

ENVIRONMENTAL STATEMENT VOLUME 1: AMENDED RESTORATION PROFILE AT PWLLFAWATKIN LANDFILL SITE

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WR7816/12/03	Proposed Phasing Plan	1:2,500
WR7816/12/04	Pre-Settlement Waste Contours	1:2,500
WR7816/12/05	Post-Settlement Waste Contours	1:2,500
WR7816/12/06	Site Sections Location Plan	1:2,500
WR7816/12/07	Site Sections Through Proposed Landform	1:1,250
WR7816/12/08	Proposed Restoration Plan	1:2,000
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1. INTRODUCTION

1.1 FORWARD

- 1.1.1 The Welsh Government recognises the important role that landfill plays as part of an integrated sustainable approach to waste management. A culture shift over recent years means that society views waste as a resource, and challenging targets have been established for recycling, re-use and recovery of waste in order to divert waste away from landfill.
- 1.1.2 The success of Government policy to reduce the amount of waste material sent to landfill and increase recycling and recovery of materials means that landfills across Wales are experiencing reduced input rates. It is also clear that reliance on landfill as a waste management option is reducing. However, as not all waste can be recycled or recovered, landfill will always have a role to play in waste management and existing sites provide important strategic disposal points.

1.2 SUMMARY OF SITE AND PROPOSAL

- 1.2.1 Three former coal spoil tips form the majority of FCC Environment's (FCC) landholding at Pwllfawtkin. Two of these tips, Tip 891 and Tip 890, are located to the north of Baran Road. The third tip, Tip 871 is located to the south of Baran Road.
- 1.2.2 Tip 891 has been restored for some time now, however Tip 890 is still accepting non-hazardous waste. Tip 871 is, where necessary, used as a source of engineering material for Tip 890.
- 1.2.3 Two planning consents that allowed the restoration of Tips 890 and 871 expired on 30th September 2018. P2002/1016 was granted in January 2005 and covers the three tips 890, 891 and 871. In December 2011, permission P2011/0537 was granted and allowed the continued restoration of Tip 871 and supersedes the 2005 permission but only on Tip 871. In March 2016 the 2011 consent was updated by P2014/0693 which amended the surface water scheme.
- 1.2.4 An application to vary conditions (reference P2018/0512) to allow an extension of time and revised restoration profile to Tip 890, that reduced the remaining site void from that consented, was submitted to Neath Port Talbot County Borough Council in 2018 but was refused at planning committee, against officer recommendation for approval, in December 2020 on odour nuisance grounds.
- 1.2.5 A separate planning application (reference P2018/0511) was submitted in 2018 to vary the conditions of planning permission P2014/0693 to extend the period to complete restoration of Tip 871 and amend the restoration profile. To date, the Welsh Government have issued a decision on a call-in request in which it was not considered that the application should be called in for determination by the Welsh Ministers and this application was still awaiting a decision.
- 1.2.6 As the consent that covered Tip 890 has expired, FCC are submitting a new planning application to allow a revised restoration profile in order to safely close the landfill operation. The red line application boundary is limited to the future operational area of Tip 890 and not the entire landfill landholding. The amendments to the restoration profile and scheme for Tip 890 proposed in this application follow on from the restoration scheme previously approved for the wider landfill.

1.3 REQUIRMENT FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

- 1.3.1 Waste disposal installations are specifically listed under Schedule 1 of The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, however for operations for incineration or chemical treatment of non-hazardous waste only or landfill of hazardous waste. Therefore Schedule 1 does not apply.
- 1.3.2 Schedule 2 criteria 11(b) states:
 - (b) Installations for the disposal of waste (unless included in Schedule 1);*
 - (i). The disposal is by incineration; or*
 - (ii). The area of the development exceeds 0.5 hectare; or*

(iii). The installation is to be sited within 100m of any controlled waters.

- 1.3.3 As the proposal would trigger criteria (ii) and (iii) of the above the proposal should be considered against Schedule 3 criteria. However, in this instance, FCC has taken the decision to volunteer an EIA. Regulation 5 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 confirms that where an applicant submits a statement referred to as an Environmental Statement for the purposes of the Regulations then that development is EIA development.

1.4 REQUEST FOR A SCOPING OPINION

- 1.4.1 In September 2021, the Applicant submitted a request for a formal Scoping Opinion from Neath Port Talbot County Council under Regulation 14 of the Environmental Impact Assessment Regulations 2017 (Wales) (EIA Regs). The purpose of the request of a Scoping Opinion is to:

- Define the Environmental Statement (ES) which will accompany the planning application;
- Anticipate and so allow potentially adverse environmental impacts to be considered at an early stage;
- Define methodologies to be used in the EIA process to assess the effects of the proposal; and
- Engage relevant stakeholders at an early stage of the proposals to enable contribution of relevant information.

- 1.4.2 Neath Port Talbot County Council issued a Scoping Opinion on 4th November 2021. **Table 1.1** below summarises what topics area to be scoped into the ES, and which are to be scoped out.

Table 1.1: Summary of Environmental Topics to be Considered by the EIA

Scoped in Environmental Topic	Scoped out Environmental Topic
Landscape and Visual	Traffic and Transport
Ecology and Nature Conservation	Noise
Hydrology and Drainage	Major Accidents and / or Disasters
Air Quality and Odour	Soils, Geology and Contaminated Land
Cumulative Impacts	Public Health and Wellbeing
	Climate Change
	Socio Economic
	Cultural Heritage
	Land Uses

1.5 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

- 1.5.1 There is no statutory requirement regarding the form an ES must take, as this is dependent on the nature of the development under consideration and the sensitivity of the baseline environment. The Environmental Statement must include at least the information reasonably required to assess the likely significant environmental effects of the development listed in regulation 18(3) and comply with regulation 18(4).

- 1.5.2 **Table 1.2** identifies the locations within the ES where the information required for inclusion within an ES in accordance with EIA Regulations 2017: Schedule 4 can be found.

Table 1.2: Information for inclusion in Environmental Statements

Required Environmental Information	Document that Contains the Information
1. Description of the development, including in particular – (a) a description of the location of the development; (b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works and the land-use requirements during the construction and operational phases; (c) a description of the main characteristic of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, oil and subsoil pollution, noise, vibration, light, heat radiation) and quantities and types of waste produced during the construction and operational phases.	Environmental Statement Vol. 1, Chapter 2 Environmental Statement Vol. 1, Chapter 3 Environmental Statement Vol. 1, Chapter 3 Environmental Statement Vol. 1, Chapters 6 to 10. Supporting technical reporting in Environmental Statement Vol. 2, Chapters 6 to 10.
2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Environmental Statement Vol. 1, Chapter 5
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effect on the basis of the availability of environmental information and scientific knowledge.	Environmental Statement Vol. 1, Chapters 6 to 10. Supporting technical reporting in Environmental Statement Vol. 2, Chapters 6 to 10.
4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaption), material assets, cultural heritage, including architectural and archaeological aspects, and	Environmental Statement Vol. 1, Chapters 6 to 10. Supporting technical reporting in Environmental Statement Vol. 2, Chapters 6 to 10.

landscape.	
5. A description of the likely significant effects of the development on the environment resulting from, inter alia – (a) the construction and existence of the development, including, where relevant, demolition works; (b) the use of natural resources in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances and the disposal and recovery of waste, (d) the risks to human health, cultural heritage, or the environment (for example due to accidents or disasters); (e) the cumulation of effect with other existing and / or approved projects taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g) the technologies and the substances used. The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at European Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43EEC and Directive 2009/147/EC.	Environmental Statement Vol. 1, Chapters 6 to 10. Supporting technical reporting in Environmental Statement Vol. 2, Chapters 6 to 10. Environmental Statement Vol. 1, Chapter 12
6. A description of the forecasting methods or evidence used to identify and assess the effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Environmental Statement Vol. 1, Chapters 6 to 10.
7. A description of measures envisaged to avoid, prevent, reduce or, if possible, offset any	

identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Environmental Statement Vol. 1, Chapters 6 to 10.
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of the Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Environmental Statement Vol. 1, Chapter 6
9. A non-technical summary of the information provided under paragraphs 1 to 8.	Environmental Statement Vol. 3, Non-Technical Summary
10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	Environmental Statement Vol. 1, Chapters 6 to 10.

1.5.3 Information has been gathered for each environmental topic. This ensures that a comprehensive technical assessment of the potentially significant effects of the proposed development has been undertaken. Each of the technical assessments will consider:

- **Context:** This sets out the relevance of each environmental topic in both planning and technical terms, including an explanation of the terminology to be used;
- **Proposed Development:** This outlines the proposed development focussing on aspects pertinent to the topic chapter;
- **Assessment Approach:** This includes details of the initial data gathering undertaken for the scoping exercise and how this has influenced the scope of the assessment and the selection of potentially sensitive receptors;
- **Baseline Conditions:** It describes baseline environmental conditions relating to the environmental topic and the identification of potentially sensitive receptors;
- **Assessment of Effects:** This outlines how data has been collected and the method used to identify any potentially significant effects. It concludes by predicting the effects of the proposed development and their significance;
- **Proposed Mitigation:** This outlines the measures that have been incorporated into the proposed development to reduce and minimise the environmental effects;
- **Summary of Predicted Effects:** This brings all of the effects, both adverse (negative)

and beneficial (positive) together in tabular form and summarises the findings using defined and consistently applied criteria; and

- **Implementation of Mitigation:** This section summarises the mitigation measures that will form part of the development proposals and who will be responsible for their implementation. It also states how measures will be monitored where appropriate;
- **Residual Impact:** This section identifies the impacts that potentially remain following implementation of the mitigation. Residual impacts should not lead to any significantly adverse effects on identified receptors, equally residual impact may have positive effects;
- **Summary and Conclusions**

1.5.4 The purpose of the Environmental Impact Assessment is to identify the likely 'significance' of environmental effects (beneficial or adverse) arising from a development. In broad terms, environmental effects are described as:

- Adverse – detrimental or negative effect to an environmental resource or receptor;
- Beneficial – advantageous or positive effect to an environmental resource or receptor; or
- Negligible – a neutral effect to an environmental resource or receptor

1.5.5 Effects are assessed in terms of:

- The magnitude of the impact – the degree of alteration (both positive and negative) from the baseline state:
- The sensitivity of the receptor(s) subjected to the impact – this may relate to the value of a resource and the reversibility of impacts.

1.5.6 Significance of effect is evaluated as a combination of the sensitivity of the receptor and the magnitude of change the development results in. Although the matrix in **Table 1.3** is designed to demonstrate an objective rational to reach a conclusion about the significance of impact a degree of professional judgement is a key element in the evaluation process.

Table 1.3: Significance of Effects

		Sensitivity of Receptor				
		Very Large	Large	Medium	Small	Negligible
Magnitude of Impact	Very High	Major	Major	Moderate	Minor	Negligible
	High	Major	Moderate	Moderate/Minor	Minor	Negligible
	Medium	Moderate	Moderate/Minor	Minor	Minor/Negligible	Negligible
	Low	Minor	Minor	Minor/ Negligible	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

1.5.7 Any effect of Moderate or Major significance is considered to represent a likely significant effect for the purposes of the EIA Regulations. Significance of effects would be considered before and after mitigation.

1.5.8 The criteria for determining magnitude of impact is set out below in **Table 1.4**.

Table 1.4: Magnitude of Effects

Magnitude of Effect	Criteria
High	Total loss or major/substantial alteration to elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Medium	Loss or alteration to one or more elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but the underlying character/composition/attributes of the baseline condition will be similar to the pre-development.
Negligible	Very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable, approximating to a 'no change' situation.

- 1.5.9 The sensitivity of a receptor is based on the importance of the receptor using the criteria below in **Table 1.5**.

Table 1.5: Degrees of Sensitivity Criteria

Sensitivity	Criteria
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high and more than local (but not national or international) importance.
Low	The receptor/resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor/resource can accommodate change without material effect, is of limited importance.

1.6 FORMAT OF THE ENVIRONMENTAL STATEMENT

- 1.6.1 The environmental information will be incorporated into an Environmental Statement which will be presented in three volumes:
- ES Volume 1 – Environmental Statement
 - ES Volume 2 – Appendices from EIA Topic Assessments, Plans and Photographs
 - Non-Technical Summary

Environmental Statement Volume 1

- 1.6.2 The introductory chapters of this ES set out the main characteristics of the site and its surroundings, and outline the proposed development, methodology of assessment and scope of the Environmental Statement.
- 1.6.3 Schedule 4 of the Environmental Impact Assessment Regulations 2017, requires a description of the likely significant impacts, direct and indirect, on the environment, explained by reference to its possible impact on:

- the construction and existence of the development, including, where relevant, demolition works;
- the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
- the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
- the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);
- the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
- the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; and
- the technologies and the substances used.

1.6.4 For the purposes of the Environmental Statement, environmental assessments have been grouped into topic studies as set out below:

Introduction	Outline Planning Application Purpose of ES Requirement of an ES Format of ES
The Site	Site and Environment Site Access Site History
The Development	Introduction Background Project Description
Summary of Relevant Planning Policy	National Planning Policy Local Development Plan Material Considerations
Need and Alternatives	Alternative Options and Scenarios
Landscape and Visual Impact Ecology and Nature Conservation Hydrology and Drainage Air Quality and Odour Cumulative Impacts Summary of Environmental Impacts	
Conclusions	

Topics considered not to be Significantly Affected by the Proposals

1.6.5 As confirmed by the Scoping Opinion (Appendix 1.1) the following environmental topic areas are considered unlikely to be materially affected or give rise to significant environmental effects as a consequence of the proposed development. As such they do not have a standalone ES chapter, nonetheless a justification of why these topics have been scoped out of the EIA is provided in Chapter 6.

- Traffic and Transport;
- Noise
- Major Accidents and/or Disasters
- Soils and Geology

- Public Health and Wellbeing
- Climate Change
- Socio-Economic
- Heritage
- Land Use

Environmental Statement - Volume 2

- 1.6.6 Each topic area considered is supported, where necessary, by detailed technical reports that will form appendices to the main ES document in Volume 1.

Non-Technical Summary

- 1.6.7 The Non-Technical Summary (NTS) provides summary information about the proposal and its likely environmental effects. It is written for the non-specialist reader and provides a summary overview of the EIA. The NTS adopts the following format:

- Summary;
- Introduction;
- Site and Surroundings;
- Description and Proposals;
- Summary of main topic areas and predicted environmental effects; and
- Summary and Conclusions.

1.7 COMPETENT EXPERTS

- 1.7.1 Following pre-application discussions, a project team was assembled to carry out the assessments within the EIA process. The EIA has been undertaken by a team of environmental consultants with expertise in their relevant disciplines. EIA coordination and preparation of the ES has been undertaken by Sirius Planning Ltd. In compliance with regulation 18(5), the consultants involved in undertaking the EIA are listed in **Table 1.6**, by EIA topic responsibility and details of their qualifications.

Table 1.6: Competent Experts

EIA Topic	Name	Company	Qualifications
Planning Policy and Need	Francesca Wray	Sirius Planning	BA (Hons), MRTPI
Alternatives	Francesca Wray	Sirius Planning	BA (Hons), MRTPI
Landscape and Visual	Alex Stappard	Sirius Planning	CMLI
Ecology and Nature Conservation	Howard Fearn	Avian Ecology Ltd	MSc MCIEEM
Hydrology and Drainage	Keelan Serjeant	KRS Environmental Ltd	BSc, MSc, MCIWEM
Air Quality and Odour	Bob Thomas	Air Quality Assessments Ltd	CSci, MEnvSci, MIAQM
Cumulative	Francesca Wray	Sirius Planning	BA (Hons), MRTPI

1.8 PRE-APPLICATION CONSULTATION

- 1.8.1 The Town and County Planning (Development Management Procedure) (Wales) (Amendment) Order 2016, requires pre-application consultation to be undertaken for all planning applications for 'major' development. Given the planning application area is larger than 1 hectare the

proposal falls within the 'major' development category therefore pre-application consultation is required.

1.8.2 Pre-application consultation takes the form of:

- Erecting site notices up near to the site;
- Notifying those adjacent landowners to the site;
- Notifying relevant Community Councils and Ward Members;
- Notifying relevant statutory consultees;
- Project website containing information on the proposals, the draft planning application, ways to make comments / provide feedback on the proposals and details of the project team for any queries; and
- Pre-Application Consultation Report.

1.9 OBTAINING INFORMATION

1.9.1 Electronic copies of all documents submitted to Neath Port Talbot County Council in respect of the planning application are available at the following website:

<https://planningonline.npt.gov.uk/online-applications/>

1.9.2 Paper format copies of the planning application and supporting information are available on request at the following price:

- Full Hard Copy - £75
- Electronic CD Copy - £15

1.9.3 All requests for hard copy information should be addressed to the following:

PlanningConsultations@thesiriusgroup.com

Or,

FCC Environment Ltd

c/o Sirius Planning

4245 Park Approach

Thorpe Park

Leeds LS15 8GB



2. THE SITE AND SURROUNDINGS

2.1 INTRODUCTION

- 2.1.1 This chapter provides a description of the site in terms of its location, history, and surrounding land uses.

2.2 LOCATION

- 2.2.1 FCC's Pwllfawatkin Landfill landholding is located approximately 5km to the north of Pontardawe on National Grid Reference (NGR) 269817, 208799. The proposal site measures c. 10.4ha located towards the northern portion of the landholding and is illustrated on drawing WR7816/12/02 and indicated on the aerial image below.

Figure 2.1: Aerial Image of Tip 890 looking north



- 2.2.2 The proposal site is situated within the Upper Clydach Valley and located approximately 350m to the west of the A474. The Upper Clydach Valley runs along the eastern boundary of the proposal site. A small industrial estate is situated c. 300m to the south-east of the proposal site off the A474.
- 2.2.3 Pwllfawatkin Farmhouse lies c. 460m to the west of the site and is currently used as the site office. The nearest residential properties are Nant y Gafalau approximately 240m to the west of the site boundary and three residential properties on the eastern side of the A474 approximately 340m to the east of the proposal site boundary.

2.3 SITE CHARACTERISTICS

- 2.3.1 The proposal site incorporates the currently operational area of Tip 890, existing access off Baran Road, weighbridge, landfill gas engines, leachate storage tanks, site staff welfare cabins, the access road and the former household waste recycling centre.
- 2.3.2 FCC's landholding incorporates the restored and operational landfills that occupy the main colliery spoil tips of the former Abernant Colliery which closed in 1988. The past and present uses of the valley for mining and landfill is recognised as a physical characteristic of this area. To the west of the site, the ground rises as part of the western slope of the Clydach Valley and

Mynydd Carnellechart and Bryn Mawr. A continuation of woodland largely surrounds the site which provides effective screening.

- 2.3.3 Baran Road bisects FCC's landholding; north of the road the former colliery spoil tips have been developed as a containment landfill for the disposal of imported waste, it comprises areas of active and restored landfill, a household waste recycling centre, a landfill gas management compound and other ancillary development. South of the road is a former colliery tip which does not form part of the imported waste disposal operation to the north other than as a source of engineering materials. A landfill leachate collection facility is also located south of the road.
- 2.3.4 Access to the landfill site is off the A474 to the west of the site along an unnamed road. The A474 runs north to south and connects Pontardawe and the more urbanised Swansea Valley to the south and the more rural Ammanford in Carmarthenshire to the North.

Figure 2.2: View of Tip 890 looking north-east



2.4 DESIGNATIONS AND IDENTIFIED RECEPTORS

- 2.4.1 Under the adopted Neath Port Talbot Local Development Plan Proposals Map, the site is allocated as a Waste Management Site.
- 2.4.2 The site does not lie within or immediately adjacent to any statutory designations. The nearest statutory ecological site is the Hafod Wennol Grasslands SSSI located approximately 1.6km to west of the site. Four non-statutory SINCs are located within 2km of the proposal site.
- 2.4.3 The nearest designated heritage asset is the Bancbryn Cairn Cemetery Scheduled Monument located approximately 1km to the north-west of the site. There are no Listed Buildings within 1km of the site.
- 2.4.4 The site is located in Flood Zone 1 which is considered to be at little risk of fluvial or coastal / tidal flooding.
- 2.4.5 No public rights of way cross the site or are located in close proximity to the proposed development, the closest footpath runs to the west of the site along the western slope of Bryn Mawr.

2.5 SITE PLANNING HISTORY

- 2.5.1 The relevant planning history for the wider Pwllfawaktin Landfill Site, obtained from Neath Port Talbot Council's online planning portal, is set out in **Table 2.1** below.

