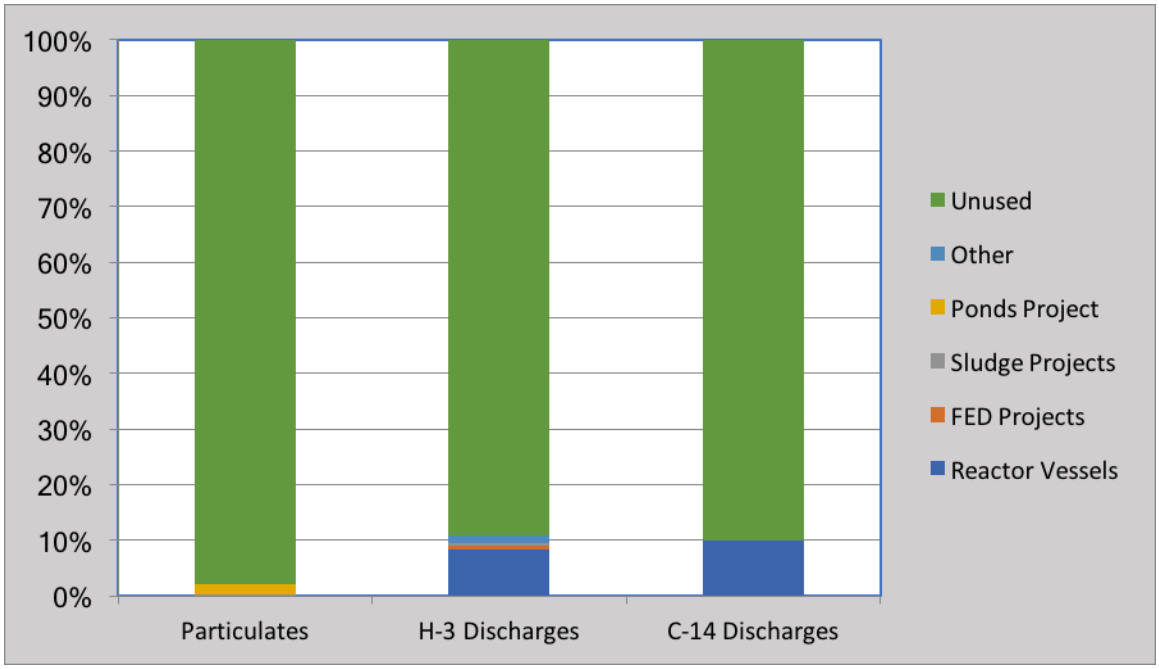
Tabl 2 - 2015 Gollyngiadau Nwyol o'u cymharu â'r terfyn blynyddol a ganiateir



Nid oedd unrhyw ddigwyddiadau amgylcheddol mawr ar y Safle yn ystod 2016 (digwyddiadau Cynllun Dosbarthu Digwyddiadau Cyffredin Asiantaeth yr Amgylchedd neu'r Cynllun Dosbarthu Cydymffurfiaeth categori 1 neu 2). Bu dau ddigwyddiad Categori 4 yn gysylltiedig â dedfrydu yng nghyswllt gwastraff a arweiniodd at ddiddordeb rheoleiddiol gan Gyfoeth Naturiol Cymru. Ni chynhyrchodd y ddau ddigwyddiad hwn unrhyw effaith amgylcheddol gan i systemau presennol y safle ddarganfod y digwyddiad cyn i ddeunydd adael y safle. Fodd bynnag, nodwyd y digwyddiadau mewn gwiriad terfynol yn hytrach nac yn ystod rheoli rhagarweiniol ac felly mae gwelliannau wedi eu rhoi yn eu lle i ddarparu gwell amddiffyniad manwl. Dibwys oedd potensial y ddau ddigwyddiad o ran niweidio'r amgylchedd na'r cyhoedd, a ddangosir gan gategori isel y digwyddiadau, ond mae'r ymateb i'r digwyddiadau hyn yn dangos awydd i wneud gwelliannau parhaus i drefniadau'r safle.