Table 2.1: Site Planning History

Planning Reference	Planning Description	Decision Date
L1974/0294	Manufacturing of avoids from small coal or duff for sale in the domestic fuel market	September 1974
L1978/0261	Extension of existing refuse Tip	December 1978
LP1980/0351	Extension of existing refuse Tip	October 1980
LP1992/0442	Continuation of existing use of site as a refuse disposal site and civic amenity site with the deletion of Condition 1 relating to subsisting consent 2/2/80/0351/03	December 1992
LP1995/0502	Diversion of the Upper Clydach River to nationalise landfill operation and to secure an agreed restoration scheme	March 1996
LP1999/0725	Restoration scheme – Phase 2 of Tip 890	September 1999
LP1999/0726	Aftercare scheme – Phase 2 of Tip 890	September 1999
P2000/1417	Excavation of colliery spoil Tip (Tip 871) for use in the engineering and restoration of Pwllfawatin Landfill Site	February 2001
P2001/0797	Change of use residential to office	August 2001
P2002/1016	Extension of existing landfill site, continued reception of waste, continued removal of engineering material and restoration	January 2005
P2005/0213	Construction of a landfill gas utilisation compound to control and convert landfill gas to electricity	August 2005
P2010/1173	Retrospective planning consent for the installation of a storage container	January 2011
P2011/0537	Retrospective planning application for continued operation of engineering operations and final restoration	December 2011
P2011/1063	Proposed anaerobic digestion facility with ancillary infrastructure and the restoration of Tip 871	September 2012
P2014/0693	Amend surface water scheme	March 2016
P2018/0511	Proposed modifications to planning permission P2014/0693 including an extension of time and amended restoration scheme	Awaiting decision
P2018/0512	Proposed modifications to planning permission P2002/1016	Refused December 2020



3. THE PROPOSED DEVELOPMENT

3.1 INTRODUCTION

3.1.1 FCC are seeking to revise the restoration profile of Tip 890 to facilitate safe early closure of the tipping operation. The new scheme, when compared to the previously approved (P2002/1016), will result in:

- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational cell 4 and not developing the previously consented cell 5;
- Localised re-profiling of cells 3 and 4;
- A reduction in void space from that previously consented;
- An amended scheme of surface water management to account for the revised restoration profile;
- Amended phasing scheme; and
- Amended scheme of landscaping.

3.1.2 The planning consent for the restoration of Tip 890 expired in September 2018 with the site not being fully restored. For long term stability, avoidance of differential or excessive settlement, protect capping integrity and for the long-term function of the environmental control systems for gas, leachate and surface water, it is necessary to complete the site to a designed profile. This can only be achieved through waste importation.

3.1.3 Differential or excessive settlement can not only impact on capping, restoration soils and environmental control infrastructure but also the delivery of final restoration and after use with delivering restoration schemes and aftercare management being particularly difficult on differentially settled landforms. Completing the site to a suitable final landform now will reduce the likelihood of needing to return to site at a later date to correct the differential settlement involving cap stripping / repaid, placement of additional wastes or soils.

3.1.4 As outlined in Section 5 of this Environmental Statement, alternative restoration profiles were considered for the site, however the proposed restoration profile enables a domed shaped profile in line with NRW's minimum requirements on slop angles for landfills designed to prevent differential settlement and associated issues outlined above.

3.1.5 Tip 890 therefore needs to be completed to a profile that meets NRW guidance and ensure long term stability of the site.

3.2 TIMESCALES

3.2.1 The rate of infilling originally anticipated that would have allowed completion of the consented restoration has not materialised. The shortfall in anticipated waste inputs to site is a result of increased recycling rates that have diverted materials from landfill. This together with the economic slowdown over the last decade and more recently the disruption caused by the COVID pandemic has led to shortfalls in expected waste volumes.

3.2.2 Preliminary forecasting of likely residual waste arising has been undertaken by FCC to estimate likely timescales for completion of the proposed restoration profile. Assuming c. 7,000 – 8,000 tonnes per month of residual waste is deposited on site then an anticipated end date for waste importations is 31st October 2023. A further two years to complete the restoration will be necessary.

3.3 REVISED RESTORATION PROFILE

3.3.1 The previous consent allowed for five containment cells to be constructed across Tip 890. Under the revised restoration profile, FCC is seeking to reduce the number of cells to four but include a sidewall extension to cell 4. Drawing no. WR7816/12/04 presents the proposed pre-settlement profile and drawing no. WR7816/12/05 presents the proposed post-settlement profile. The footprint of cell 5 will simply be graded to tie into surrounding levels.

3.4 LOCALISED REPROFILING

- 3.4.1 The previously approved contours for Tip 890 reached a maximum height of 192m AOD. From recent topographical surveys of cells 3 and 4 it is clear that the current profile of the cells is lower than the previously approved levels. The difference in height is up to a maximum of 2m in some places. This is largely due to differential settlement in the waste mass.
- 3.4.2 To address this, soils would be used to achieve restoration contours under the requirements of restoration and aftercare as per the previous consent.

3.5 SURFACE WATER MANAGEMENT

- 3.5.1 The current scheme of surface water management relies on a gravity drainage system and includes a ditch collection system excavated into the re-profiled tip, feeding under gravity into an attenuation and settlement ponds prior to discharging to the Upper Clydach River.
- 3.5.2 Whilst a new restoration profile for the site is being sought for Tip 890, the area of land to be drained is not increasing, furthermore, the principles of surface water management across the site will not alter significantly. An updated scheme of surface water management is presented in Drawing no. WR7470/01/01 R4.

3.6 LANDSCAPING

- 3.6.1 The main restoration elements of the previously consented scheme are retained in the amended scheme of restoration, including:
- Approximate field pattern, size and distribution;
 - Field treatments of meadow grassland and agricultural pasture; and
 - Distribution of proposed hedgerows, woodland and scrubland; and
 - Retained features of infrastructure.
- 3.6.2 The restoration proposals are shown on Drawing no. WR7816/12/08, the restoration plan is accompanied by the following plant schedules.

Table 3.1: Plant Schedules

Scrub Planting		
Species	Common Name	% Mix
<i>Betula pendula</i>	Silver Birch	15
<i>Corylus avellana</i>	Hazel	10
<i>Crataegus monoygna</i>	Hawthorn	30
<i>Ilex aquifolium</i>	Holly	10
<i>Ligustrum vulgare</i>	Privet	10
<i>Salix cinerea</i>	Grey Willow	5
<i>Prunus spinosa</i>	Blackthorn	10
<i>Ulex europaeus</i>	Gorse	5
<i>Viburnum opulus</i>	Guelder Rose	5
Woodland Planting		
Species	Common Name	% Mix
<i>Alnus glutinosa</i>	Black Alder	15
<i>Betula pendula</i>	Silver Birch	10
<i>Crataegus monoygna</i>	Hawthorn	20
<i>Fagus sylvatica</i>	Beech	10
<i>Prunus padus</i>	Bird Cherry	5
<i>Quercus petraea</i>	Sessile Oak	20
<i>Salix fragilis</i>	Crack Willow	10
<i>Sorbus aucuparia</i>	Rowan	10
Hedgerow Planting		

Species	Common Name	% Mix
Corylus avellana	Hazel	7.5
Crataegus monogyna	Hawthorn	65
Euonymus europaeus	Spindle	5
Fagus sylvatica	Beech	2.5
Ilex aquifolium	Holly	7.5
Prunus spinosa	Blackthorn	7.5
Viburnum opulus	Guelder Rose	5
Grassland seed mix		
Species	Cultivar	% Mix
Standard Reclamation Mix (sown at 20g/m ²)		
4Turf Tetraploid Perennial Ryegrass	Double	25
Perennial Ryegrass	Esquire	25
Strong Creeping Red Fescue	Maxima	50

3.7 OTHER OPERATIONAL CONSIDERATIONS

Hours of Operation

- 3.7.1 The proposed hours of operation will remain unchanged from the previous consent, i.e. 07:00 hours to 17:00 hours Monday to Friday and 07:00 hours to 13:00 hours on Saturdays for waste disposal and up to 19:00 Monday to Friday and 15:00 on Saturday for daily cover and restoration activities.

Traffic

- 3.7.2 Condition 63 of the previous consent, P2002/1016, limited waste imports to 180,000tpa and condition 20 limited the number of HGV daily visits to 125 (Monday to Friday) and 60 on Saturday. FCC anticipate that approximately 7,000 to 8,000 tonnes per month will be imported to site. Taking the higher scenario of 8,000 tonnes of waste per month imported to site, assuming an average load of 18 tonnes per HGV and that waste will be deposited at the site for 2 years (2021 to 2023) based on a 5.5 day working week then circa 20 daily deliveries will be made by HGVs, or 40 vehicle movements.
- 3.7.3 As part of the restoration there will be a requirement to import engineering material for the cap and restoration materials. Clearly, there is significant reduction in vehicles delivering residual waste to site compared to that previously consented.
- 3.7.4 Vehicles associated with the continued operation of the landfill will use the A474 as per the existing consent.

Noise

- 3.7.5 The scale and nature of the operations at the landfill site will remain unchanged from current operations, therefore the potential noise generation will not change from current operations.

Employment

- 3.7.6 The proposed development would not create any additional job opportunities; however, the continued operational use of the Pwllfawatkin Landfill will provide job security for existing employees.

Lighting and Security

- 3.7.7 No additional lighting or security measures will be required as part of the continued operation of the landfill.

Office and Welfare Facilities

- 3.7.8 No additional office or welfare facilities will be required as part of the continued operation of the landfill.



4. PLANNING POLICY CONTEXT

4.1 INTRODUCTION

- 4.1.1 This chapter sets out the planning policies which are relevant both to the site and to the type of development proposed, and the National legal and policy those planning policies are set within.
- 4.1.2 Section 38 of the Planning and Compulsory Purchase Act 2004 (as amended) requires planning applications to be determined in accordance with the provisions of the Development Plan unless material considerations indicate otherwise. Given the primary of the development plan in the decision-making process it is imperative that the application identifies which planning policies area relevant to the proposal.
- 4.1.3 A detailed appraisal of Development Plan policy and material consideration is presented in a standalone Planning Statement submitted with the planning application. To avoid duplication, this chapter only identifies and summarises the policy context and material considerations for the EIA.

4.2 WASTE STRATEGY AND PLANNING POLICY FOR WALES

Towards Zero Waste 2010

- 4.2.1 Towards Zero Waste is the strategic Waste Strategy document for Wales. The document was published in 2010 and outlines a long-term framework for resource efficiency and waste management until 2050. The aim of the strategy is for Wales to be a high recycling nation by 2025 and a zero-waste nation by 2050.
- 4.2.2 The document sets out a number of aspirations and targets in order to meet the overall objective zero waste by 2050. The key aims are:
- By 2025, a significant reduction in waste of around 27% based on 2007 levels;
 - By 2050, achieving zero waste and 'living within our environmental limits'; and
 - In achieving zero waste by 2050, a need to reduce waste arising by around 1.5% of the 2007 baseline each year across all sectors.
- 4.2.3 In achieving the above, the document states that Towards Zero Waste means:
- "Waste will be reduced significantly;
 - There will be a strong economy in resource management;
 - Residual waste will be minimised;
 - Landfill will be eliminated as far as possible; and
 - Legacy wastes will be tackled".

Planning Policy Wales (Edition 11, February 2021)

- 4.2.4 In February 2021, the Welsh Government (WG) published an update to national planning policy in the form of the 11th edition of Planning Policy Wales (PPW). PPW sets out the land use planning policies of the WG.
- 4.2.5 Section 5.13 relates to Sustainable Waste Management Facilities. Paragraph 5.13.1 states that "the planning system has an important role to play in facilitating sustainable waste management by providing a framework for decision making which recognises the social, economic and environmental benefits that can be realised from the management of waste as a resource to meet the needs of society and business...".
- 4.2.6 Paragraph 5.13.4 goes onto state that "The Welsh Government's policy for waste management is contained in Towards Zero Waste and associated sector plans. Planning authorities should, in principle, be supportive of facilities which fit with the aspirations of these documents and in doing so reflect the priority of the waste hierarchy as far as possible".
- 4.2.7 In respect of waste management facilities, paragraph 5.13.10 states that "planning authorities must support the provision and suitable location of a wide ranging and diverse waste

infrastructure which includes facilities for the recovery of mixed municipal waste and may include disposal facilities for any residual waste which cannot be dealt with higher up the waste hierarchy”.

Technical Advice Note 21 Waste

- 4.2.8 Technical Advice Note (TAN) 21 provides advice on how the land use planning system should contribute towards sustainable waste management and resource efficiency, reflecting the new waste management drivers at a European Union and Waste level. Both Planning Policy Wales and TAN 21 set out a framework for facilitating the delivery of sustainable waste management infrastructure through the planning process.

4.3 LOCAL PLANNING POLICY

Neath Port Talbot Local Development Plan

- 4.3.1 The proposals will be assessed against the policies contained in the Neath Port Talbot Local Development Plan, adopted in January 2016. The relevant policies include:

Policy SP1: Climate Change

“...In relation to the consequences of climate change: 1. Likely increased flood risk will be taken into account and addressed by ensuring that there is greater resilience by avoiding development on land that is at risk from flooding... 2. The fragmentation of habitats will be minimised and opportunities made for habitat and species change and migration where possible”.

Policy SP14: The Countryside and the Undeveloped Coast

“The countryside and undeveloped coast, including landscapes, seascapes and agricultural land, will be protected and where feasible enhanced through the following measures: 1. The protection of the open countryside through the control of inappropriate development outside settlement limits...”

Policy SP15: Biodiversity and Geodiversity

“Important habitats, species and sites of geological interest will be protected, conserved, enhanced and managed...”

Policy EN6: Important Biodiversity and Geodiversity Sites

“Development proposals that would affect Regionally Important Geodiversity Sites (RIGs), Local Nature Reserves (LNRs), Sites of Interest for Nature Conservation (SINC), sites meeting SINC criteria or sites supporting Local Biodiversity Action Plan (LBAP) or S42 habitats or species will only be permitted where: 1. They conserve and where possible enhance the natural heritage importance of the site; or 2. The development could not reasonably be located elsewhere, and the benefits of the development outweigh the natural heritage importance of the site”.

Policy EN7: Important Natural Features

“Development proposals that would adversely affect ecologically or visually important natural features such as trees, woodlands, hedgerows / field boundaries, watercourses or ponds will only be permitted where: 1. Full account has been taken of the relevant features in the design of the development, with measures put in place to ensure that they are retained and protected wherever possible; or 2. The biodiversity value and role of the relevant feature has been taken into account and where removal is unavoidable, mitigation measures are agreed.”

Policy SP16: Environmental Protection

“Air, water and ground quality and the environment generally will be protected and where feasible improved through the following measures: 1. Ensuring that proposals have no significant adverse effect on water, ground or air quality and do not significantly increase pollution levels; 2. Giving preference to the development of brownfield sites over greenfield sites where appropriate and deliverable; 3. Ensuring that developments do not increase the number of people exposed to significant levels of pollution.”

Policy EN8: Pollution and Land Stability

“Proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and / or local amenity or would expose people to unacceptable risk due to the following will not be permitted: Air pollution, Noise pollution, Light pollution, Contamination, Land instability, Water (including ground water) pollution. Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk or harm to public health, biodiversity and / or local amenity to an acceptable level.

Policy SP19: Waste Management

“Provision will be made for the delivery of an integrated network of waste management facilities through the following measures: ... 3. Continuation of the disposal of residual non-hazardous waste and inert waste at Pwllfawatkin landfill site...”.

Policy TR 2: Design and Access of New Development

“Development proposals will only be permitted where all of the following criteria, where relevant, are satisfied: 1. The development does not compromise the safe, effective and efficient use of the highway network and does not have an adverse impact on highway safety or create unacceptable levels of traffic generation; 2. Appropriate levels of parking and cycling facilities are provided and the access arrangements for the site allow for the safe manoeuvring of any service vehicles associated with the planned use...”.

Policy SP21: Built Environment and Historic Heritage

“The built environment and historic heritage will, where appropriate, be conserved and enhanced...”.

- 4.3.2 The planning statement accompanying the Environmental Statement will appraise the above policies.



5. NEED AND ALTERNATIVES

5.1 INTRODUCTION

- 5.1.1 This chapter outlines the need for continued provision of non-hazardous landfill capacity at Pwllfawatkin Landfill Site up to 2023. The chapter also sets out alternatives considered by the applicant and the rationale for the chosen option.

5.2 POLICY CONTEXT

- 5.2.1 The Neath Port Talbot Local Development Plan (adopted, 2016) states in paragraph 5.3.110 that:

“In regard to landfill, the disposal of residual non-hazardous waste and inert waste will continue at Pwllfawatkin Landfill Site and the site is identified on the Proposals Map. The remaining capacity at the site is sufficient to cater for both current and anticipated future demand over the Plan period and beyond. The development of further landfill will therefore be resisted”.

- 5.2.2 In relation to identifying need for new facilities, Planning Policy Wales states that planning authorities must:

“support the provision and suitable location of a wide ranging and diverse waste infrastructure which includes facilities for the recovery of mixed municipal waste and may include disposal facilities for any residual waste which cannot be dealt with higher up the waste hierarchy”.

- 5.2.3 Alternatives were considered to the proposed amendments to the restoration profile in this Environmental Statement. In accordance with the EIA Regulations, the reasonable alternatives considered by the applicant are described below, together with the reasons given for selecting the chosen option, and a comparison of environmental effects.

5.3 ASSESSMENT OF NEED

- 5.3.1 Policy SP19 Waste Management in the Local Development Plan states that:

“Provision will be made for the delivery of an integrated network of waste management facilities through the following measures: ... 3. Continuation of the disposal of residual non-hazardous waste and inert waste at Pwllfawatkin landfill site...”.

- 5.3.2 The previous planning consent that allowed the restoration of Tip 890 expired on 30th September 2018. An application to vary conditions (reference P2018/0512) to allow an extension of time and revised restoration profile to Tip 890 was submitted to NPTCBC in 2018 but was refused at planning committee, against officer recommendation for approval, in December 2020 on odour nuisance grounds.

- 5.3.3 As the consent that covered Tip 890 has expired, FCC are submitting a new planning application to allow a revised restoration profile to facilitate early safe closure of the tipping operation.

- 5.3.4 The amount of waste landfilled in Neath Port Talbot increased in 2019-2020 to c. 9,700 tonnes from c. 7,000 during 2016-2018¹.

- 5.3.5 Local Planning Authorities in Wales are expected to identify where landfill capacity falls below both a 7-year and a 5-year void in a region. 7 years is considered sufficient for the market to provide a solution to a shortfall, while 5 years is a trigger for pursuing action necessary to facilitate future provision. Neath Port Talbot's Annual Monitoring Report dated October 2021 states that the Waste Planning Monitoring Report 2020/21 for the South West Wales region indicates that the predicted landfill capacity for the region currently amounts to 6.1 years. Although this falls below the trigger point, the Annual Monitoring Report states that the figure remains above the 5-year threshold for requiring new provision to be made and therefore should

¹ Stats Wales: Annual management of waste by management method (tonnes)

not be deemed to trigger identifying future provision in the monitoring period. However, the monitoring report goes on to state that the reduction in voidspace availability and the increase in the amount of waste landfilled seen in 2018 and 2019 will need to be closely monitored in future.

- 5.3.6 The above assumes an operational landfill at Pwllfawatkin. If void was lost at Pwllfawatkin, then remaining capacity would fall below the 5-year threshold.
- 5.3.7 The AMR's published since the adoption of the Local Development Plan in 2016, indicate that no new landfill capacity has been granted.
- 5.3.8 Continuing operations at Pwllfawatkin Landfill Site will ensure a disposal capacity for the local and wider area for the short term. Pwllfawatkin Landfill Site plays a major role in regional resource management with Policy SP19 stating that the remaining capacity at Pwllfawatkin is sufficient to cater for both current and anticipated future demand over the Plan period. This demonstrates the reliance the Local Development Plan places on Pwllfawatkin Landfill Site in meeting the need for landfill capacity in Neath Port Talbot.
- 5.3.9 It is also considered that the restoration of Pwllfawatkin Landfill Site will deliver beneficial use of the site through the restoration scheme providing landscaping and biodiversity enhancements.

5.4 ASSESSMENT OF ALTERNATIVES

- 5.4.1 In accordance with Schedule 4 of the EIA Regulations the Environmental Statement will provide:

"A description of the reasonable alternatives studied by the developer...and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

- 5.4.2 The possible alternative approaches are outlined below:
 - Do nothing scenario;
 - This is where no proposals are developed
 - Alternative scheme of restoration
 - Consideration of the most beneficial restoration scheme for when operations at the site come to an end.

Do Nothing

- 5.4.3 This is the scenario which would occur if the site was left in its present state without any continued infilling, investment and development. As a result of no additional works on site there could be significant risk of adverse environmental impact from a landfill cell not being satisfactorily completed, for example, waste could be exposed to the atmosphere, landfill gas, surface water drainage and leachate management systems not implemented fully. Even if the active cells were closed correctly and the potential for environmental impacts were minimised, the approved restoration scheme could not be fully implemented due to the final landform not being completed. Not achieving the approved levels, soil depth and composition could potentially result in long-term ground instability, differential or excessive settlement and inadequate provision to manage surface water. This could result in the application site, part of a wider landfill site, not having a beneficial after use which under the previous planning consent is grassland and woodland.
- 5.4.4 Closing the landfill with immediate effect would result in the loss of a resource for the disposal of residual waste material, which may result in waste being transported further from its place of origin for disposal.

Alternative Scheme of Restoration

- 5.4.5 Restoration of the site is necessary to provide a beneficial after use. The 'do nothing' scenario has been considered and been discounted due to potentially significant adverse environmental impacts. To ensure that risks to the receiving environment are minimised and that a sympathetic landform is achieved, it is clear that disposal operations need to continue.
- 5.4.6 An alternative flatter restoration profile in which waste operations would end in 2022 was considered for the site alongside the proposed profile.
- 5.4.7 The overall gradient of the pre-settlement waste flanks at Pwllfawatkin Landfill Site need to be sufficiently steep to overcome the future settlement ensuring that the post-settlement restoration flanks are in accordance with the minimum requirements stated within technical guidance. This will also ensure that any surface water which collects on the waste mass, drains naturally under gravity, and is directed to the surrounding perimeter surface water ditches to prevent saturation and ponding of water on the capped surface.
- 5.4.8 The alternative profile, which was flatter, presented a greater risk of future differential settlement or excessive settlement which can cause damage to capping and environmental control systems for gas and leachate. Differential or excessive settlement which results in an uneven landform also presents risk to establishment of final restoration and bringing the site into afteruse in the longer term. This is because an uneven landform with hollows or irregular slopes constrains the ability to manage the site using standard agricultural practices and machinery e.g. for seeding, mowing etc.
- 5.4.9 The alternative flatter profile considered generally had a larger surface area on the top of the waste mass which when settlement occurs could result in a flat final profile occurring. This would reduce the ability for water that falls on this area to drain away naturally under gravity and therefore cause surface water ponding on the waste mass due to insufficient falls to the perimeter of the waste mass which could potentially have detrimental impacts on the performance and integrity of the capping system and the stability of restoration soils.
- 5.4.10 The proposed restoration profile and associated contours enables a domed shaped profile meeting the minimum requirements for slope gradients and allows surface water to be naturally shed off the capping system under gravity into the surrounding surface water ditches. The proposed restoration profile provides a better landform for surface water management than the alternative restoration profile considered.
- 5.4.11 The assessment of need for a residual waste disposal facility, has been based on the anticipated rates of fill and achievement of a desired restoration landform. This application seeks to modify the previously consented restoration profile to facilitate early closure of the tipping operation in a safe manner in accordance with guidance for suitable slopes on landfills. The continued operation of the facility will provide a much-needed disposal resource and the site will be restored to a beneficial after use providing enhanced landscaping and biodiversity.

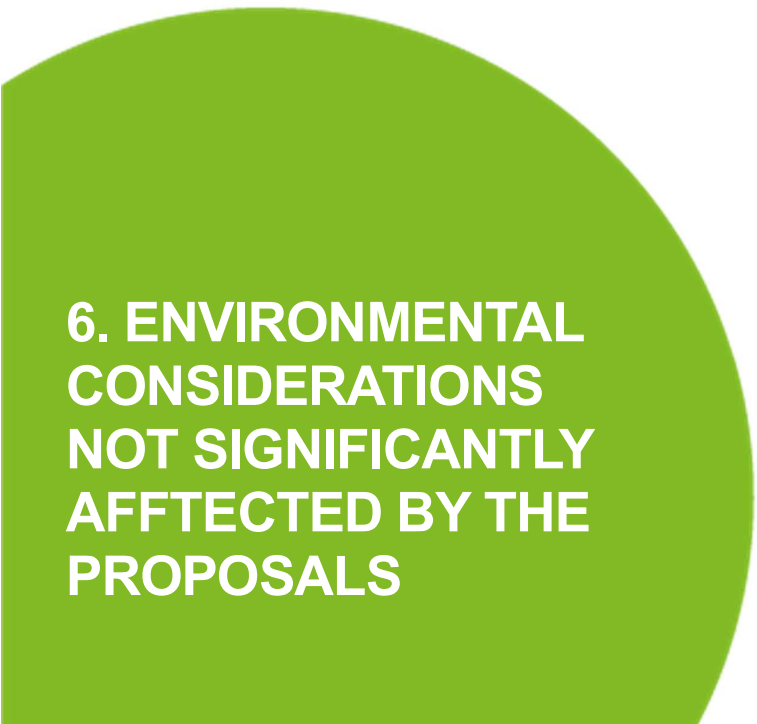
5.5 ALTERNATIVE DISPOSAL METHODS

- 5.5.1 This section of the chapter sets out the different technologies and methods which could be employed for the management of residual waste. The technologies for the management of residual non-hazardous waste include:
- Landfilling;
 - Mass Burn Incineration; and
 - Advanced Thermal Treatment.
- 5.5.2 Landfill is the only option that can manage all types of residual waste; mass burn incineration and advanced thermal treatment still generate a residual waste that requires management, typically landfill. As such, a like for like consideration of alternative disposal options cannot be

adequately undertaken.

Conclusion

- 5.5.3 In considering the preferred management of residual waste it was considered that the continuation of landfill operations would be most appropriate at Pwllfawatkin, as it would provide restoration of the site and offer final disposal facility for residual waste. By its very nature residual waste will have already been subject to a number of potential treatment options to remove recyclable material.



6. ENVIRONMENTAL CONSIDERATIONS NOT SIGNIFICANTLY AFFECTED BY THE PROPOSALS

6.1 INTRODUCTION

6.1.1 The following environmental considerations are unlikely to be materially affected or give rise to significant environmental effects as a consequence of the proposed development and were confirmed as being 'scoped out' of the Environmental Impact Assessment by the Scoping Opinion issued by Neath Port Talbot Council (Appendix 1.1). Following the headings, a justification is provided as to why the assessments have been scoped out.

6.1.2 Scoped out environmental topics include:

- Traffic and Transport
- Noise
- Major Accidents
- Soils, Geology and Contaminated Land
- Public Health and Well-being
- Climate Change
- Socio Economic
- Cultural Heritage
- Land Uses

6.2 TRAFFIC AND TRANSPORT

6.2.1 Condition 20 of the previous consent (P/2002/1016) allowed for up to 125 visits (250 vehicle movements) Monday to Friday and a maximum of 60 visits on Saturday (120 vehicle movements). However, based on gate receipts the average number of visits to the landfill over the last couple of years is circa 28 daily visits or 56 HGV movements.

6.2.2 The proposed hours for waste disposal will remain unchanged from the previous consent, i.e. 0700 hours to 1700 hours Monday to Friday and 0700 hours to 1300 hours on Saturday. Daily cover and restoration operations to operate to 1900 Monday to Friday and 1500 on Saturday.

Highway Network

6.2.3 The site will continue to utilise the existing access from the A474 to the east via a priority junction. The A474 connects Pontardwe and Ammanford.

6.2.4 From the A474 access to the landfill is via Baran Road (adopted highway). Baran road also provides access to the site offices, gas engines and leachate lagoons.

Vehicle Movements

6.2.5 To bring the site to an earlier close, FCC is seeking to reduce the amount of landfill capacity from that previously consented at Pwllfawatkin. This will result in a revised restoration scheme and altered phasing. FCC anticipate that approximately 7,000 to 8,000 tonnes per month will be imported to site. Engineering material will continue to originate, as needed, from Tip 871. Therefore, it is considered that the proposal will result in a significant reduction in vehicle numbers compared to that previously approved.

6.2.6 Taking the higher scenario of 8,000 tonnes per month imported to site, assuming an average load of 18 tonnes per HGV and that waste will be deposited at the site for 2 years (2021 to 2023) based on a 5.5 day working week then circa 20 daily deliveries will be made by HGVs, or 40 vehicle movements.

6.2.7 As part of the restoration there will be a requirement to import engineering material for the cap and restoration.

6.2.8 The proposal will not result in additional workers or will it change the working hours of the site.

6.2.9 Vehicular access arrangements to and within the site will not significantly alter from that previously approved. From the weighbridge vehicles will travel to the active disposal area by the internal service road. Once vehicles have deposited their loads, they will leave the site via

the weighbridge to tare off.

- 6.2.10 It is assumed that HGVs will arrive evenly throughout the working day. Site staff and operatives will arrive and depart the site at different times of the day to reflect hours of work. Once the site has been restored there will be little or no requirement for vehicles to regularly access the site. Only trips associated with routine inspections, maintenance of equipment and aftercare landscaping will be undertaken. The limited levels of generated traffic means there would be no effect on the existing highway network.

Summary

- 6.2.11 Given the location of the site and previously approved operations it is considered that the existing access arrangements are suitable to accommodate the traffic from the proposed development.
- 6.2.12 As average vehicle movements resulting from the proposal will be less than previously experienced at the site it is considered that in terms of congestion and delay there will be no effect on the local highway network beyond that previously encountered.
- 6.2.13 There is limited scope to minimise car trips associated with the proposal, however the development would have no traffic effect on the current serving highway network.
- 6.2.14 Operation of the landfill will generate approximately 20 visits through the importation of waste per working day. In addition, engineering and restoration materials will be imported to site. This volume of traffic has previously visited the site delivering waste and engineering materials. This figure does not include staff movements or intermittent movements such as delivery of plant, equipment and materials.
- 6.2.15 Operations at the landfill employs 6 staff. As a worst-case scenario, if all landfill employees were to access the site using private transport up to 12 vehicle movements per day would be generated.
- 6.2.16 The potential effect on traffic generation as currently experienced will be negligible. As such, the topic has been scoped out of the assessment.

6.3 NOISE

- 6.3.1 The day-to-day operations and practices at the landfill site will remain unchanged. The anticipated end date for waste importation is 31st October 2023 with a further two years to complete the restoration. It is considered that the additional time and amended restoration profile will not materially affect the existing noise climate in and around the proposal site.
- 6.3.2 The nearest residential properties are Nant y Gafalau approximately 100m to the west of the site boundary and Highbury Cottage approximately 300m to the east of the site boundary. Highbury Cottage is the nearest residential property within the prevailing wind located c. 300m from the site boundary but c. 390m from the waste deposit tipping area.
- 6.3.3 Pwllfawatkin Landfill Site already incorporates effective management of activities and has existing measures in place to reduce the impacts of noise on nearby sensitive receptors. Such measures include:
- Where appropriate the surface of the site will be regularly maintained to prevent and to avoid unwanted rattle and 'body slap' from vehicles;
 - A speed limit of 10 mph will be imposed within the site and strictly enforced;
 - Any reversing bleeper fitted to any HGV or other operational vehicle will be minimised as far as is reasonably practical subject to maintaining safety;
 - Where possible vehicles would manoeuvre in a circular manner to avoid the use of reversing alarms;
 - All plant and vehicles will be regularly maintained, such machines will be fitted with properly lined acoustic covers and which will be closed whilst machines are in use;

- Plant will be operated in a proper manner with respect to minimising noise emissions, i.e. no unnecessary noise due to revving of engines; and
- Machines that are intermittently used will be shut down in the intervening, periods between work or throttled to a minimum.

6.3.4 Due to the ambient noise climate and the control techniques, together with good operational working practices and regular maintenance of plant and machinery the impacts from excessive noise from the continued operations on nearby noise-sensitive receptors will be negligible. As such, the topic has been scoped out of the assessment.

6.4 MAJOR ACCIDENTS AND / OR DISASTERS

6.4.1 The scale and nature of the proposal means that the potential for major accidents and disasters are low. The site has been operating as a landfill facility since the 1970s without major incident.

6.4.2 Landfill gas and leachate management systems are in place not only to reduce potential adverse environmental impacts but also minimise the potential risk to human health. Furthermore, the restoration profile of the site has been designed to ensure they are safe far beyond the closure of the landfill site.

6.4.3 The Health and Safety Executive (HSE) identifies no Control of Major Accident Hazards (COMAH) registered sites² in proximity to the application site. Landfill sites are typically exempt from the COMAH Regulations and potential hazards are identified and controlled through the Environmental Permit regulated by Natural Resource Wales (NRW).

6.4.4 NRW is the regulatory body responsible for ensuring on site safety. Every aspect of landfill design, implementation, operations and monitoring is scrutinised by experts and the public alike to minimise the potential for major accidents and disasters. Therefore, this topic is scoped out of the assessment and does not require any further consideration.

6.5 SOILS, GEOLOGY AND CONTAMINATED LAND

6.5.1 The geological suitability of the site for landfill has been established by previous assessments and the previous consents for the site. It is proposed to continue restoring the site but rather than import the previously approved amount of waste to create the previously approved restoration profile it will be to a reduced final landform. This is being achieved through not progressing infill of previously approved Phase 5 and completing the contours on Cell 4 instead. The Cell 5 area will be graded with remaining in situ materials and soils. The ground conditions have not changed since previous assessments and therefore this topic is scoped out of the assessment.

6.6 PUBLIC HEALTH AND WELLBEING

6.6.1 Whilst landfill operations will continue to 31st October 2023, there will be a reduction in the total volume of waste being disposed of at the site from that previously consented. There will also be benefits of the scheme once restored.

6.6.2 Pwllfawatkin Landfill Site is currently operating under Environmental Permit EPR/BU8819IV which is regulated by NRW. This Permit regulates the landfill site and the associated activities, including the management of landfill gas, to ensure that operations are controlled in such a way that there is no significant risk of pollution of the environment, harm to human health, or detriment to amenity, therefore the topic is scoped out of the assessment.

6.7 CLIMATE CHANGE

6.7.1 The greatest potential impact to climate change from operating a landfill is the generation of landfill gas from the biodegradable waste degrading in anaerobic conditions. Landfill gas is managed by implementing a positive extraction system that captures the gas, which is 60%

² <https://notifications.hse.gov.uk/COMAH2015/Search.aspx>

methane / 40% CO₂, and uses it as fuel to generate electricity which is delivered to the grid.

- 6.7.2 There is already a scheme of landfill gas management at Pwllfawtkin which collects the generated gasses and utilises them to generate electricity. The collection and utilisation of landfill gas for energy generation has a positive effect in reducing greenhouse gas emissions for the site.
- 6.7.3 Given the short duration of the proposed works to 2023, climate change resilience of the proposal is not anticipated to require consideration. Therefore, the topic is scoped out of the assessment.

6.8 SOCIO ECONOMIC

- 6.8.1 The proposal is to revise the restoration profile of Tip 890 at Pwllfawtkin Landfill Site to facilitate early safe closure of the tipping. This will continue landfill operations at the site to 31st October 2023 plus two years to complete restoration. The nature of the consent and the number of staff to be employed will remain as that previously consented. Therefore, the topic is scoped out of the assessment.

6.9 CULTURAL HERITAGE

- 6.9.1 Owing to the historic uses of the site as a colliery and now a landfill, the potential for direct impacts on heritage resources will be negligible. Furthermore, as the proposal is to amend the approved landform and continue operations, the potential to indirectly affect identified heritage resources beyond that previously assessed is considered to be limited. Therefore, the topic is scoped out of the assessment.

6.10 LAND-USE

- 6.10.1 The use of the site has already been established. The proposals seek a continuation of that use over the same area of land as that approved including revisions to the approved profile, therefore consideration of potential effects has been coped out of the assessment.

7. LANDSCAPE AND VISUAL

7.1 INTRODUCTION

- 7.1.1 Sirius Planning Limited was appointed to undertake a Landscape and Visual Impact Assessment (LVIA) in support of a planning application (EIA) for amendments to the restoration profile at Pwllfawatkin Landfill Site, Pontardawe, Neath, SA84RX.

Site Background

- 7.1.2 Three former coal spoil tips form the majority of FCC Environment's (FCC) landholding at Pwllfawatkin. Two of these tips, Tip 891 and Tip 890, are located to the north of Baran Road. The third tip, Tip 871 is located to the south of Baran Road.
- 7.1.3 Tip 891 has been restored for some time now, however Tip 890 is still accepting non-hazardous waste. Tip 871 is, where necessary, used as a source of engineering material for Tip 890.
- 7.1.4 Two planning consents that allowed the restoration of Tips 890 and 871 expired on 30th September 2018. P2002/1016 was granted in January 2005 and covers the three tips 890, 891 and 871. In December 2011, permission P2011/0537 was granted and allowed the continued restoration of Tip 871 and supersedes the 2005 permission but only on Tip 871. In March 2016 the 2011 consent was updated by P2014/0693 which amended the surface water scheme.
- 7.1.5 An application to vary conditions (reference P2018/0512) to allow an extension of time and revised restoration profile to Tip 890, that reduced the remaining site void from that consented, was submitted to Neath Port Talbot County Borough Council in 2018 but was refused at planning committee, against officer recommendation for approval, in December 2020 on odour nuisance grounds.
- 7.1.6 A separate planning application (reference P2018/0511) was submitted in 2018 to vary the conditions of planning permission P2014/0693 to extend the period to complete restoration of Tip 871 and amend the restoration profile. To date, this application was still awaiting a decision.
- 7.1.7 As the consent that covered Tip 890 has expired, FCC are submitting a new planning application to allow a revised restoration profile in order to safely close the landfill operation. The red line application boundary is limited to the future operational area of Tip 890 and not the entire landfill landholding. The amendments to the restoration profile and scheme for Tip 890 proposed in this application follow on from the restoration scheme previously approved for the wider landfill.

Landscape and Visual Impact Assessment

- 7.1.8 This Landscape and Visual Impact Assessment (LVIA) is produced in support of the application to consider the potential effects of the proposed changes and new features. As landfill operations have previously been consented, an operational existing feature in the landscape, the assessment will focus on the proposed changes, notably the change to the final landfill profile and continuation of site operations.
- 7.1.9 The assessment and methodology for this LVIA conforms to the relevant parts of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013). The assessment focuses on the identification of likely 'Significant' landscape and visual effects, including those that are, positive and negative, direct and indirect, long, medium and short term, and reversible and irreversible, as well as cumulative effects (when applicable). This includes the potential effects on local landscape character and landscape designations as well as the potential effects on views experienced by people (receptors) including (but not limited to); settlements, public rights of way, registered parks and gardens and transportation corridors.
- 7.1.10 This chapter outlines the data gathering methodology that was adopted for the LVIA. It then leads to a description of the assessment methodology, the overall baseline conditions, and an assessment of potential effects. The chapter concludes with a summary of the assessment results with an analysis of the previously consented scheme and the amended scheme.

- 7.1.11 This LVIA utilises the LVIA submitted in support of the previous (and similar) planning application (reference P2018/0512) but updated where necessary, particularly the viewpoint assessment, which highlights the change to the tip profile within the intervening period. The scope was agreed with NPT Council (Scoping Opinion, dated 4th November 2021).

Study Area

- 7.1.12 The extent of the study area for a development is broadly defined by the visual envelope of the proposed development and the anticipated extent of the Zone of Theoretical Visibility (ZTV) arising from the development itself. The ZTV study area for this assessment extends to a 2.5km radius from the site centre.
- 7.1.13 The study area was selected on the basis of the scale of the proposal, consideration of best practice, and the nature of the surrounding topography and landscape elements and features, plus review of the historic assessment(s). It is accepted that receptors located over 2.5km away from a development of this scale would have no potential to experience landscape or visual effects of a significant nature. Due to the location of the site upon the valley floor and the surrounding mature vegetation that despite the 2.5km study area it is considered that the likelihood of the development being substantially perceptible from areas outside of the site boundary is low.
- 7.1.14 GLVIA, section 5.2, additionally states that a study area should “include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner. This will usually be based on the extent of landscape character areas likely to be significantly affected either directly or indirectly”.

Chapter Structure

- 7.1.15 This chapter is structured as follows:
- Introduction;
 - Methodology;
 - Policy Context;
 - Baseline Landscape Summary;
 - Baseline Visual Conditions;
 - Restoration and Mitigation Proposals;
 - Assessment of Visual Effect;
 - Viewpoint Assessment; and
 - Conclusion.

7.2 METHODOLOGY

Introduction

- 7.2.1 The methodology for this LVIA conforms to the relevant parts of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013). The assessment focuses on the identification of likely landscape and visual effects, including those that are, positive and negative, direct and indirect, long, medium and short term, and reversible and irreversible, as well as cumulative effects.
- 7.2.2 Detailed explanation of the methodology including the basis on which judgements have been made on the sensitivity of the receptors, magnitude of change and level of effects is contained within Appendix 7.1.
- 7.2.3 For the purposes of clarity, the European Landscape Convention (ELC) (2000), defines the term ‘landscape’ as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”.
- 7.2.4 The ELC confirms that the landscape should be considered as a resource in its own right. It provides an integrated way of conceptualising our surroundings and is increasingly considered

to provide a useful spatial framework for thinking about a wide range of environmental, land use and development issues. The ELC applies to all landscapes; natural, rural, urban and peri-urban areas, including land, inland water and marine areas. It considers landscapes that might be considered outstanding as well as every day or degraded landscapes.