Rheolaeth Amgylcheddol Gyffredinol

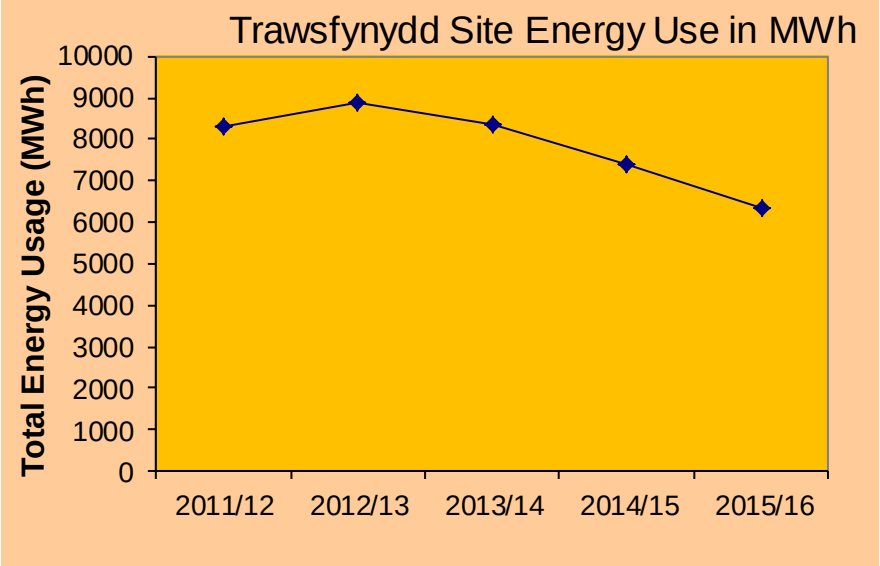
Mae System Rheoli Amgylcheddol gorfforaethol Magnox Ltd. yn parhau i fod ag ardystiad BS EN ISO 14001 (2004) a ddyfarnwyd gan Lloyds Register Quality Assurance (LRQA).

Fel rhan o ailstrwythuro sefydliadol y Cwmni'n ddiweddar, mae'r swyddogaeth amgylchedd seilwaith wedi'i integreiddio mewn adain Gwarchod Radiolegol a'r Amgylchedd newydd o fewn Adran yr Amgylchedd, Iechyd, Diogelwch, Sicrwydd ac Ansawdd (EHSSQ). Pennaeth yr EHSSQ yw Rheolwr yr EHSSQ a erys yn aelod o Dîm Arweiniol Trawsfynydd. Caiff yr Adain Gwarchod Radiolegol a'r Amgylchedd ei rheoli gan Bennaeth Gwarchod Radiolegol a'r Amgylchedd ac mae'n cael ei staffio gan Gynghorydd Amgylcheddol (Radiolegol), Peiriannydd Gwarchod Ymbelydrol, Cydlynydd Amgylcheddol ac yn derbyn cefnogaeth gan adnoddau technegol a gweinyddol. Yn ogystal, mae gan y rhaglenni eu hadnodd arbenigol eu hunain gan gynnwys Cydlynydd Amgylcheddol a phedwar Peiriannydd Gwarchod Ymbelydrol. Mae'r adran EHSSQ yn parhau i ddarparu cefnogaeth agos i'r rhaglenni hyd nes y bo'n hadnodd arbenigol wedi ennill y lefel ofynnol o fedrusrwydd a phrofiad i weithio'n annibynnol. Unwaith y gall y rhaglenni weithio'n annibynnol bydd yr adran EHSSQ yn darparu rôl sicrwydd annibynnol yn bennaf. Dylai'r trosglwyddiad hwn fod wedi'i gwblhau yn 2017.