7.2.5 Additional guidance has also been taken from the following publications:

- Council of Europe, The European Landscape Convention (2000, ratified 2006) ETS no. 175.
- An Approach to Landscape Character Assessment, Natural England, October 2014;
- An Approach to Landscape Sensitivity Assessment – To Inform Spatial Planning and Land Management, Natural England, June 2019
- Landscape Institute Advice Note 06/19 – Visual Representation of Development Proposals Landscape Institute, (Sept, 2019); and
- Landscape Institute Technical Guidance Note 02/21 – Assessing landscape value outside national designations, (May 2021).

Assessment Process

7.2.6 The assessment has 3 key stages, summarised as follows:

- Baseline – gathering of documented information; existing landscape character studies, identification of landscape and visual receptors, scoping of the assessment, agreement of viewpoints and assessment parameters, discussion with relevant consultees and the local planning authority, site visits and initial reporting of design issues and client designer;
- Design – Review of initial design and ongoing design iterations following baseline survey, including responses to other specialisms e.g. ecology and cultural heritage. Consideration of mitigation options and enhancement (where appropriate) including a comparative assessment between the consented scheme and the revised scheme; and
- Assessment – involves an assessment of the landscape and visual effects of the scheme, involves site and desk-based survey and assessment.

Landscape and Visual Effects

7.2.7 LVIA is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity (GLVIA 2013, para 1.1).

7.2.8 Landscape and visual effects are assessed separately within the LVIA, “the assessments are known as impact assessments but the European Union Directive refers to assessment of the effects, which changes are arising from the development that is being assessed”. (GLVIA 2013, para 1.15). Impact is defined as ‘action being taken’ and the effect is defined as the ‘change resulting from the action’.

7.2.9 Landscape effects are defined “An assessment of landscape effects deals with the effects of change and development on landscape as a resource. How the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character” (GLVIA 2013 para 5.1).

7.2.10 Visual effects are defined “An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. Assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements” (GLVIA 2013 para 6.1).

Timescale of Effects

7.2.11 The principal landscape and visual effects, which are non-reversible, occur during the formation of the site landform, before any proposed mitigation has time to mature and are then considered to be in situ as a permanent landscape feature.

Seasonal Effects

- 7.2.12 Within the assessment consideration is given to the seasonal differences in effects arising from the varying degree of screening and/or filtering of views by vegetation that will apply year round. The assessment considers the visual screening effects that vegetation would provide in both summer and winter months (when deciduous vegetation is not in leaf), and if it is considered that there would be substantial differences in the screening and/or filtering of vegetation between the summer and winter months, it will be stated.

Significance – Level of Effect

- 7.2.13 The detailed criteria used to determine the significance of effect is listed in Appendix 7.1 Methodology. It should be noted that while the methodology is designed to be robust and transparent, in line with best practice, professional judgement is finally applied to determine the significance of effects, and whether the effects are considered 'Significant' or 'Not Significant'.

Subjectivity of the Nature of Effects

- 7.2.14 This assessment does not state explicitly whether the effects of the development on landscape and visual amenity is adverse, neutral or beneficial. However, it is acknowledged that the GLVIA 2013 states that professional opinion should be applied and a positive or negative judgement stated (Para 5.37 and 6.29).
- 7.2.15 It is commonly accepted that the nature (or valency) of effects of a development are subjective based upon the attitude of the individual. The introduction of a new development may be seen as a landscape detractor, or as a positive addition to the evolving landscape. In examining visual effects, it is important to consider that public opinion (or the likelihood that professionally qualified landscape architects may have differing positions) when discussing the effect upon views perceived by the public.
- 7.2.16 In accordance with GLVIA a 'precautionary approach' is taken and therefore, although the nature of effects is not stated within the assessment, effects would be negative unless stated otherwise. This precautionary approach of negative effects should be considered with the caveat that the valency of effect must always be considered by the decision makers, the approach should not be concluded to be the final judgement and it should be acknowledged that many people would see the development as either a positive or neutral addition.

Assessment Limitations

- 7.2.17 The assessment of landscape and visual effects is undertaken from publicly accessible locations only including; roads, parks and public rights of way to represent potential impacts on a range of receptors. Consideration of the effect on views from residential receptors is undertaken from representative publicly accessible points and analysis of map data. This assessment does not consider or assess impacts from every theoretical location where the development would be visible.

Design Mitigation

- 7.2.18 Mitigation measures are measures that are proposed to prevent / avoid, reduce, offset or remedy potential effects of the proposed development. The nature of the development being assessed, an amended restoration plan, presents many opportunities for discussion of the landform and ground treatments and covering upon it. Mitigation (in the form of the restoration treatments) will be considered and referenced in the assessment of effects where applicable.

Residual Effects

- 7.2.19 Residual effects are defined as the effects remaining after any proposed methods of mitigation have been implemented.

- 7.2.20 The potential for additional residual effects on landscape and visual amenity following the completion of the restoration is limited over and above the final restored scheme. Longer term as the mitigation planting matures, residual effects would be considered to reduce.

7.3 POLICY CONTEXT

Planning Policy Wales (PPW) Edition 11

- 7.3.1 PPW gives more detailed advice in relation to planning matters. In respect of landscape and seascape it stresses throughout that conservation of biodiversity and landscape should be promoted and taken into account in all development decisions and development plans and that the undeveloped coastline should be protected or enhanced.
- 7.3.2 It is stated that non-statutory designations such as Special Landscape Areas should be soundly based on a formal scientific assessment of the nature conservation, landscape or geological value of the site. Such designations should be applied to areas of substantive conservation value where there is good reason to believe that normal planning policies cannot provide the necessary protection.
- 7.3.3 See the Planning Statement for detailed discussion.
Neath Port Talbot Local Development Plan (January 2016)
- 7.3.4 See Section 5 of the Planning Statement for consideration of local policy applicable to the site proposals.

7.4 PROPOSED DEVELOPMENT

- 7.4.1 FCC are seeking to revise the restoration profile of Tip 890 to facilitate safe early closure of the tipping operation. In comparison to the previously consented scheme, this will result in:
- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational cell 4 and not developing the previously consented cell 5;
 - Localised re-profiling of cells 3 and 4;
 - A reduction in void space from that previously consented;
 - An amended scheme of surface water management to account for the revised restoration profile;
 - Amended phasing scheme; and
 - Amended scheme of restoration (landscaping)
- 7.4.2 The planning consent for the restoration of Tip 890 expired in September 2018 with the site not being fully restored. For long term stability, avoidance of differential or excessive settlement, protect capping integrity and for the long-term function of the environmental control systems for gas, leachate and surface water, it is necessary to complete the site to a designed profile. This can only be achieved through waste importation.
- 7.4.3 Differential or excessive settlement can not only impact on capping, restoration soils and environmental control infrastructure but also the delivery of final restoration and after use with delivering restoration schemes and aftercare management being particularly difficult on differentially settled landforms. Completing the site to a suitable final landform now will reduce the likelihood of needing to return to site at a later date to correct the differential settlement involving cap stripping / repaid, placement of additional wastes or soils.
- 7.4.4 As outlined in Section 5 of the accompanying Environmental Statement, alternative restoration profiles were considered for the site, however the proposed restoration profile enables a domed shaped profile in line with NRW's minimum requirements on slop angles for landfills designed to prevent differential settlement and associated issues outlined above.
- 7.4.5 Tip 890 therefore needs to be completed to a profile that meets NRW guidance and ensure long term stability of the site.

Timescales

- 7.4.6 The rate of infilling originally anticipated that would have allowed completion of the consented restoration has been less than expected. The shortfall in anticipated waste inputs to site is a result of increased recycling rates that have diverted materials from landfill. This together with the other factors such as economic slowdown and more recently the disruption caused by the COVID pandemic has led to reductions in expected waste volumes.
- 7.4.7 Preliminary forecasting of likely residual waste arising has been undertaken by FCC to estimate likely timescales for completion of the proposed restoration profile. Assuming c. 7,000 – 8,000 tonnes per month of residual waste is deposited on site then an anticipated end date for waste importations is 31st October 2023. A further two years to complete the restoration and landscape planting will be necessary.

Revised Restoration Profile

- 7.4.8 The previous consent allowed for five containment cells to be constructed across Tip 890. Under the revised restoration profile, FCC is seeking to reduce the number of cells to four but include a sidewall extension to cell 4. Drawing no. WR7816/12/04 presents the proposed pre-settlement profile and drawing no. WR7816/12/05 presents the proposed post-settlement profile. The footprint of cell 5 will simply be graded to tie into surrounding levels.

LOCALISED REPROFILING

- 7.4.9 The previously approved contours for Tip 890 reached a maximum height of 192m AOD. From recent topographical surveys of cells 3 and 4 it is clear that the current profile of the cells is lower than the previously approved levels. The difference in height is up to a maximum of 2m in some places. This is largely due to differential settlement in the waste mass.
- 7.4.10 To address this, soils would be used to achieve restoration contours under the requirements of restoration and aftercare as per the previous consent.

Surface Water Management

- 7.4.11 The current scheme of surface water management relies on a gravity drainage system and includes a ditch collection system excavated into the re-profiled tip, feeding under gravity into an attenuation and settlement ponds prior to discharging to the Upper Clydach River.
- 7.4.12 Whilst a new restoration profile for the site is being sought for Tip 890, the area of land to be drained is not increasing, furthermore, the principles of surface water management across the site will not alter significantly. An updated scheme of surface water management is presented in Drawing no. WR7470/01/01 R4.

Landscaping

- 7.4.13 The main restoration elements of the consented scheme are retained in the amended scheme of restoration, including:
- Approximate field pattern, size and distribution;
 - Field treatments of meadow grassland and agricultural pasture; and
 - Distribution of proposed hedgerows, woodland and scrubland; and
 - Retained features of infrastructure.
- 7.4.14 The restoration proposals are shown on Drawing no. WR7816/12/08.

7.5 LANDSCAPE ASSESSMENT BASELINE CONDITIONS

- 7.5.1 An overview of the existing landscape character and value for both the application site and the study area as a whole has been determined by observations made during a site visit and through review of the published Landscape Character Assessments (LCA). Landscape character is defined as “An area, as perceived by people, the character of which is the result of

the action and interaction of natural and/or human resources". (GLVIA 2013).

- 7.5.2 It follows from the above that in order to assess whether landscape character is 'substantially' affected by a development, it should be determined what and how each of the key characteristics would be affected. The judgement of magnitude therefore reflects the degree to which the key characteristics and elements which form those characteristics will be altered by the proposals. The scale of the development, the nature and sensitivity of the receiving landscape, and local 'barriers' in the landscape (such as breaks of topography, woodlands, settlements, and roads or rivers) will influence the exact extent of effect of the development.

National Landscape Character

- 7.5.3 National Landscape Character Areas (NLCA) form the broadest scale of landscape character assessment in Wales, undertaken by Natural Resources Wales.

"NLCAs are defined at a broad landscape scale throughout Wales. The descriptive profiles for the 48 individual character areas highlight what distinguishes one landscape from another, with reference to their regionally distinct natural, cultural and perceptual characteristics".

- 7.5.4 The NLCAs assist in the development (and assessment) of policy strategy and guidelines. NRW's Area Statements incorporate NLCA information. The Pwllfawatkin site is set within one of the largest NLCAs; **NLCA 37 South Wales Valleys**. The full description can be found in Appendix 7.3 to this assessment, but in summary the key characteristics that are considered relevant to the site and local study area, referenced in the description include:

- **Extensive upland plateaux** – typically wild and windswept, often with unenclosed tracts, running roughly north-south as 'fingers' parallel between intervening deep valleys.
- **Numerous steep-sided valleys** – typically aligned in parallel, flowing in southerly directions, shaped by southward flowing glaciers, leaving behind distinctive corrie ('cwm') and crag features.
- **Extensive remains of heavy industry** – with a mix of derelict, preserved and largely redeveloped areas, notably for coal mining. Preserved as heritage (World heritage site) at Blaenafon this typically includes old railway alignments, buildings and former tips.
- **Contrast of urban valley activity next to quiet uplands** – e.g. busy roads, new developments, traffic noise, noise lighting, verses the adjacent wilder, remoter quieter uplands.
- **Large blocks of coniferous plantation and deciduous woodland fringes** – covering many steep hillsides and hilltops, most notably in the middle to western portion of the area, providing a softer contemporary landscape where there was once industry.
- **Heather, rough grassland and steep bracken slopes** – dominate many plateaux and are grazed mainly by sheep. Much is common land.
- **Transport routes restricted to valleys** – the intervening topography makes valley travel difficult, except at heads and bottoms of valleys. Occasionally there are roads that climb steep over passes with dramatic views and 'hair pin' bends.

Visual and Sensory Profile

- 7.5.5 The document states the following with regard to visual and sensory profile which is considered of relevance to the Pwllfawatkin site area:

"The South Wales Valleys is one of Wales' more widely known iconic images, combining the wilder and often inclement upland setting with the heavily industrialised and busy valleys. Active mines and industry are now generally an image of the past, however the legacy remains extensively apparent today and together with the steep topography of the valley sides, has a defining influence on landscape character. Levels and old railway alignments, the generally reclaimed but sometimes still perceptible physical footprints of mine spoil heaps, the often intensively urbanised valley floors with old industrial buildings, and lower valley sides with their distinctive long rows of workers terraces, retain the traditional image.

It is a landscape of contrasts. The valleys contain the extensive ribbon development, which snakes along the valley floors and lower valley sides, and sometimes with settlements precariously extending over intervening slopes and spurs. The windswept upland plateaux that separate the valleys could not be more different. Devoid of settlement, the uplands engender a strong sense of openness and remoteness, although in places compromised by proximity to industry and people, for example reclaimed spoil heaps..... and occasional wind turbine developments. But the open plateaux afford extensive views across the valleys, southwards to the Severn Estuary and northwards to the Brecon Beacons. At times, views from plateau to plateau conceal the intervening valleys and thus visually connect more with the wider uplands of Wales.

The far western valleys, (those west of the Neath Valley) have slightly gentler intervening hills and long, unfenced lanes use the ridges as convenient routes. This affects experience of the area too, as ridgeline routes are uncommon elsewhere”.

- 7.5.6 Through a review of the NLCA 37 it is considered that the site and particularly the local study area contains many of the identified characteristics of the NLCA, albeit it is an area that is less intensively developed, more rural fringe than many of the heavily industrialised valleys in the region, particularly to the east (eg Rhondda). The surrounding upland areas (locally designated Special Landscape Areas) provide natural containment and attractive landscape context, with limited legacy features of the industrialised past evident.

LANDMAP

- 7.5.7 LANDMAP (Countryside Council for Wales, now Natural Resources Wales) details the Welsh national level approach to landscape assessment. It is a GIS (Geographical Information System) based the landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent data set.
- 7.5.8 LANDMAP is formally recognised in Planning Policy Wales (PPW) (Ed 11, 2021) as the starting point for landscape assessments in Wales. LANDMAP provides information for all of Wales' landscapes apart from the built-up areas of Cardiff and Swansea. It states that:
- 'LANDMAP is an important information resource, methodology, and monitoring baseline for the landscapes of Wales, which can help inform planning for the sustainable management of natural resources in an area. LANDMAP describes and evaluates the physical, ecological, visual, cultural and historic aspects of the landscapes of Wales, and provides the basis of a consistent, quality assured national approach to landscape assessment. LANDMAP assessments can help to inform development management decisions.'
- 7.5.9 LANDMAP Guidance Note 3, May 2013 (now archived), stated that:
- 'all EIAs in Wales should therefore include an assessment using the information provided in LANDMAP as part of their ES chapter on landscape and visual effects. In particular, it should be used to inform a thorough understanding of the baseline conditions'.*
- 7.5.10 LANDMAP Information is defined by five methodological chapters: Cultural Landscape, Geological Landscape, Historic Landscape, Landscape Habitats and Visual & Sensory. These chapters are considered the key national level landscape guidance for Wales. LANDMAP as the most comprehensive landscape resource, will be utilised in this assessment and discussion of landscape baseline.
- 7.5.11 Considering the scale and geographic setting of the site (and defined 2.5km study area) the following aspect area study area radius have been considered:

Table 7.1: Approach to Aspect Areas

Aspect	Search area defined by aspects which:	Typical study area Radius dependent on development characteristics	Evaluation of aspect areas which should be main focus of study	Useful thematic Maps to inform study (can be overlaid with ZTV)
Geological Landscape	Contain site boundary and those adjacent	1km	Outstanding and high overall evaluation	Overall evaluation and rarity / uniqueness evaluation criteria
Landscape Habitats	Contain site boundary and those adjacent	1km	Outstanding and high overall evaluation	Overall evaluation and connectivity / cohesion criteria
Visual and Sensory	Are intervisible with development	1km	Outstanding and high overall evaluation. Plus moderate evaluation (where scenic quality and/or character criteria are outstanding or high).	Overall evaluation and scenic quality and character evaluation criteria
Historic Landscape	Are intervisible with development	1km	Outstanding and high overall evaluation	Overall evaluation
Cultural Landscape	Are intervisible with development	1km	Outstanding and high rarity and group value evaluation criteria	Overall evaluation and rarity and group value evaluation criteria

7.5.12 The application site is located within the following aspect areas:

- Visual and Sensory: VS575 Cwm Gors Open/Wooded Mosaic Upland Valleys (Evaluation: Moderate)
- Cultural Landscape: CL044 Western High Ridge: Mynydd y Garth, Cefn Sense of Place (Evaluation: High)
- Geological: GL010 Upper Clydach Valley Upland plateau (Evaluation: High)
- Historic Landscape: HL041 Clydach Cwm Du Other fieldspaces (Evaluation: High)
- Landscape Habitats: LH007 Mosaic (Evaluation: Low) & LH009 River Corridors (Evaluation: High) & LH013 Mosaic (Evaluation: High)

7.5.13 A full description of the relevant LANDMAP aspect areas is contained with Appendix 7.3.

District Landscape Character

7.5.14 The county borough Neath Port Talbot Landscape Assessment (2004) is based on the LANDMAP process. The assessment was produced to be used as a framework for landscape

planning.

- 7.5.15 The assessment split the county borough into 53 Landscape Character Areas which were derived from a combination of the five LANDMAP aspect areas, led by the visual and sensory aspect layer. The site is located within: **Landscape Character Area (LCA) 32 – Cwm Gors / Gwaun Cae Gurwen / Abernant.**

- 7.5.16 LCA 32 is described as:

Context

This upland valley lies in the north west of the County Borough. It is defined to the east by the open common land of Mynydd Uchaf/Mynydd y Garth and to the west by the County Borough boundary. It ranges from an elevation of approx 250m AOD above East Pit to 150m AOD in the lower valley.

The valley is predominantly grazed, with the presence of invasive bracken, scrub and coarse grasses signifying reduced management input, enclosed by outgrown hedges. Deciduous woodland is a dominant landscape element along riparian corridors and on the lower reaches of the valley sides. There are extensive areas of disturbance on the valley floor with old workings, landfill and commercial developments all acting as localised detractors.

Visual and Sensory Characteristics

Views are generally contained within the valley, by both the topography and tree cover, the latter of which screens developments. Yet from adjacent high ground the detracts are highly visible.

Vegetation and Habitat

Running through the valley is the river corridor. This contains extensive areas of broadleaved woodland, including oakwood (BAP habitat) on some of the steep valley sections, areas of marshy neutral habitats (e.g. rush-pastures etc) along the watercourse and on drier areas, acid grasslands.

The southern extent of the area is dominated by an area of disturbed industrial development on former mine workings and spoil. Although this disturbance has deleterious impact on habitats, it has also resulted in the creation of secondary habitats, which are themselves of value. Many plant species, including a number of orchid species, are now to be found on old spoil sites, often in large numbers.

Key Characteristics

Upland valley ranging from 250m AOD to 150m AOD.

Predominantly grazed, with invasive bracken, scrub and coarse grasses.

River corridor runs through the valley with significant riparian vegetation.

Disused mineral tram roads, levels and quarries and former colliery.

Settlements of Gwaun Cae Gurwen and Cwmgors stretch along the A474

- 7.5.17 It is considered that the site displays many of the characteristics highlighted with LCA 32, particularly the fringe areas of the site that are away from the two main landfill engineered elements that have largely remained free from disturbance over recent years.

Special Landscape Areas

- 7.5.18 The southern area of the wider site (outside of this application area) and a large proportion of the study area is located within one of Neath Port Talbot's 'Special Landscape Areas'; SLA1 (EN2/1) Mynydd y Garth.
- 7.5.19 LDP Policy EN2 concerns Special Landscape Areas (SLAs). These are areas of high landscape quality, identified using criteria set out in the Countryside Council for Wales Guidance Note 1

(2008) (now superseded by NRW LANDMAP Guidance Note 1. The boundary of SLA1 is illustrated on Figure 6.2 Landscape Designations and Recreational Routes.

7.5.20 SLA1 is described as:

Primary Landscape Qualities and Features:

The upland plateau is dominated by pennant sandstone and underlying Productive Coal Formation, up to 357m AOD.

The land cover is predominantly grazed pasture with deciduous tree cover especially along riparian corridors.

Restricted access to the area provides a remote, exposed yet settled and tranquil feel.

It has a high scenic upland mosaic landscape quality with panoramic views out from higher elevations. It is relatively unspoilt with a strong sense of place which adds to the integrity and coherence of the landscape.

The landscape bears evidence of evolution over millennia to include: prehistoric cairns, ancient field systems, trackways, industrial spoil heaps and small pockets of afforestation which combine to evoke a timeless quality of great scenic, cultural value and strong cultural identity. Gwrhyd road has a local dialect meaning the Long Man which is a possible reference to a prehistoric burial site.

The post medieval boundary stones and sheep folds are features of the upland which is one of the three most important and significant funerary and ritual landscapes in south Wales.

It is one of the key non forested areas within the County Borough that is classified as “tranquil” but which has seen considerable erosion in area of tranquillity since 1997.

Key Policy and Management Issues

Preserve essence of the landscape

Prevent development other than small scale near to existing settlements and farmsteads

Enhance edges of forestry to improve integration with adjacent open landscape

Maintain grazing regime

Enhance existing field boundaries – stone walls, hedges etc

Promote as low key leisure destination for walkers etc

7.5.21 The landscape qualities and features identified in the SLA description will be considered in the assessment of the landscape value of the site and the subsequent restoration proposals. It is considered that the sensitive restoration of the site, a change from a current active landfill to a network of landforms of restored grass, scrub and woodland would contribute positively to the SLA and its immediate setting.

7.5.22 It is noted that the Carmarthenshire Mynydd y Betws SLA is also located to the north west of the study area, the SLA now host to the large Mynydd y Betws wind farm (15no. 110m tip turbines).

Local Landscape Character – Landscape Value

7.5.23 An overview of the existing landscape elements and features for both the application site and the study area has been determined by observations made during site visits and through a review of the published landscape character assessments / studies that covers the site and study area.

- 7.5.24 Local landscape character is considered in detail at a site level extending out to the 1km focussed study area. The landscape character of the site is influenced by the adjoining areas, notably the upland and valley sides (and southern site area) that encompass areas of SLA1 Mynydd y Garth.
- 7.5.25 Paragraph 5.19 of GLVIA3 identifies that following a review of existing landscape designations “the value attached to undesignated landscapes also needs to be carefully considered and individual elements of the landscape – such as trees, buildings or hedgerows – may also have value”. This LVIA provides a review of undesignated landscapes and landscape elements, which includes (but is not limited to) hedgerows, woodland, watercourses, landform and trees, and attributes a value to each element.
- 7.5.26 The value of the landscape potentially affected by a proposed development is evaluated when establishing the landscape baseline and is judged as being High, Moderate or Low. This is in accordance with paragraph 5.44 of GLVIA3. Landscape value is also referred to in the following section as part of the method for ‘Assessing the Level of Landscape Effects’.
- 7.5.27 The landscape value of the site and the immediate adjoining area is considered with reference to the indications of Landscape. **Table 3.2** provides an analysis of each of the indications and classifies the landscape value in accordance with **Table 1.3** of the Methodology (Appendix 7.1).

Landscape Receptors – Landscape Designations within 2.5km

- 7.5.28 Review of the local study area has confirmed that aside from the Special Landscape Area (SLA) there are no other landscape receptors within the study area i.e., Registered Parks and Gardens (RPG); Country Parks (CP); and, landscape designations within the Local Plan/Development Framework (if still applicable) such as: Special Landscape Areas (SLA) and any national landscape designations; Areas of Outstanding Natural Beauty (AONB); and, National Parks (NP).

Specific scenic routes and national trails are considered in the visual assessment section.

Table 7.2: Landscape Value Appraisal (Site and local area to c. 1km)

Landscape Indications Value Considerations	Description	Value Method Criteria	Value Assessment
Natural Heritage	The site area, as an operational landfill site, contains no features of natural heritage save the now restored areas of planting and wildflower grassland. Within the wider landholding, regenerating (and unaffected) areas of woodland and scrub contribute to wildlife habitats. These remain unaffected by the proposal. The wider areas contribute to the sense of place of the regenerating, former disturbed areas upon the valley floor. A reasonably commonplace feature.	Lies wholly or partially within a designated landscape but where localised character and scenic value is less distinctive or has become degraded.	Medium (low – site, Medium/High – surrounding area)
Cultural Heritage	The previously disturbed (and on going operations) result in a site with no evidence of archaeological or cultural interest. Wider area contains no historical land mark structures. No natural time depth features within the site area that contribute to landscape value. Former colliery demolished.	Does not present locally important / distinctive landscape characteristics and distinctions	Very Low
Landscape Quality (condition)	The site, an active landfill, is typical of the land use, with areas of recent and ongoing tipping within the northern area, restored central area (former landfill), close to the areas of former household waste recycling (now closed) and gas compounds. The remaining southern, eastern and western areas of the site of a more naturalistic character, in many cases regenerating riparian woodland and scrub with areas of grass pasture on lower slopes, more typical of the wider landscape.	Lies wholly or partially within a designated landscape but where localised character and scenic value is less distinctive or has become degraded.	Medium (low – site, Medium/High– surrounding area)
Scenic Quality	The active and recently restored areas of the site (focused to the northern area) are of a very low scenic quality, brownfield and active engineering operations in nature. Outside of the active areas, the southern and wooded areas of the site are of a smaller scale, scenic quality is positively influenced by the surrounding lower slopes of the SLA and valley sides. Vegetation types range from woodland and scrub, to pasture and coarse	Outside of the site - <i>Presents locally</i> distinctive landscape characteristics with some scenic interest.	Medium

	upland bracken and grassland, all contribute to the scenic (and relatively unspoilt) scenic quality of the local study area. Elevated areas of the site (not publicly accessible) offer expansive views over the site area, the wider valley to the north and south, and to upland areas.		
Rarity	The active areas of the site contains few features or elements that contribute to landscape character. Man-made artificially raised landscape. Outside of this area however, the landscape features contribute to the character of the SLA and landscape character type. A transitional zone of habitats from valley floor to mid slope fringes considered intact to warrant local designation.	Outside of the site - Medium importance and rarity, limited potential for substitution. Regional and local scale	Medium
Representativeness	The active areas of the site contains no features that are representative of the wider landscape, although this is well contained within the valley floor (and site boundary). Outside of this area, the landscape contains features and elements that contribute to the local landscape character.	Outside of the site – <i>Presents</i> locally distinctive landscape characteristics with some scenic interest	Medium
Conservation Interests	The site contains no features of earth science, archaeological or cultural interest that adds to the value of the landscape at a local level. Outside of active areas the site contains many features of ecological value (unaffected by the proposals).	Outside of the site – <i>Presents</i> locally distinctive landscape characteristics with some scenic interest	Medium
Recreational Value	The main site area is not publicly accessible; therefore no recreational routes would be affected by the works. Potential for long term public access to the main site area once restored (subject to separate agreements). Potential longer term affects upon visual amenity from surrounding areas – St Illtyd's Walk to the south west, glimpsed views a longer term improvement.	Does not present Important public amenity value by way of access or opportunity for quiet enjoyment (relative tranquillity)	Low (with future benefit)
Perceptual Aspects	*At a site level, it considered the site does not possess any specific perceptual qualities notably wildness due to the existing land filling and engineering operations. Outside of the site boundary, upon the upper	Outside of the site – <i>Presents</i> Public Amenity value by way	Medium (wide landscape)

	slopes and hilltop plateaus, wildness and tranquillity is substantially increased.	of views, access, and opportunity for quiet enjoyment (relative tranquillity)	
Associations	The site is historically associated with the former colliery (and mineral extraction) but not associated with any historical events or people that contribute to perceptions of natural beauty of the local area and site.	Does not present locally important / distinctive landscape characteristics and distinctions	Very Low
Landscape Value Summary	Overall, through the consideration of the indicators of landscape value, the site is concluded to be of a Low importance and rarity at a local scale. The site's value is heavily influenced by its current use, an active landfill, accepting waste with ongoing engineering operations, however positively influenced by the wider landscape setting of the upland areas of the SLA. There is no current public access to the site area however there are limited roads and public rights of way within the wider area. The site in its current form displays limited landscape interest however the proposed restoration presents the opportunity to address this and improve the landscape and biodiversity quality of the local area.		Medium (Very Low – site area)

7.6 VISUAL ASSESSMENT BASELINE CONDITIONS

Zone of Theoretical Visibility (ZTV)

- 7.6.1 Land that may potentially be visually connected with the proposed development is usually identified and mapped at the outset (of a full landscape and visual assessment) in accordance with paragraph 6.6 of GLVIA3. Zone of Theoretical Visibility (ZTV) mapping is produced to determine the area over which the proposed development could theoretically be seen. ZTV maps are generated by computer from a Digital Terrain Model (DTM) representing the bare ground topography overlaid on a map base without significant areas of screening vegetation and built form.
- 7.6.2 Visibility mapping to the remodelled landforms is provided to a 2.5km study area, illustrated on the Figure 7.4 Zone of Theoretical Visibility (ZTV) plan (over 1:25000 scale mapping). The ZTV is undertaken with a reference point upon the proposed highest point of the capped landfill at c.200m AOD (post settlement) upon Tip 890.
- 7.6.3 It should be noted that although the areas shown to experience no visibility are considered to be accurate, the accuracy of areas marked as experiencing visibility is verified further with the addition of the Ordnance Survey (OS) Buildings (8m) and Woodland Layer (12m) from OS Vector Map District added as visual barriers. OS 'Terrain 5' ground levels data has been used for generating the ground model.
- 7.6.4 In addition, considering the existing areas of individual trees and hedgerows within the valley, the actual extent of theoretical visibility as shown by the ZTV would be reduced. Visibility levels are further refined through the site survey and consideration of visibility from the identified receptors; settlements, recreational routes, landscape receptors and the viewpoint assessment.

Geographical Extent

- 7.6.5 The geographical extent of effects is influenced by the landscape setting and established features around the site, the scale of the proposed development (amended landfill structure), the site and localised topography.
- 7.6.6 The ZTV and on site assessment has established that there is channelled visibility along the valley floor and the rising side slopes. Outside of the immediate valley sides, the gradients restrict visibility out of the valley area to the upland areas beyond the ridge lines. Visibility is focussed on the A474 Pontardawe Road corridor as it passes within the valley before it widens to the north and south (outside of the study area). Visibility within the valley is evident at the moment with representative views to the restored central tip (Tip 891), at a height of c.210m AOD, and the operational northern areas of Tip 890 at a height of c.200m AOD.
- 7.6.7 Tip 871 (southern tip) and outside of this application area, is substantially lower, post settlement contours at a maximum of c.166m AOD, views to this area are largely screened by the mature surrounding woodland and scrub areas.
- 7.6.8 Although the restored landfill (under assessment) will be perceptible based on current visibility, it will be of a smaller overall mass than the previously consented scheme, the effects are considered to be of a small scale due to the existing levels of screening within the local area and limited receptors within a small geographical area. A low level of effect is concluded when considering the geographical extent of the revised restoration and landfill profile changes.

Key Receptors

- 7.6.9 The key visual receptors within the study area will consist of (people within) settlements, users of public rights of way (cycle ways and footpaths), users of recreational facilities, and

transportation networks. Registered parks and gardens and country parks are considered in the landscape baseline and effects section, but views are considered where a view is a key component of the designated landscape. The receptors have been identified through site appraisal surveys and desk top surveys.

- 7.6.10 Through consideration of the scale of the development, site survey and desk-top appraisals it is considered that there would be no potential for substantial adverse effects (if any) on visual receptors over 1km from the site boundary, although main settlements are considered within the 2km study area where appropriate.

Residential Properties

- 7.6.11 Residential properties are considered to have a high sensitivity to visual change as there is the potential for large numbers of receptors (people) to be concentrated in the properties / settlements with continuous fixed views. It should be noted that many individual dwellings and dwellings within settlements, even when close to other proposed developments, may have 'no' or 'limited visibility' of the proposed development. For each individual property close to the development site, the exact degree of visibility will depend on the orientation of the property, the orientation of the windows in the property, and the degree of screening provided by localised landform, trees, hedgerows and surrounding built features. The individual properties within 1km are assessed.

- 7.6.12 The individual properties within 1km considered within this assessment include:

- R1, Nantmelyn, c.50m north-west.
- R2, Nant y Gafaelau, c.110m west.
- R3, Mynydd Carnilechart, c.150m south-west.
- R4, Pontardawe Road properties, c.310m east.
- R5, Highbury Cottage, Pontardawe Road, c.450m east.
- R6, Pontardawe properties, southern end of Cwmgors, c.450m north-east.
- R7, Coedcae mawr, c.470m south.
- R8, Pontardawe Road, Mynydd y Garth property, c.480m south-east.
- R9, Ty n y coedcae, c.550m east.
- R10, Lletty r Crydd, c.550m north-east.
- R11, Nant y gaseg uchaf (grouping) c.600m east.
- R12, Nantricket, c.650m north.
- R13, House by Nant Hopcyn, c.680m north east.
- R14, Pontardawe properties, southern end of Cwmgors, c.750m north-east.
- R15, Bryn-ohwyth, c.890m south-east.
- R16, Cwm nant Hopkin, c.900m north east.
- R17, Pontardawe properties, southern end of Cwmgors / Uplands, c.950m north-east.

Note: consideration of visual effects upon the properties is assessed from the closest publicly accessible location to the property and the analysis of mapping / aerial photography.

Transportation and Public Access Network

Recreational Routes

- 7.6.13 There are a number of footpaths and bridleways within the wider study area however within the focussed 1km the following routes are considered:
- St Illtyd's Walk, follows Baran Road and passes over Bryn Mawr to the west of the site (c.320m at the closest point, from Tip 871 boundary). The walk is a c.103km route from Carmarthenshire to Neath Port Talbot.
 - Public footpath between Pontardawe Road and Nant y gafaelau, c. 130m from the western site boundary.

Transport Routes

- 7.6.14 The main transport route within the study area is the A474 Pontardawe Road which follows the valley floor on a north to south orientation, c.300m to the east of the site boundary. Views from the two local lanes that rise up the valley sides to the area and west of the site will be considered in the viewpoint assessment.

Selected Recreational / Cultural Designations

- 7.6.15 There are no high sensitivity recreational or cultural destinations within the study area. Heritage designations including listed buildings and Scheduled Ancient Monuments will be considered independently in the heritage assessment (where applicable).

Viewpoint Assessment

- 7.6.16 Five viewpoints have been selected on the basis that they provide views to (or illustrate the limited visibility) of the existing landfill from sensitive receptors (residential, recreational and PROW) and are representative of locations within the study area.
- 7.6.17 A full list of viewpoints is included in the following table. The locations of the viewpoints are illustrated on Figure 7.5. The baseline descriptions discuss the location and representative characteristics of viewpoint location; nature, composition, direction and elements of the existing view.

Table 7.3: Viewpoint Descriptions

Number	Visual Assessment Point Name	Location		Reason For Selection	Receptors
Viewpoint 1	Bryn Mawr (road)	Distance from site	c.560m	Illustrates elevated visibility from closest road to the west of the site.	Roads users – predominantly cars, low level of usage, small number of pedestrian, cyclist and equestrian.
		Direction from site	South West		
		NGR	E - 269326, N - 208380		
		Height	c.272m AOD		
Baseline Description	Viewpoint aligned to the east with open panoramic view over the Upper Clydach Valley and the landfill area. Beneath the viewpoint the site office and associated storage barns are located with views to the employment area upon the former Colliery site. Tip 890 with the black membrane upon it can be seen to the north of the restored central tip, the black membrane a temporary feature that stands out in the local landscape. Open views east to the site of the former colliery buildings close to the A474 corridor and the rising hills of Mynydd y Garth beyond (Special landscape area). Woodland and scrub upon the valley floor to the east of the site is prominent. Evidence of former mine workings to the north of the study area.				
Viewpoint 2	Old Star Inn (former) Wind	Distance from site	c.430m	Illustrates visibility from the	Road users, predominantly

	farm access road	Direction from site	North-east	main road to the east of the site, representative of views to users travelling south (although from one of the most open locations)	cars, also representative of individual residential properties in the locality.
		NGR	E – 270331, N - 209386		
		Height	c.176m AOD		
Baseline Description	Viewpoint aligned to the south west, the rising landforms of Tip 890 and the restored central tip (further to the south) are noticeable above the intervening hedges and tree line but viewed against a rising backdrop of the valley side which reduces the prominence of the engineered structures. The temporary black membranes upon Tip 890 are noticeable. Views to the surrounding upland areas (Special landscape Areas) and the wind farm to the north (in the wider field of view).				
Viewpoint 3	Public Footpath (between Pontardawe Road and Nantmelyn)	Distance from site	c.620m	Illustrates visibility from the closest public footpath to the northern site boundary.	Footpath users, track also serves individual properties on the western side of the valley.
		Direction from site	North-east		
		NGR	E – 270227, N - 209708		
		Height	c.170m AOD		
Baseline Description	Viewpoint aligned to the south, illustrating similar context to VP2 but visibility reduced by mature intermediate tree lines. The rising landforms of Tip 890 and the restored central tip are noticeable above (and through) the intervening tree line but viewed against a rising backdrop of the valley side which reduces the over prominent of the engineered structures. Black membrane upon Tip 890 a notable feature.				
Viewpoint 4	St Illtyds Walk (Baran Road)	Distance from site	c.1.73 km	Illustrates visibility from the closest regional trail, a popular route.	Trail users – pedestrian, cyclist and equestrian. Also representative of road users (low level usage)
		Direction from site	South		
		NGR	E – 269771, N - 206763		
		Height	c.250m AOD		
Baseline Description	The regional trail provides open elevated views north over the Upper Clydach Valley. Limited oblique views north to Tip 890, black membrane visible upon the upper areas of the tip. Location provides panoramic views				

	over the surrounding upland areas (Special Landscape Areas) and north to the settlements within the valley head. Former areas of colliery, now restored to grassland, prominent in the near foreground and valley floor.				
Viewpoint 5	Mynydd Uchaf (local road)	Distance from site	c.1.2 km	Illustrates visibility over the lower valley areas from the eastern side of the valley approaching Mynydd Uchaf.	Roads users – predominantly cars, low level of usage, small number of pedestrian, cyclist and equestrian.
		Direction from site	East		
		NGR	E – 271170, N - 209400		
		Height	c.280m AOD		
Baseline Description	Road and local area offers elevated panoramic views west over the upper valley area, the landfill upon the valley floor is noticeable but seen against the backdrop of the steeply rising western valley side with woodlands and small fields upon it. Tip 890 and the black membrane areas on the upper slopes can be seen with the lower lying area between Tip 890 and the restored central tip (Tip 891). Very limited visibility to Tip 871, southern end. Electricity pylons in the intervening area, distant views west to large scale wind farm.				

N.B. These locations tie in with areas shown to experience visibility from the ZTV albeit it, in reality pockets of vegetation and built form may restrict views from some of these areas.

7.7 LANDSCAPE AND VISUAL MITIGATION MEASURES

7.7.1 Mitigation is included as it is an integrated part of the design and assessment process. The mitigation proposals incorporate features primarily for landscape and visual reasons but are additionally informed by the findings of other specialist studies e.g. ecological assessment (where applicable).

7.7.2 Mitigation seeks to integrate the restored site into the local environment, screen views to the site from sensitive receptors (whilst work is ongoing) and provide landscape (and often ecological) enhancement from restoration onwards.

Proposed Development

7.7.3 Restoration proposals have been amended considering the revised final restoration profile. The following elements are considered due to their specific landscape and visual implications:

- Reduction of the total requirement for waste importation at the landfill, creating a wider central valley feature to the south of Tip 890, that was formally due to be filled.
- The central area will be regraded using in situ material and imported restoration materials from Tip 871, amending the final profile of the landform, reducing the overall area of elevated areas.
- Longer term retention of the landfill gas and leachate compound

Landscape and Visual Elements of the Revised Restoration Profile

7.7.4 As the current landform of the landfill is established, the main landscape and visual impacts of the development (and restoration of the central tip) are already present to local receptors. New impacts are therefore linked to the predicted differences in the extent of the assessed landscape and visual impacts, between the restored final profiles of Tip 890. The proposed restoration amendments are limited to Tip 890 only, the previously consented restoration plans

are to be followed for the remaining areas of the FCC landholding, including Tip 871 to the south of the central restored tip.

- 7.7.5 The previous Tip 890 consent allowed for the tip to extend southerly towards the central tip area, the southern extent of the landform (fill) is now to be reduced leaving an open recessed 'valley area' in between, the overall height of Tip 890 remains at c.202m AOD (post settlement).
- 7.7.6 Due to the reduction extent of elevated section and overall volume and area of landfill of Tip 871 it is considered that the landscape and visual effects will be improved over the consented scheme, reducing the mass of the main landform feature within the wider valley landscape. It is though noted that the duration of landfilling, and subsequent period to final restoration is extended, therefore extending the time period of landscape and visual effects experienced by receptors.
- 7.7.7 It is considered that the changes to the landform of Tip 890 would not lead to substantial changes to the proposed restoration treatments. The schemes have been amended and updated to take account of the new landform features; field and woodland scrub features remain.