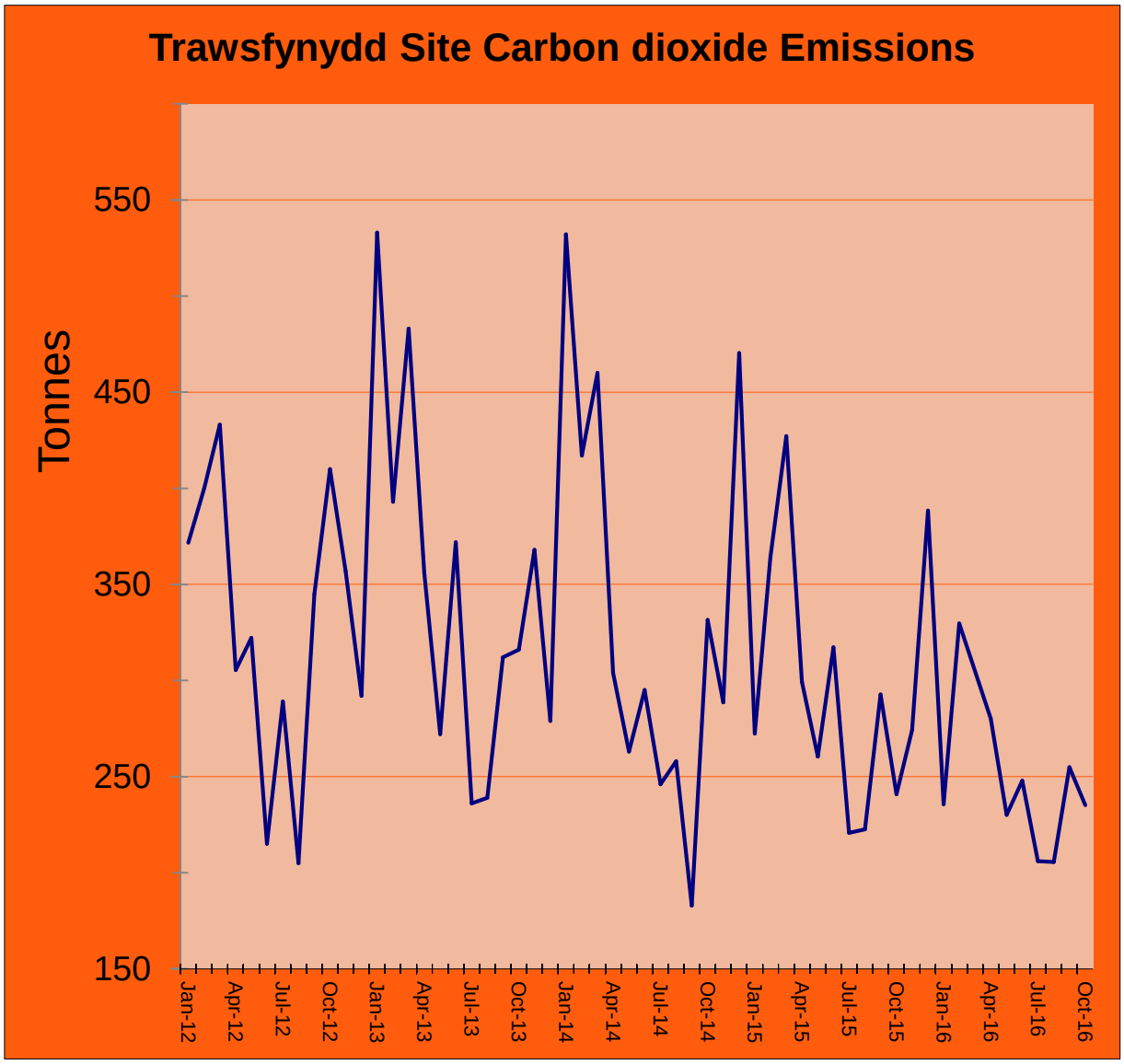
Mae'r Safle yn parhau i fonitro'i heffaith ar yr amgylchedd fel sy'n ofynnol gan yr Awdurdod Datgomisiynu Niwclear a threfniadau'r cwmni. Mae llawer o'r ynni a ddefnyddir yn cael ei ddefnyddio mewn peiriannau cysylltiedig â diogelwch niwclear a'r cwblhau parhaus ar waith datgomisiynu a dymchwel. Wrth i beiriannau gael eu datgomisiynu mae'r defnydd ynni wedi gostwng. Bu'r gwelliant mwyaf o ran ynni yn 2016 o ganlyniad i ymadael â'r hen Floc Gweinyddol a'r Gweithdy. Gan ei fod yn hen adeilad aneffeithlon, mae troi'r gwasanaeth i ffwrdd i'r adeiladau hyn wedi arwain at ostyngiad o oddeutu 45Mwh

yn y defnydd o ynni bob mis (mae hyn gyfwerth â 40 tunnell o CO2 y flwyddyn). Gellir gweld y gostyngiad graddol yng nghyfanswm y defnydd o ynni a charbon deuocsid yn y graffiau a ddangosir yn Nhabl 3 & 4.