Timescale of the Potential Impacts

- 7.7.8 Final restoration proposals would be followed by a period of aftercare (predicted minimum 5 year) to be dealt with via a condition. Landscape and visual impacts are likely to be at their greatest from now until 2023 after which the site would be restored (predicted to take a further 2 years). Effects are considered against the previously consented scheme. The revised development proposals will therefore result in an extended period of operations and potential effects, before the site is finally restored.

Potential Indirect Impacts

- 7.7.9 The main indirect effect from a development of this type is traffic generated from the transportation of waste to the site. Traffic has a visual impact upon local receptors however this is an existing impact, with predicated lower vehicle numbers overall from previous and as impacts already exist, visual effects of this are considered negligible.

Site Layout

- 7.7.10 The main restoration elements of the previously consented scheme are retained in the amended scheme restoration plan, including:
- Approximate field pattern, size and distribution;
 - Field treatments of meadow grassland and agricultural pasture; and
 - Distribution of proposed hedgerows, woodland and scrubland, and
 - Retained features of infrastructure.
- 7.7.11 Overall, it is considered that the restoration profile and layout changes are of a negligible change to the landscape and ecological structure and the functionality of the restored landscape of the site (as previously approved).
- 7.7.12 The restoration proposals are shown on Drawing Number WR816/12/08, the restoration plan is accompanied by the following plant schedules.

Table 7.4: Plant Schedules – Scrub Mix Planting

Species	Common Name	% Mix
Betula pendula	Silver Birch	15
Corylus avellana	Hazel	10
Crataegus monoygna	Hawthorn	30
Ilex aquifolium	Holly	10
Ligustrum vulgare	Privet	10
Salix cinerea	Grey Willow	5
Prunus spinosa	Blackthorn	10
Ulex europaeus	Gorse	5
Viburnum opulus	Guelder Rose	5

Woodland Mix Planting

Species	Common Name	% Mix
Alnus glutinosa	Black Alder	15
Betula pendula	Silver Birch	10
Crataegus monoygna	Hawthorn	20
Fagus sylvatica	Beech	10
Prunus padus	Bird Cherry	5
Quercus petraea	Sessile Oak	20
Salix fragilis	Crack Willow	10
Sorbus aucuparia	Rowan	10

Hedgerow Mix Planting

Species	Common Name	% Mix
Corylus avellana	Hazel	7.5
Crataegus monoygna	Hawthorn	65
Euonymus europaeus	Spindle	5
Fagus sylvatica	Beech	2.5
Ilex aquifolium	Holly	7.5
Prunus spinosa	Blackthorn	7.5
Viburnum opulus	Guelder Rose	5

Grassland Seed Mix

Species	Cultivar	% Mix
Standard Reclamation Mix (sown at 20g/m ²)		
4Turf Tetraploid Perennial Ryegrass	Double	25
Perennial Ryegrass	Esquire	25
Strong Creeping Red Fescue	Maxima	50

- 7.7.13 It is considered that the amended restoration scheme would not result in a material change to the landscape character of the restored site, the main elements remain but with variations in the distribution and topographic features. At a site level, the aesthetic and perceptual aspects will remain largely similar, that of a restored landfill. Outside of the site area the amended topographic features and reduction in physical mass of the site may lead to positive changes to the aesthetic and perceptual aspects of the site within the local area, opening up additional views across the valley side. Changes will be considered in the assessment of effects section.

7.8 ASSESSMENT OF LANDSCAPE EFFECTS

- 7.8.1 Landscape assessment involves assessing the sensitivity of a landscape receptor against the magnitude of change that will be likely to be caused by a development in order to evaluate the significance (or level) of effects upon that receptor.
- 7.8.2 The significance (or level) of the effect of a development on the landscape is not an absolute scale but is a judgement based on the magnitude of the anticipated effect (or scale of change) and the sensitivity of the landscape to accommodate a particular development.

Effects on Landscape Character – Landscape Sensitivity (the site and surroundings ~250m)

- 7.8.3 Landscape receptors are assessed in terms of sensitivity which combines judgements of their susceptibility to the type of change or development concerned and the value attached to the landscape. Sensitivity is specific to the particular project / development, which in this case is a restored landfill (amended scheme, considered against consented scheme) and the landscape of the site and setting.

Susceptibility to Change

- 7.8.4 The susceptibility to change of the landscape to the landfill development (amended restoration) is determined with reference to the baseline assessment of the existing landscape and described as High, Medium, or Low. It is assessed by taking into account the existing landscape, elements and features, landscape character and key characteristics and landscape value. Landscape characteristics of the application site and immediate surroundings (up to ~500m) are considered which includes the host Landscape Character Area, LCA 32 – Cwm Gors / Gwaun Cae Gurwen / Abernant.
- 7.8.5 Indicators of susceptibility to change and the effect of the restored landfill (amended scheme) upon the key characteristics of the site and immediate surroundings is considered in the following table:

Table 7.5: Susceptibility to change of the site and immediate surroundings (extending to ~250m)

Susceptibility to Change (Sensitivity Indicators)	Key characteristics of the site and LCA 32 – Cwm Gors / Gwaun Cae Gurwen / Abernant	Restored site and relationship to key characteristics of LCA and resultant change from consented scheme.	Susceptibility to change Rating (application site and local area with regard to proposed development)
Physical Qualities			
Scale and Enclosure	<i>The valley cuts through an underlying geology is of south dipping sandstone of South Wales pennant formation (Lower Pennant Measures) which underlies mudstone dominated Productive Coal formation. There is significant disruption through mining within the valley, and landslips are evident on the valley slopes.</i>	The amended restoration plan will result in a landform within the valley of a reduced scale compared to the previously consented scheme. The existing landfill landform within the valley is an accepted and established feature, however the reduced scale of the landfill results in a small positive change. No affect upon enclosure.	Negligible
Landform and Topography	<i>This upland valley lies in the north west of the County Borough. It is defined to the east by the open common land of Mynydd Uchaf/Mynydd y Garth and to the west by the County Borough boundary. It ranges from an elevation of approx 250m AOD above East Pit to 150m AOD in the lower valley</i>	The landfill is already an established feature within the valley floor area. Limited further change to the current visible landform, and overall of a reduced volume in comparison to the consented scheme, a positive change.	Negligible
Land Cover Pattern	<i>The valley is predominantly grazed, with the presence of invasive bracken, scrub and coarse grasses signifying reduced management input, enclosed by outgrown hedges. Deciduous woodland is a dominant landscape element along riparian</i>	The updated restoration design will allow for substantial areas of new woodland, scrub and rough grassland planting, improving the landscape structure of the valley over the current partially despoiled and	Negligible

	<i>corridors and on the lower reaches of the valley sides. There are extensive areas of disturbance on the valley floor with old workings, landfill and commercial developments all acting as localised detractors.</i>	engineered situation.	
Settlement Pattern and Density	<i>The settlement of Cwmgors stretch along the A474, Tairgwaith lies on the fringe of the opencast works, while sitting between the two Gwaun Cae Gurwen is more nucleated in character. The cores of these settlements are difficult to define and have a limited number of commercial enterprises and with newer residential areas extending around the core. The few original buildings are a mix of stone, brick and render with slate roofs while newer buildings tend to be render and pebbledash.</i>	No direct effect upon settlement pattern. Restoration allows for improvement to the local landscape thereby improving the wider setting for nearby settlements/ residents, no change over the previously consented scheme.	Negligible
Landmarks and Visible Built Features	<i>The southern extent of the area is dominated by an area of disturbed industrial development on former mine workings and spoil. Although this disturbance has deleterious impact on habitats, it has also resulted in the creation of secondary habitats, which are themselves of value. Many plant species, including a number of orchid species, are now to be found on old spoil sites, often in large numbers.</i> <i>Disused mineral tramroads, levels and quarries characterise the north around Gwaun cae Gurwen and Cwmllynfell. Much of the industry was</i>	Restored landfill will improve a significant area of the valley floor, historically blighted by mines and latterly waste operations. Landform forms a noticeable landscape feature, reduced tipping and amended restoration proposals will reduce the overall southern extents of Tip 890, reducing the prominence of the restored structure as a visible built feature.	Negligible

	<i>abandoned during the last century, and significant areas reverted to its former rural character.</i>		
Skyline	<i>None discussed in documents</i>		
Visual Connections with Adjacent Landscapes	<i>Views are generally contained within the valley, by both the topography and tree cover, the latter of which screens developments. Yet from adjacent high ground the detractors are highly visible.</i>	Views within the valley constrained by existing topography and built features, minimal change. Views from upper areas un-altered.	Negligible
Perceptual Qualities			
Human Response	Not discussed within LCA that is of relevance to the study area.		-
Remoteness and Tranquillity	<i>This upland valley lies in the north west of the County Borough. It is defined to the east by the open common land of Mynydd Uchaf/Mynydd y Garth and to the west by the County Borough boundary</i>	Site area beside transportation corridor to the south (c.2km) of a locally large settlement, the amendments would not affect remoteness and tranquillity over and above currently experienced levels.	Negligible
Overall Rating			Negligible

7.8.6 Considering the above indicators of susceptibility to change and the effect of the amended restoration profile and proposals, considered against the consented scheme, with the characteristics of the local landscape (<250m) it is concluded that the landscape has a negligible sensitivity to change (between consented to proposed restoration scheme). The development is not likely to negatively influence the key characteristics of the landscape. The local landscape could accommodate the development proposals (amended) with no change in character, longer term improvement.

Value of the Landscape Receptor (Site < 250m)

- 7.8.7 The value of the landscape receptor, an active landfill which is partially restored, is considered with regard to its current state with reference to the methodology and the landscape value conclusions from the baseline chapter.
- 7.8.8 The site is not subject to any national, regional or local landscape designations although a SLA is within c.300m of the landfill area subject to the amendments, and bordering the southern boundary of the landholding. The SLA contributes positively to the landscape setting of the site. Mature vegetation upon the site boundary, including mature blocks of scrub and woodland contributes to the transition between the active landfill area and wider landscape, features which will be reinforced through the restoration proposals. The SLA is not directly affected by the proposals however the setting will improve due to the restoration of the site at a reduced overall mass compared to that previously consented.
- 7.8.9 There is currently no public access to the landfill site and it is not considered to be valued locally as a recreational and landscape resource.
- 7.8.10 Overall in terms of value, when considering the value of the site and local area, it is considered that the consented scheme and proposed scheme are of a similar landscape value. The current operational and partially restored state of the site is considered to be of a low landscape value, predicted to improve to Low-medium once the restored site becomes established in the landscape (beside the SLA), no substantial change from the previously consented scheme.

Overall Sensitivity of the Landscape Receptor

- 7.8.11 Considering the previously established susceptibility to change (negligible) and landscape value indicators (low to medium), the overall landscape sensitivity to the proposed changes to the landfilling operations and restoration plan is therefore concluded to be Low. In accordance with the methodology, these are:

“Landscape character, elements, and associated land uses which by nature of their character would be able to accommodate change of the type proposed, that are lower value, non-designated landscapes with discordant / derelict features. The landscape has few features of value through use, perception and historic associations and no features that could not be replaced. Landscape elements with a low susceptibility to change, able to accommodate the proposed development without undue consequences.”

Magnitude of Landscape Effects

- 7.8.12 Landscape effects arising as a result of the proposed development are considered with reference to the criteria established in the methodology including; size and scale of effect; geographical extent; duration; and, reversibility. The type of effect considered includes:
- The potential operational effects upon the landscape fabric within the site (direct effect);
 - The potential operational effects on the host landscape character area (direct effect), including the consideration of any effects within designated areas; and,
 - The potential operational effects on the wider landscape character areas within the study area (indirect effects), including consideration of any effects within designated areas. Note – not applicable in this instance due to the scale of development, size of the landscape character type and study area.
- 7.8.13 The direct effect of the proposed development (amended restoration) upon the landscape character of the site and local area depends on: the key characteristics of the receiving environment (as previously considered); and, the degree to which the development may be considered to be consistent or at odds with the landscape and how the development would be perceived within the landscape. Perceptions can be influenced by: the distance to the site;

weather conditions; appearance/fit of the development (levels of visibility); and, relationships to other built and natural features in the landscape.

- 7.8.14 It is acknowledged that there is an overlap between perception of change to landscape character and visual amenity; landscape character is derived from the combination pattern of landscape elements in the view. The effects of a particular development (an amended landfill restoration in this instance) on landscape character arise from its relationship to these combinations and patterns.

Scale of Landscape Effect

- 7.8.15 Consideration is given to the scale of the change in the landscape that is experienced as a result of each effect and can include both the loss and addition of new features.
- 7.8.16 The amended restoration proposals as a result of reduced tipping of waste will overall reduce the scale of landscape effect experienced from the approved scheme. The physical mass and form of the landfill will be substantially reduced in extent of Tip 890 overall extension to the south, although the footprint of disturbed areas remains consistent. Elements of the site restoration will remain as originally consented, however a proportion of the site will be set at a lower overall elevation and the precise boundaries of restoration treatments amended to take account of the restoration contours of the site.
- 7.8.17 Overall, aesthetically it is considered that the amended restoration will result in a slight improvement, and variation to local landscape character. Perceptually once restored it is considered that longer term effects will remain very similar between the consented and proposed schemes.
- 7.8.18 Overall, the changes will be of a benefit to the local landscape character of the site and local area, but effects that are similar between the consented and proposed restoration schemes. A low (beneficial) scale of effect is concluded with regard to the amended restoration plan.

Geographical Extent of Landscape Effect

- 7.8.19 The geographical extent of effects is influenced by the landscape setting (established features around the site), the scale of the proposed development, the site and localised topography and is distinct from the scale of effect.
- 7.8.20 The overall footprint of the restored landfill remains as previously consented however the revised restoration plan reduces the extent of southern cell construction of Tip 890 thereby reducing the overall area of elevated visible elements of the site. Although these are reduced, the overall area and changes to the site (Tip 890) remains as previously consented, it is therefore considered that the influence of the revised restoration scheme will remain similar to the previously consented scheme, focused to the site area and local areas within the landscape character type extending to c.1km. A negligible level of effect is concluded when considering the potential change between the previously consented and proposed restoration schemes.

Duration and Reversibility of the Landscape Effects

- 7.8.21 The applications seeks to extend the time period where waste operations can take place, thereby potentially negatively affecting landscape character in the short term. The time frame to the final site restoration, with improved green and ecological infrastructure is therefore extended. Following the extended period the site will be restored so longer term effects remain as consented. A short term medium level of effect is concluded regarding the duration of landscape effects, with no potential for reversibility.

Overall Magnitude of Landscape Effects

- 7.8.22 Magnitude is considered with regard to the methodology and the; scale, geographical extent, and duration and reversibility of landscape effects. The magnitude of change arising from the

proposed amendments to the landfilling operations and subsequent restoration plan is considered to be **Low**. In accordance with the methodology *“the development changes would result in a minor alteration to landscape elements, introducing elements that are not uncharacteristic with the surrounding landscape”*.

Overall Level (Significance) of Landscape Effect upon the Site and Local Area

- 7.8.23 The level of effect is determined by consideration of the landscape sensitivity and magnitude of landscape effect. With reference to the evaluation of the landscape effects in accordance with the methodology, a ‘Low’ landscape sensitivity and a ‘Low’ magnitude of change is considered to result in a **Minor** significance of landscape effect overall, this is a Not Significant effect, but of a beneficial nature.
- 7.8.24 The proposed restoration plan changes remain similar, the scheme still creates a modified landform, albeit of a reduced overall scale, affects an area (site) of overall low value / susceptibility to change, limited to the local context with a common sense of place. Overall, the effects would not be considered to be effects that would be a material factor in the decision making process.
- 7.8.25 The level of significance of landscape effect are also considered to affect the host LANDMAP Visual and Sensory unit and LCA 32, of not significant levels overall.

Assessment of Predicted Effects on Landscape Character – Indirect Effects

- 7.8.26 Due to the scale of development, features of the local landscape setting (topography and vegetation) and distinctive features of the host LCA, contrasting with the adjoining LCAs it is considered that effects of a noticeable nature as a result of the amended restoration plan would be limited to the site and local area only, with no potential for landscape effects to extend into neighbouring landscape character areas (and therefore the potential for indirect effects).

Assessment of Predicted Effects on Landscape Receptors

- 7.8.27 As established in the baseline section the main ‘landscape receptor’ is the Neath Port Talbot Special Landscape Area 1, SLA1 (EN2/1) Mynydd y Garth. Effects upon the SLA are as considered for the Site and host landscape character areas.
- 7.8.28 Due to the scale of the development changes and location relative to established local features and the SLA, the amended restoration proposals are considered to result in a ‘neutral’ magnitude of landscape effect upon the setting of the SLA, over the previously consented scheme. A neutral significance, Not Significant effect.

7.9 VISUAL ASSESSMENT – LEVEL OF EFFECTS

Assessment of Predicted Visual Effects on Residential Properties within 1km

- 7.9.1 Residential receptors within 1km of the proposed site are considered in **Table 7.6**. Figure 7.5 illustrates the location of the individual receptors considered. *Approximate distances measured from the closest boundary area of the site, to the receptor.

Table 7.6: Residential Receptor

R1, Nantmelyn, c.330m north-west.	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	ZTV illustrates the potential for theoretical visibility. Due to the angle of view, views will remain as existing to the northern area of Tip 890. No change over the previously consented scheme and current view. View will improve over time as restoration landscape planting added to the restored landfill.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Visual Effect

R2, Nant y Gafaelau, c.240m west	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	ZTV illustrates potential for theoretical visibility. Property has elevated views over the lower valley area and the operational landfill, although part obscured by near vegetation. Once restored, the reduced extents of filled area of Tip 890 would be a noticeable feature, a slight improvement over the approved plans, but in the shorter term, an extended duration of operations, increasing the visible volume of the landfill in the area to the immediate east of the property. Outlook improved over time as site restored.
Geographical extent	Open elevated views east to the landfill area at c.240m
Duration and reversibility of effect	Restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is). Extended duration of operation, engineering elements remaining visible, but as per the current situation.
<u>Magnitude of visual effect</u>	Slight Adverse
LEVEL OF VISUAL EFFECT	Moderate Adverse, A Not Significant Effect

R3, Mynydd Carnilechart, c.990m south-west	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	- Analysis reveals grouping of farm buildings only, not residential
Geographical extent	
Duration and reversibility of effect	
<u>Magnitude of visual effect</u>	
LEVEL OF VISUAL EFFECT	N/A

R4, Pontardawe Road properties, c.310m east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	ZTV illustrates the potential for theoretical visibility. Two detached properties, front elevation aligned to the west towards the site. Properties face road and mature band of trees on opposing side which restrict further views. Visibility likely to be more open when vegetation not in leaf, and reduced scale of Tip 890 may be perceptible. Due to intervening feature scale of effect negligible.
Geographical extent	Application site boundary c.310m directly to the west.
Duration and reversibility of effect	Restored site a permanent feature, longer term reduction in effects as mitigation planting (and intervening planting) matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible
LEVEL OF VISUAL EFFECT	Minor – Neutral, a Not Significant Effect

R5, Highbury Cottage, Pontardawe Road, c.570m south east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	ZTV illustrates the potential for theoretical visibility. Single detached property, front elevation aligned to the west towards the site area. House faces the road and a mature band of trees on opposing side which restrict further views. Visibility likely to be more open when vegetation not in leaf, but due to the alignment of view, amendments to Tip 890 screened by central tip.
Geographical extent	Application site boundary c.570m to the south west.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect

R6, Pontardawe properties, southern end of Cwmgors, c.620m north-east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	ZTV illustrates the potential for theoretical visibility. Due to the angle of view and location of properties, views will remain as existing to the northern area of Tip 890. No change over the previously consented scheme and current view. View will improve over time as mitigation planting added to the restored tip.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Visual Effect

R7, Coedcae mawr, c.1.5 km south	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	Farm house upon valley side, with potential for theoretical visibility as illustrated by the ZTV. Main views aligned east, away from site area to the north. Views generally screened, highly oblique to Tip 890. Changes considered to be barely perceptible.
Geographical extent	Application site c.1.5 km to the north, aligned away from main views.
Duration and reversibility of effect	Restored site a permanent feature, longer term reduction in effects as mitigation planting (and intervening planting) matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Effect

R8, Pontardawe Road, Mynydd y Garth property, c. 1 km south-east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	Property elevated above road corridor, potential for distant views to the north west towards the site area. Considering the separation distance and scale of development, Tip 890 screened by central tip area. A negligible scale of effect.
Geographical extent	Southern site area is c. 1 km to the north west, aligned away from properties main views, which are aligned to the west.
Duration and reversibility of effect	Restored site a permanent feature, longer term reduction in effects as mitigation planting (and intervening planting) matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Effect

R9, Ty n y coedcae, c.550m east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	Property set upon valley floor surrounded by mature hedgerows, views to amended areas of restoration concluded to by intervening vegetation and existing landform features.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect

R10, Lletty r Crydd, c.740m north-west	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	The ZTV illustrates that all visibility to the amended areas of the site would be screened by existing landform upon the valley side.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect

R11, Nant y gaseg uchaf (grouping) c.600m east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	The ZTV illustrates that there would be theoretical visibility to the site from this grouping. The southern properties are surrounded by a block of vegetation, screening views. Potential for inter visibility from the northern property. Reduced southern extents of filling to Tip 890 likely to be perceptible, a minor beneficial improvement over the previously consented scheme.
Geographical extent	Application site boundary c.600m to the west.
Duration and reversibility of effect	Restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible (benefit)
LEVEL OF VISUAL EFFECT	Minor (beneficial) A Not Significant Effect

R12, Nantricket, c.980m north	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	The ZTV illustrates the potential for limited theoretical visibility from the property (and near house to the north). Due to the angle of view, views will remain as existing to the northern area of Tip 890. No change over the previously consented scheme and current view. View will improve over time as mitigation planting added to the restored tip.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect

R13, House by Nant Hopcyn, c.680m north east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	Property surrounded by mature vegetation, due to the separation distance and intervening features, the restoration amendments would not be perceptible from the property.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect

R14, Pontardawe properties, southern end of Cwmgors, c.1 km north-east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	ZTV illustrates the potential for theoretical visibility. Due to the angle of view and location of properties, views will remain as existing to the northern area of Tip 890, which screens further views to the amended areas. No perceptible change over the previously consented scheme and current view. View will improve over time as mitigation planting added to the restored tip.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Visual Effect

R15, Cwm nant Hopkin, c.900m north east	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	Property set upon lower valley slopes with slightly elevated views west over the valley. The main landform features of the site are likely to be perceptible but considering the separation distance and angle of view the restoration changes are unlikely to be noticeable.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Visual Effect

R16, Pontardawe properties, southern end of Cwmgors / Uplands, c.1.2 km north-east.	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	ZTV illustrates the potential for very limited theoretical visibility. Due to the angle of view and location of properties, views will remain as existing to the northern area of Tip 890 (very limited from upper storey windows only), which screens further views to the amended areas. No perceptible change over the previously consented scheme and current view. View will improve over time as mitigation planting added to the restored tip.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Visual Effect

R17, Pen yr heol, c.800 m east.	
Visual receptor / susceptibility to change	Residents, High susceptibility to change.
Value of view	Views likely to be valued by residents only.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	The ZTV illustrates that there would be theoretical visibility to the site from the property. Reduced southern extents of filling to Tip 890 likely to be perceptible, due to angle of view, a minor beneficial improvement over the previously consented scheme.
Geographical extent	Application site boundary c.800m to the west.
Duration and reversibility of effect	Restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible (benefit)
LEVEL OF VISUAL EFFECT	Minor (beneficial) A Not Significant Effect

- 7.9.2 In summary the assessment concludes that none of the identified residential receptors within 1km would experience visual effects of a significant nature. The change to the restored profile would be most perceptible from Receptor 2, Nant y gfaelau farmhouse which is set upon the rising hillside to the west of the site and Receptor 17, Pen yr Hoel set upon the rising hillside to the east. The properties are located above the height of the operational landfill areas, therefore subject to more expansive views over the wider landscape. The continuation of operations a noticeable feature but not of a significant level, with a longer term improved aspect due to the reduced and varied scale of the restored site.
- 7.9.3 Overall effects as a result of the amended landform changes are considered to be of a positive nature, the reduction in the volume of the landfilling operations will overall reduce the southern extents and physical form of the landfill (Tip 890), a longer term improvement, balanced against the extended duration of operations upon the site before final restoration.

Assessment of Predicted Visual Effects on Public Rights of Way and Transportation Network within 2km Study Area

- 7.9.4 The following key transport routes within 2.km of the site, as illustrated in Figure 7.2, are considered in **Table 7.7**.

Table 7.7: Assessment of Effect on Key Transport Routes within 2km

St Illtyd's Walk. c.900m at the closest point, from Tip 871 boundary.	
Visual receptor / susceptibility to change	People engaged in outdoor recreation upon the trail
Value of view	No recognition in planning terms although guide books / websites publicise the route. Assumed valued regionally.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	The ZTV illustrates the potential for theoretical visibility from the trail as it passes upon Barran Road to the south of the study area (close to Viewpoint 4). Views to the site are channelled north up the valley, views to Tip 890 obliquely although generally screened by intervening mature woodland. Revised restoration considered to result in a negligible change (if any) to the view from the trail. Areas of the trail closer to the site screened by intermediate landform.
Geographical extent	Trail c.900m from the western boundary of the site at the closest point, although not visible at the closest distances.
Duration and reversibility of effect	Restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible
LEVEL OF VISUAL EFFECT	Minor, A Not Significant Visual Effect

Public footpath between Pontardawe Road and Nant y gfaelau, c. 160m from the western site boundary	
Visual receptor / susceptibility to change	People engaged in outdoor recreation upon the footpath
Value of view	No recognition in planning terms. Assumed valued locally.
<u>Sensitivity of visual receptor</u>	HIGH
Scale of visual effect	The ZTV illustrates the potential for theoretical visibility to the site from the footpath. Due to the angle of view and location of path upon the valley side, views will remain as existing to the northern and western flanked areas of Tip 890, which would screen further views to the amended areas. Main perceptible change over the previously consented scheme and current view to unfilled area to the south of Tip 890. View will improve over time as mitigation planting added to the restored tip.
Geographical extent	As all visibility would be screened there is no geographical extent of visibility to the site area, not applicable.
Duration and reversibility of effect	No visual effects, not applicable.
<u>Magnitude of visual effect</u>	No Change
LEVEL OF VISUAL EFFECT	Neutral, a Not Significant Visual Effect

7.9.5 Views from the road corridor, A474 Portardawe Road are as described for the properties upon the road, R4 and R5 although views would be reduced (in duration) further due to the speed, direction of travel and focus away from the site area. Views west general screened by near road side vegetation, a legacy from screen planting to the former colliery.

7.9.6 Overall, the assessment concludes that there would be no 'Significant' visual effects from any of the recreational routes or main road corridors within the study area. Views are generally screened by a combination of alignment, topography and vegetation, and when visible the final restored profile considered an improvement over the consented scheme due to the reduced overall landfill mass.

Assessment of Predicted Visual Effects on Viewpoints

7.9.7 Visual receptor sensitivity to change is defined as being; High, Medium, Low or Negligible depending upon the activity of the receptor. For further information in relation to sensitivity see the Methodology Appendix 7.1.

7.9.8 To assist in the description and comparison of the effects on views, issues to be considered include:

- The nature of the view of the development e.g. full, partial, glimpse;
- The proportion of the development or features that would be visible e.g. full, most, small, part, none;
- The distance of the viewpoint from the development and whether the viewer would focus on the development due to its scale and proximity or whether the development would be only a small, minor element in a panoramic view;

- Whether the view is stationary or transient or one of a sequence of views, as from a footpath or moving vehicle; and,
- The nature of the changes, e.g. changes in the skyline profile, a new visual focus, changes in visual simplicity or complexity and alteration of visual scale.

7.9.9 The current views from each of the viewpoint locations are shown in the photo plates for Viewpoints 1 – 4, with site extents of Tip 890 approximately marked. Detailed analysis of the viewpoints is made with reference to the current baseline views. The analysis of the magnitude of change, and the predicted visual effect, are considered in the following tables.

Table 7.8: Assessment of Effect on Viewpoint Locations

Viewpoint 1 - Bryn Mawr (road)	
Visual receptor / susceptibility to change	Roads users – predominantly cars, low level of usage, small number of pedestrian, cyclist and equestrian Medium susceptibility to change.
Value of view	No recognition in planning terms (landscape and heritage) or literature. Not a defined 'scenic road' (although could be considered to be one)
<u>Sensitivity of visual Receptor</u>	Medium (transport corridor)
Scale of visual effect	The viewpoint offers visibility over Tip 890. The restoration treatments are similar but upon revised landform, it is considered that the reduced scale of Tip 890 would be noticeable and a positive feature in the middle distance. Amended tipping operations noticeable in the short term (as per the current situation) but once restored, the landfill areas would integrate with the surrounding landscape structure. A minor scale of effect.
Geographical extent	Site area visible over a range of views, closest area of the site boundary is c.560m to the north east.
Duration and reversibility of effect	Short term extended effects, Restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible
LEVEL OF VISUAL EFFECT	Minor - Neutral, a NOT SUBSTANTIAL visual effect

Viewpoint 2 - Old Star Inn (former) Wind farm access road	
Visual receptor / susceptibility to change	Road users, predominantly cars, also representative of individual residential properties in the locality.
Value of view	No recognition in planning terms (landscape and heritage) or literature. Not a defined 'scenic road'
<u>Sensitivity of visual</u>	Medium (transport corridor)

<u>Receptor</u>	
Scale of visual effect	The viewpoint location illustrates views to the northern area of the site towards the northern and eastern flank of Tip 890 and the central restored tip (891). Due to the angle of view only the changes to the eastern wall of the amended landfill profile are likely to be perceptible, the view will remain as the current aspect, but improved over time as the black membrane removed, area restored to grass and planted. Negligible change over the previously consented scheme.
Geographical extent	Site area visible over a range of views, closest area of the site boundary is c.430m to the south east.
Duration and reversibility of effect	Short term extended effects, restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible
LEVEL OF VISUAL EFFECT	Minor adverse, a NOT SUBSTANTIAL visual effect

Viewpoint 3 - Public Footpath (between Pontardawe Road and Nantmelyn)	
Visual receptor / susceptibility to change	Footpath users, track also serves individual properties on the western side of the valley.
Value of view	No recognition in planning terms (landscape and heritage) or literature. Not a defined scenic path
<u>Sensitivity of visual Receptor</u>	High (public right of way)
Scale of visual effect	As per Viewpoint 2, the viewpoint location illustrates views to the northern area of the site towards the northern and eastern flank of Tip 890 and the central restored tip (891). Due to the angle of view the changes to the restoration profile are small, with the eastern flank partially perceptible, southern flank screened by landform. This view will be improved over time as the black membrane removed, area restored to grass and planted. Negligible change over the previously consented scheme.
Geographical extent	Site area visible over a range of views, closest area of the site boundary is c.430m to the south.
Duration and reversibility of effect	Short term extended effects, restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
<u>Magnitude of visual effect</u>	Negligible-Neutral

LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect
Viewpoint 4 - St Illtyds Walk (Baran Road)	
Visual receptor / susceptibility to change	Trail users – pedestrian, cyclist and equestrian. Also representative of road users (low level usage)
Value of view	No recognition in planning terms (landscape and heritage) or literature. A defined regional trial (high value)
<u>Sensitivity of visual Receptor</u>	High (public right of way)
Scale of visual effect	The main noticeable change at restoration would be the removal of the black membrane and restoration to grass and woodland, a similar scheme to that consented but the Tip 890 with a reduced southern extent a barely perceptible change. Scale of effect is negligible.
Geographical extent	Site area visible over a range of views, closest area of the application site boundary is c.1.73 km to the north.
Duration and reversibility of effect	Short term extended effects of operation, restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
Magnitude of visual effect	Negligible-Neutral
LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect

Viewpoint 5 - Mynydd Uchaf (local road)	
Visual receptor / susceptibility to change	Roads users – predominantly cars, low level of usage, small number of pedestrian, cyclist and equestrian.
Value of view	No recognition in planning terms (landscape and heritage) or literature.
<u>Sensitivity of visual Receptor</u>	Medium (transportation corridor)
Scale of visual effect	Location offers views to the revised profile of Tip 890, the southern extents reduced, the localised valley between Tip 890 and 891 perceptible set against the rising valley side backdrop. Compared to current views the main noticeable change at restoration would be reduced mass of landfill on the southern extent, however a gap still remains to Tip 871 and following works the removal of the black membrane and restoration to grass and woodland would be a positive feature. A minor scale of effect.

Geographical extent	Site area visible over a range of views, closest area of the site boundary is c.1.2 km to the west.
Duration and reversibility of effect	Short term extended effects of operation, restored site a permanent feature, longer term reduction in effects as mitigation planting matures and landform becomes established landscape feature (of which part of it already is).
Magnitude of visual effect	Negligible
LEVEL OF VISUAL EFFECT	Minor-Neutral, a NOT SUBSTANTIAL visual effect

7.9.10 The viewpoint assessment considered publicly accessible locations that were expected to illustrate the greatest (and representative) levels of visibility to the site from within the local landscape.

7.9.11 The viewpoints, when considered with the restoration proposals, serve to illustrate the actual limited visibility to the active works at the site and the limited (additional) visual effects considered to arise from the revised restoration proposals. In many instances, as the scale of the landfill will be reduced, a beneficial visual effect is concluded.

7.10 SUMMARY AND CONCLUSION

7.10.1 The assessment has sought to establish the full extent of the likely landscape and visual effects of the proposed amendments to the landfilling operations and final restoration proposals at Pwllfawatkin Landfill. The change arising from the proposed development may engender positive or negative responses depending on individual perceptions regarding development and what it can signify.

Landscape Assessment

7.10.2 The assessment considered indicators of susceptibility to change and the effect of the amended restoration profile and proposals, against the consented scheme and the characteristics of the local landscape (<250m). It is concluded that the landscape has a negligible sensitivity to change (from previously consented to proposed restoration scheme). The development is not likely to negatively influence the key characteristics of the landscape (over and above the previously consented scheme) and could accommodate the development with no change in character, with a longer term improvement.

7.10.3 The amended restoration proposals, as a result of reduced tipping of waste, will overall reduce the scale of landscape effect experienced from the final scheme. The physical mass and form of the landfill will be reduced on the southern extents of Tip 890. Previously consented elements of the site restoration will remain, however, a larger proportion of the site will be set at a lower overall elevation and the precise boundaries of restoration treatments amended to take account of the restoration contours of the site.

7.10.4 Overall, aesthetically it is considered that the amended restoration will result in a slight improvement, reducing the engineered volume of the Tip 890 within the wider landholding and when viewed from the local landscape. Perceptually once restored it is considered that longer term effects will remain very similar between the consented and proposed schemes.

7.10.5 Magnitude was considered with regard to the methodology and scale, geographical extent, and duration and reversibility of landscape effects. The magnitude of change arising from the proposed amendments to the landfilling operations and subsequent restoration plan is considered to be Low. In accordance with the methodology *“the development changes would*

result in a minor alteration to landscape elements, introducing elements that are not uncharacteristic with the surrounding landscape”.

- 7.10.6 The overall significance of landscape effect upon the site and local area of the amended scheme is therefore considered to result in a Minor significance of landscape effect overall, this is a Not Significant effect, but of a beneficial nature.
- 7.10.7 The proposed restoration plan changes remain similar, the scheme still creates a modified landform, albeit of a reduced overall scale, affects an area (site) of overall low value / susceptibility to change, limited to the local context with a common sense of place. Overall, the effects would not be considered to be effects that would be a material factor in the decision-making process.
- 7.10.8 Due to the scale of the development changes and location relative to established local features and the Special landscape Area, the amended restoration proposals are considered to result in a neutral magnitude of landscape effect upon the setting of the SLA, over the previously consented scheme, a ‘Not Significant’ effect.

Visual Assessment

- 7.10.9 With regard to residential receptors the assessment concludes that none of the identified residential receptors within 1km would experience visual effects of a significant nature. Overall effects as a result of the amended landform changes are considered to be of a positive nature, the reduction in the landfilling operations will reduce the physical form of the landfill, a longer term improvement, balanced against the extended duration of operations upon the site before final restoration.
- 7.10.10 With regard to recreational routes and transportation corridors the assessment concludes that there would be no ‘Significant’ visual effects from any of the recreational routes or main road corridors within the study area. Views are generally screened by a combination of alignment, topography and localised vegetation, and when visible the final restored profile considered an improvement over the consented scheme due to the reduced overall landfill mass.
- 7.10.11 The viewpoint assessment considered publicly accessible locations that were expected to illustrate the greatest (and representative) levels of theoretical visibility to the site from within the local landscape. The viewpoints, when considered with the restoration proposals, serve to illustrate the actual limited visibility to the active works at the site and the limited visual effects considered to arise from the revised restoration proposals. In many instances, the scale of the landfill will be reduced, and despite the extended operational period, upon restoration a beneficial visual effect is concluded.

Final Comment

- 7.10.12 Overall, it is considered that the assessment has established that there would be limited landscape and visual effects generated by revised restoration scheme and extended operation (timeframe) for tipping proposals. When effects are noticeable it is considered that they would be of a neutral – slight beneficial nature. This LVIA demonstrates that the proposed development modifications could still be successfully assimilated into the surrounding landscape without causing substantial harm to the landscape character and visual amenity in the local area over and above existing operational and previously consented levels.



8. ECOLOGY

8.1 INTRODUCTION

- 8.1.1 This chapter has been prepared by Avian Ecology Limited (AEL) in respect of the proposed development at Pwllfawatkin Landfill Site.
- 8.1.2 The proposed development comprises a revised restoration profile of Tip 890 to facilitate closure of the tipping operation in a safe and environmentally responsible manner
- 8.1.3 This assessment establishes the likely presence or likely absence of protected or notable species, identifies statutory and non-statutory designated sites for nature conservation in the vicinity of the proposed development and evaluates the overall conservation interest of the Site. The potential for the proposed development to have an effect on designated sites, habitats and protected and notable species is assessed and the significance of any effect is identified. This chapter also sets out mitigation measures required to reduce significant adverse effects and outlines the biodiversity enhancements that will be implemented.
- 8.1.4 This chapter is supported by the following figures and technical appendices:
- Technical Appendices:
 - Appendix 8.1: FPCR (2018), Ecological Appraisal – Proposed Modifications to Planning Permissions P/2002/1016 and P/2011/0537 – Pwllfawatkin Landfill Site, Pontardawe, Neath Port Talbot, SA8 4RX;
 - Appendix 8.2: Amphibian and Reptile Reasonable Avoidance Measures (RAMs) Method Statement.
 - Figures (Appendix 8.3):
 - Figure 8.1: Phase 1 Habitat Plan;
 - Figure 8.2: Pond Location Plan.

Site History

- 8.1.5 Pwllfawatkin Landfill operated by FCC Environment (FCC) comprises three former coal spoil tips (Tip 891 and 890 to the north of Baran Road and Tip 871 to the south of Baran Road. Tip 891 has been restored for some time; however, Tip 890 is still accepting non-hazardous waste. Tip 871 is, where necessary, used as a source of engineering material for Tip 890.
- 8.1.6 Two planning consents that allowed the restoration of Tips 890 and 871 expired on 30th September 2018. P2002/1016 was granted in January 2005 and covers the three tips 890, 891 and 871. In December 2011 permission P2011/0537 was granted and allowed the continued restoration of Tip 871 and supersedes the 2005 permission but only on Tip 871. In March 2016 the 2011 consent was updated by P2014/0693 which amended the surface water scheme.
- 8.1.7 An application to vary conditions (reference P2018/0512) to allow an extension of time and revised restoration profile to Tip 890, that reduced the remaining site void from that consented, was submitted to Neath Port Talbot County Borough Council in 2018 but was refused at planning committee, against officer recommendation for approval, in December 2020 on odour nuisance grounds.
- 8.1.8 A separate application (reference P2018/0511) was submitted in 2018 to vary the conditions of planning permission P2014/0693 to extend the period to complete restoration of Tip 871 and amend the restoration profile. To date this application was still awaiting a decision.
- 8.1.9 As the consent that covered Tip 890 has expired, FCC are submitting a new planning application to allow a revised restoration profile in order to safely close the landfill operation.

8.2 ASSESSMENT APPROACH

Scope of Assessment

- 8.2.1 The scope of the assessment has been informed by consultation responses summarised in **Table 8.1** and the following key legislation, planning policy and guidance:

- International
 - Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 ('the Ramsar Convention);
 - Convention on the Conservation of European Wildlife and Natural Habitats 1979 ('the Bern Convention);
 - UNESCO convention on the protection of the World Cultural and Natural Heritage (1972)
- National
 - The Conservation of Habitats and Species Regulations 2017 (as amended);
 - The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
 - The Wildlife and Countryside Act 1981 (as amended);
 - The Environment (Wales) Act 2016;
 - The Environment Bill (currently being processed through the House of Commons);
 - Countryside and Rights of Way Act 2000;
 - Protection of Badgers Act 1992;
 - Hedgerow Regulations 1997;
 - Planning Policy Wales (PPW11, 2021);
 - The Nature Recovery Plan for Wales;
 - Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition (Collins, 20163);
 - BS 42020:2013 Biodiversity – Code of Practice for Planning and Development
- Local
 - Local Nature Partnership Neath Port Talbot⁴;
 - Supplementary Planning Guidance (May 2018) Biodiversity and Geodiversity, Neath Port Talbot County Borough Council Local Development Plan 2011 – 2026⁵.