Tabl 3 – Defnydd Ynni dros y blynyddoedd diweddar



Tabl 4 – Gollyngiadau CO2 dros y blynyddoedd diweddar



Mae Cynllun Gweithredu Bioamrywiaeth (BAP) y safle yn parhau i gael ei ddefnyddio a chyflawnwyd y canlynol yn ystod 2016:

- Cyflawnwyd Gwelliant i Gynefinoedd y safle drwy;
    - Annog twf planhigion traddodiadol sy'n blodeuo mewn dolydd er budd bywyd gwyllt (gwenyn a phryfed peillio eraill yn benodol) drwy barhau i wella'r rhaglen torri gwellt
    - Rheoli a chael gwared o blanhigion ymledol fel rhododendron, canclwm Japan a Montbretia o ardaloedd a reolir gan y Safle.
    - Rheoli'r ardaloedd o goetir o fewn ffin yr orsaf bŵer i annog datblygu a chadw unrhyw bren marw sy'n sefyll a choed wedi'u difrodi.

- Gwaith arall cysylltiedig â BAP
    - Arolwg BAT o'r Bloc Gweinyddol a'r Gweithdy a BAT ac Arolwg Cynefin ran ogleddol y Safle lle y bu angen torri rhai coed er mwyn gosod tyllau turio

Yn ystod 2017 y cynllun yw i'r safle barhau i wella cynefinoedd y Safle drwy waith rheoli tiroedd.

Rheoli gwastraff nad yw'n Ymbelydrol

Y flwyddyn ariannol hon (2016-17), hyd yma mae'r safle wedi cynhyrchu 209 tunnell o wastraff gyda 72% ohono (88% os eithrir gwastraff peryglus o'r cyfansymiau) yn cael ei ailgylchu.

Yn ystod y flwyddyn ariannol 2015-16, cynhyrchwyd 358 tunnell o wastraff ac ailgylchwyd 83% (cyfradd ailgylchu o 91% ac eithrio gwastraff peryglus).

Mae'n glir o'r cyfraddau ailgylchu rhagorol a gyflawnwyd, fod y Safle'n parhau i fod yn llwyddiannus iawn wth ddilyn amcanion ac egwyddorion yr hierarchaeth gwastraff.

Yn ystod 2016 gwnaed ymdrech wirioneddol i gael gwared â deunyddiau peryglus a etifeddwyd megis cemegolion, paent ayb. i helpu i baratoi ar gyfer dymchwel safle'r Gweithdy. Cafwyd gwared â chyfanswm o 61 tunnell o wastraff peryglus yn y flwyddyn ariannol hon hyd yma. Nid oes modd ailgylchu'r gwastraff peryglus hwn bob amser ac mae'r pwysau mawr a waredwyd wedi effeithio ar gyfanswm y gyfradd ailgylchu ar gyfer 2016-17 hyd yma. Fodd bynnag, dylai gwaith dymchwel y Bloc Gweinyddol a safle'r Gweithdy roi hwb mawr i gyfradd ailgylchu'r Safle erbyn diwedd y flwyddyn ariannol gan y bydd symiau mawr o wastraff y gellir ei ail-ddefnyddio a'i ailgylchu yn cael eu cynhyrchu a'u rheoli gan gydymffurfio ag egwyddorion yr Hierarchiaeth Gwastraff.

Elifiant anadweithiol

Ni fu unrhyw faterion sylweddol yn ymwneud â gollyngiadau elifion anadweithiol ar y Safle yn 2016. Mae'r rhaglen Rheoli Asedau yn parhau i uwchraddio a chynnal y systemau hyn fel bo angen. Bydd prosiect dymchwel y Bloc Gweinyddol sydd ar fin digwydd yn destun goruchwyliaeth agos i leihau i'r eithaf y risgiau o effeithio ar ansawdd elifiant yn systemau draenio'r safle.