Desk Study

- 8.2.2 Biological records data on non-statutory designated sites and records of protected and notable species were requested from the South East Wales Biodiversity Records Centre (SEWBReC). Information on non-statutory designated sites and protected and notable species was provided based on a 2km search radius, centred on central grid reference SN 698 088.
- 8.2.3 Reference was also made to Ordnance Survey (OS) maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any features of nature conservation interest in the wider area.
- 8.2.4 The desk study also reviewed existing survey information relating to the Site. A series of baseline surveys were undertaken in 2017 and 2018 by FPCR as summarised below in **Table 8.1**. The survey methodologies and findings are provided in the report which is presented as Technical Appendix 8.1 which accompanies this chapter.

Table 8.1: Baseline surveys undertaken by FPCR

Survey	Year
Phase 1 habitat Survey	May 2017 (updated 2017 and 2018)

³ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition. Bat Conservation Trust, London.

⁴ <https://www.npt.gov.uk/5405>

⁵ https://www.npt.gov.uk/media/9003/spg_biodiversity_geodiversity_may18.pdf

Survey	Year
Badger survey (incorporated with Phase 1 habitat survey)	May 2017 (updated 2017 and 2018)
Bats – Manual Activity Survey	2017 & 2018
Bats – Automated (Passive) Activity Survey	2017 & 2018
Scoping Bird Survey	2018
Great Crested newt e-DNA survey	2017
Great Crested newt presence/absence survey	2018
Reptiles	2017
Riparian mammals (water vole and otter)	2018

Surveys

- 8.2.5 An ecological walk-over survey was undertaken in May 2021 by Andrew Hulme BSc, (Avian Ecology Ltd.) an experienced and qualified ecologist to provide an update and verification of the 2017/18 Phase 1 habitat survey.

Consultation

- 8.2.6 **Table 8.2** summarises the consultation responses received regarding ecology issues and provides information on where and/or how they have been addressed in this assessment.

Table 8.2: Consultation Responses (Scoping Response)

Consultee	Comments / Issues	Response / Action Taken
NRW & Neath Port Talbot County Borough Council (NPTCBC)	Ecology should be screened into the Environmental Statement (ES).	Ecology Chapter included within the ES.
	An assessment of ecosystem resilience (Section 2 Environment (Wales) Act 2016 to consider (a) diversity between and within ecosystems; (b) the connections between and within ecosystems; (c) the scale of ecosystems; (d) the condition of ecosystems (including their structure and functioning); (e) the adaptability of ecosystems.	Ecosystem Resilience is discussed in Section 8.7 of the Chapter.
	In line with the general principles set out in SPG: Biodiversity and Geodiversity (May 2018) and the Environment Wales Act (2016) the application should demonstrate how biodiversity enhancement is to be achieved.	Biodiversity enhancements are discussed within this Chapter. The proposed development will achieve enhancements through the proposed restoration which will include the creation of species rich grassland and woodland, scrub and hedgerow planting. Further measures are proposed to benefit species such as the inclusion of roost features for bat and habitat piles for terrestrial species

Consultee	Comments / Issues	Response / Action Taken
		such as amphibian and reptile species.
	Site Surveys – recommended that further assessment be undertaken to determine the likelihood of protected species being present in the area to be affected by the proposals. Should protected species be found during the surveys, information must be provided identifying the species-specific impacts in the short, medium and long term together with any mitigation and compensation measures proposed to offset the impacts identified.	Detailed site surveys were undertaken in 2017 and 2018 across the wider FCC landownership, which includes the site of the proposed development. These have formed the baseline for the assessment with an updated habitat survey in 2021. The habitats were broadly the same as described from 2017/18 surveys and the results of the species surveys are unlikely to have significantly changed. Pre-cautionary pre-commencement surveys and standard good practice mitigation measures are proposed as required to provide additional assurances.
	Dormice - There is potentially suitable habitat for the species on site and potential connectivity of habitat through the wider landscape, therefore we advise that surveys for dormice are undertaken to inform the EIA.	It is acknowledged that dormouse may be present locally; however, no suitable dormouse habitat will be affected by the proposed development. Dormice are considered in relation to standard good practice mitigation measures.
	Otter and water vole: We are aware of records of otters principally along the River Clydach. In addition, there appears to be a water vole record close to the proposed site. We therefore welcome that these species are scoped into the EIA.	It is acknowledged that otters are likely to be present along the River Clydach valley. Otter and water vole are considered within the assessment with standard good practice mitigation measures proposed as required.
	EPS Licence: Where a European Protected Species is identified and the development proposal will contravene the legal protection they are afforded, a licence should be sought from NRW. The EIA must include consideration of the requirements for a licence and set out how the works will satisfy the three requirements as set out in the Conservation of Habitats and Species Regulations 2017 (as amended).	No European Protected Species have been identified with risk of disturbance by the proposed development. Standard good practice mitigation measures are proposed as required as required in relation to protected species.
	Schedule 1 Birds: We advise that consideration is given to the presence and likely impacts of the proposals on	The potential presence for species listed on Schedule 1 of the Wildlife and Countryside Act (as amended).

Consultee	Comments / Issues	Response / Action Taken
	Schedule 1 birds in the area.	
	Protected Sites: Based on the information submitted, we consider that the proposed development is not likely to damage the features for which Hafod Wennol Grasslands Site of Special scientific interest (SSSI).	Designated sites are considered within this Chapter.
Rebecca Sharp of NPTCBC (7 th May 2021)	Great crested newts: It was agreed that great crested newt eDNA surveys which produced a positive result from one pond within the FCC landownership in 2017 was unreliable, given the negative results of the 2018 conventional surveys. It was also agreed that the submission report should state that the 2018 surveys are considered the appropriate data set to rely on, and that updated surveys would not be required given the negative 2018 survey results. Standard Reasonable Avoidance Measures (RAMs) as a precaution should be adopted.	This Chapter presents the survey information gathered during the 2017 and 2018 amphibian surveys. In accordance with the discussions with Rebecca Sharp, a RAMs Method Statement will be adopted for amphibian and reptile species.

Assessment Methodology

- 8.2.7 The Ecological Impact Assessment (EclA) contained in this Chapter has been undertaken with reference to the CIEEM (2018) guidance⁶ and the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended). It focuses on those activities that could potentially generate significant environmental effects on ecological receptors.
- 8.2.8 Ecological Impact Assessment (EclA) is defined within the CIEEM guidelines as
'a process of identifying, quantifying and evaluating the potential effects of development-related or other proposed actions on habitats, species and ecosystems'.
- 8.2.9 The CIEEM guidelines stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological receptors that are sufficiently widespread, unthreatened and resilient to impacts of the Proposed Development. As such, the assessment considers effects upon designated sites and ecological receptors which are considered important on the basis of relevant guidance and professional judgement.
- 8.2.10 Where ecological receptors are not considered so important as to warrant a detailed assessment, or where they would not be significantly affected on the basis of baseline information, these are 'scoped out' of the assessment. Mitigation measures for such receptors may however, still be outlined as appropriate to reduce and/or avoid any potentially adverse effects or to ensure legislative compliance.
- 8.2.11 The assessment includes the following stages:

⁶ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine (Version 1.1 – Updated September 2019). CIEEM, Hampshire.

- Determine and evaluation of important / sensitive ecological receptors;
- Identification and characterisation if impacts;
- Outline of mitigating measures to avoid and reduce significant impacts;
- Assessment of the significance of any residual effects after such measures; and,
- Identification of appropriate compensation measures to offset significant residual effects.

8.2.12 For the purpose of the assessment, the terms 'impacts' and 'effects' are referred to in accordance with the definitions set out in the CIEEM Guidelines as follows:

- Impact: Actions resulting in changes to an ecological feature, for example, removing a hedgerow; and,
- Effect: Outcome to an ecological feature from an impact, for example the changes experienced by the local population of a species arising from the loss of the hedgerow.

Zone of Influence

8.2.13 The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposal and associated activities. The zones of influence that extend beyond the direct land-take required for the proposed development have been identified based upon the nature of the completed project and the construction activities to be undertaken, informed by the consultation and Scoping process and current CIEEM guidance where available. The zone of influence will therefore vary for different ecological features depending on their sensitivity to an environmental change. The zones of influence were used to establish the scope of baseline ecological surveys and the extent of survey area and desk study.

8.2.14 Zones of influence for the Site and the proposed development that have been considered are as follows:

- Desk study - designated sites (Special Protection Areas (SPA) or Special Areas of Conservation (SAC) and including Ramsar sites) within 5km;
- Desk study - (NERC Section 42 Species of Principal Importance and Priority Habitats) within 2km;
- Field survey (habitats) – land within the Site and immediately surrounding habitats where these could be surveyed from within the landownership, from publicly accessible land or with third party permission.

Significance Criteria

8.2.15 The EIA Regulations⁷ require the description of the 'likely significant environmental effects of the proposed development on the environment' (Regulation 18(3) (b)).

8.2.16 To determine the overall significance of each ecological effect, judgements on the sensitivity of the receptor(s) and the magnitude of impact from the Proposed Development are considered together in order to determine whether or not an effect is likely to be significant. This involves a combination of quantitative and qualitative assessment and the application of professional judgement.

8.2.17 For the purposes of this assessment, effects are categorised as Significant or Not Significant in line with the EIA Regulations. The assessment considers effects at different geographic scales i.e. where effects may be discernible at a local scale but are not considered Significant in the context of the EIA Regulations. For the purpose of the assessment, Moderate and Substantial effects are deemed to be 'Significant' in EIA terms unless stated otherwise. A 'Significant effect' is considered to be an effect that either supports or undermines biodiversity conservation objectives for 'important or sensitive ecological features' or for biodiversity in general.

⁷ Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).

8.2.18 CIEEM guidelines on Ecological Impact Assessment note that:

'A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures.'

8.2.19 For ease of reference, **Table 8.3** below sets out adapted CIEEM terminology, which also shows the equivalent EIA terms.

Table 8.3: EIS Regulations and CIEEM terminology used

Effect (Standard EIS-related terminology and associated assigned significance)		Equivalent CIEEM terminology adapted for Ecological Assessment
Moderate or Substantial Beneficial	Significant	Positive effect on ecological integrity or conservation status at a County, National or International geographic scale.
Minor Beneficial	Not Significant	Positive effect on ecological integrity or conservation status, discernible/significant in ecological terms at a Local geographic scale only
Negligible and Neutral	Not significant or Neutral	No discernible or significant on ecological integrity or conservation status (e.g. species or habitat).
Minor Adverse	Not Significant	Adverse effect on ecological integrity or conservation status, discernible/significant in ecological terms at a Local geographic scale only.
Moderate or Substantial Adverse	Significant	Adverse effect on ecological integrity or conservation status at a County, National or International geographic scale.

8.2.20 The assessment of effects includes any incorporated / embedded mitigation measures which form part of the project design.

Duration

8.2.21 Development-related activities and their associated impacts have been described in terms of their predicted duration as short, medium term and long-term as follows, recognising that the actual duration of effects may be different for different species:

- Short-term: defined as 0 -3 years;
- Medium term: defined as 3 – 15 years; and,
- Long-term: defined as > 15 years

Importance and sensitivity of ecological receptors

8.2.22 For the purposes of this assessment the importance or sensitivity of an ecological feature is considered within the context of a defined geographical area, ranging from International (high value) to Site (low / negligible), as detailed in **Table 8.4**.

Table 8.4: Importance / sensitivity and geographic scale and ecological feature

Geographic Scale of Importance	Definition (examples)
High – International	Beyond a UK scale, e.g. internationally designated site (SPA, SAC and/ or Ramsar site) or proposed/ candidate site (pSPA or cSAC); large area of a habitat listed in Annex I of the Habitats Directive or smaller areas of such habitat which are essential to maintain the viability of the larger whole, large population of an internationally important species or site supporting such a species (or supplying a critical element of their habitat requirement) or species listed in Annex IV of the Habitats Directive.
High – National	UK: A nationally designated site (e.g. SSSI) or a discrete area which meets the selection criteria for national designation. An area of a priority habitat which constitutes a significant proportion of the UK resource of that habitat or smaller area essential to maintain the viability of that ecological resource. A regularly occurring, nationally significant population of any nationally important species listed as a UK BAP / priority species and Species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive
Medium – Regional/County	Neath Port Talbot: Locally designated sites (County or Sites of Importance for Nature Conservation (SINCs)). Areas of priority habitat which constitutes a significant proportion of the County's resource of that habitat. A regularly occurring, locally significant population of any nationally important species listed as a UK BAP / priority species and Species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.
Low – Local	Pontardawe: For example, areas of priority habitat but which are not large enough to meet the criteria for County value, or small but sustainable populations of a protected or notable species. Areas of habitat or species considered to appreciably enrich the ecological resource within the local context e.g. hedgerows.
Negligible – Site	Considered within the context of the Site only.

8.2.23 Effects on ecological receptors have been assessed based upon the interaction between their importance or sensitivity and the nature of the change likely to be experienced in relation to environmental parameters as set out in **Table 8.5**. In accordance with the CIEEM guidelines, an EclA need only assess in detail, impacts upon important ecological features i.e., those that are considered important and potentially affected. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable. Where ecological receptors are not considered important enough to warrant further consideration, or where they will not be significantly affected, these are scoped out of the assessment presented here, and justification for exclusion

is provided.

- 8.2.24 Relevant European, national and local guidance from governments and specialist organisations has been referred to in order to determine the importance or sensitivity of ecological receptors. Importance has also been determined using professional judgement and taking account of the results of baseline surveys and the functional role of receptors within the context of the geographical area. Importance does not necessarily relate solely to the level of legal protection that a receptor receives and these may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.
- 8.2.25 Once identified, potential impacts are described making reference to the following characteristics as appropriate: positive or negative, extent, magnitude, duration, timing, frequency, and, reversibility. The judgements on magnitude may need to be adjusted (either up or down) to reflect the duration of the change (i.e. short, medium or long term) and whether it is potentially reversible. The assessment also identifies areas where no change is anticipated and the resulting effect is described as 'not discernible' or 'none'.
- 8.2.26 Ecological effects are described as far as possible and where available information allows in terms of the parameters detailed in **Table 8.5**.
- 8.2.27 Magnitude of effect, based on the effects that the Proposed Development would have upon the resource/receptor, is considered within the range of high, medium, low, negligible. Consideration is given to scale, duration of impact/effect (and extent of proposed development). The assessment considers how existing baseline conditions may change over time, as for example the baseline conditions could alter through operational land use, in the form of differing management and natural growth or succession of habitats.

Table 8.5: Environmental parameters

Environmental Parameter	Description
Magnitude	The 'size' or amount of the effect is referred to as the magnitude and is determined on a quantitative basis where possible supported by professional judgement.
Extent	The area over which an effect occurs. The magnitude and extent of an effect may be synonymous
Duration	The time over which an activity or impact is expected to last and associated effect prior to the recovery or replacement of the ecological receptor. This can be considered in terms of life cycles of species or regeneration of habitats. The duration of effect may be longer than the duration of an activity.
Reversibility	Reversible (or temporary) effects are those that occur during the lifetime of the development and where spontaneous recovery or mitigation allows recovery within a reasonable timescale. Permanent effects are those which cannot be recreated within the proposed development or there is no reasonable chance that actions can be undertaken to reverse it.
Timing and Frequency	The timing of effects in relation to important seasonal and/or life cycle constraints. The frequency with which activities and simultaneous effects would take place can be an important determinant.

- 8.2.28 For an effect to be significant, the ecological integrity or conservation status of a sensitive feature must be influenced in some way. It may be that the effect is substantial in magnitude or scale, irreversible, has a long-term effect, or coincides with a critical period in a species' life-cycle. Where uncertainty or limitations exist, this is acknowledged.
- 8.2.29 It is recognized that discernible effects can also occur at a local geographic scale which are not sufficiently severe to be assessed as 'Significant' in accordance with the EIA approach, and do not require specific mitigation, but nonetheless merit discussion. In the interest of completeness, these effects are discussed in relation to general construction good practices to be adopted to avoid or minimise low-level or minor disruption to local features, including for example standard pollution prevention and control measures.
- 8.2.30 The assessment of effects is based upon the assessments of magnitude of effects and sensitivity of the resource/receptor to come to a professional judgement of how important this effect is. The magnitude of change effected on ecological receptors is described as set out in **Table 8.6**. The likelihood or probability that an effect will occur is addressed as far as possible based on available information. Whilst it is reasonably straightforward to identify effects that are certain to occur, or conversely will not occur, it is generally more difficult to assign a quantified level to occurrences defined as likely, unlikely or highly unlikely. In these circumstances, professional judgement has been used, with reasoning supported by available evidence.

Table 8.6: Magnitude of Impact / Change

Magnitude	Criteria
High	The change may negatively or positively affect the conservation status of a site or species population, in terms of the coherence of its ecological structure and function that sustains the habitat, complex of habitats and/or the population levels of species of interest.
Moderate	Conservation status of a site or species population will not be negatively or positively affected, but some element of the functioning of the site or population might be affected and the change to the site/ population is likely to be significant in terms of its ability to sustain some part of itself in the long term.
Low	Neither of the above applies, but some minor negative or positive change is evident on a temporary basis, or the change affects extent of habitat or individuals of a species abundant in the local area.
Negligible	No observable effect in either direction

Limitations

Desk Study

- 8.2.31 The desk study data is derived from records submitted by members of the public, conservation groups and from data provided as part of other ecological assessments. It does not represent a definitive list of species that occur in the local area, and the absence of records does not necessarily imply absence of such species.
- 8.2.32 Limitations identified with the surveys undertaken in 2017 and 2018 are presented within the Ecological Appraisal (FPCR, 2018) included as Technical Appendix 8.1.

Field Survey

- 8.2.33 The ecological walkover survey undertaken in 2021, does not constitute a detailed botanical survey or faunal species list or provide a full protected species survey but, enables competent

ecologists to ascertain an understanding of the ecology of a site in order to:

- Broadly identify the nature conservation value of a site and assess the significance of any potential impacts on habitat/species recorded; and/or,
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation value of a site (if any).

8.2.34 The survey was completed in May, within the optimal survey period for undertaking habitat surveys. Therefore, it is considered that the timing of this survey did not present a limitation to the baseline information gathered.

8.2.35 With reference to the consultation responses (see **Table 8.2**), further surveys for dormouse were not considered necessary, as no suitable habitat will be affected by the Proposed Development. Potential for effects on otter and water vole have been assessed, with mitigation embedded as part of the Proposed Development with further pre-commencement surveys proposed as required. No further updated surveys for great crested newts were considered necessary with agreement Neath Port Talbot County Borough Council but precautionary Reasonable Avoidance Measures (RAMs) are proposed.

8.2.36 The surveys undertaken at the Site both as reviewed as part of the desk study and updated walkover provide a suitable baseline to the meet the objectives of the assessment.

8.3 BASELINE CONDITIONS

8.3.1 This section provides a summary of baseline conditions in relation to designated sites for nature conservation, habitats and protected and notable species. The baseline has been informed by field survey and desk-based review of available online information and existing ecological data and reports relating to the Site. Survey information is set out in Technical Appendices 8.1 and 8.2 and accompanying Figures.

Site Context

8.3.2 Pwllfawatkin Landfill is located approximately 5km to the north of Pontardawe. The Application Site measures c.10ha and is located with Tip 890, towards the northern end the landfill as illustrated in Figure 8.1.

8.3.3 The Application Site is situated within the Upper Clydach Valley and located approximately 350m to the west of the A474. The Upper Clydach River runs along the eastern boundary of the Application Site.

8.3.4 The Application Site incorporates the currently operational area of Tip 890, existing access off Baran Road, weighbridge, landfill gas engines, leachate storage tanks, site staff welfare cabins, the access road and the former household waste recycling centre. The wider FCC landownership incorporates the restored and operational landfills that occupy the main colliery spoil tips of the former Abernant Colliery which closed in 1988. To the west of the site, the ground rises as part of the western slope of the Clydach Valley to Mynydd Carnellechart and Bryn Maw and there is a continuation of woodland which surrounds the landfill.

Statutory Designated Site for Nature Conservation

8.3.5 The Site does not form part of any statutory designated sites for nature conservation. Eight statutory designated sites for nature conservation were identified within 5km of the Site. A summary of statutory designated sites within 5km of the Site is presented in **Table 8.7**.

Table 8.7: Statutory Designated Sites (SSSI Site of Special Scientific Interest)

Designated Site	Distance and direction	Details
Hafod Wennol Grasslands SSSI	1.6km W	An extensive series of hay meadows, pastures and rough grazing managed using traditional farming methods and forming one of the largest examples of lowland neutral grassland in the region. Unimproved grassland supports uncommon plant species which are increasingly scarce in Wales. Marsh fritillary butterfly <i>Eurodryas aurinia</i> has been recorded on site.
Frondeg	2.8km SE	The site is of special interest for its neutral grassland, fen – meadow and wet grassland, which support uncommon plant species, scarce in lowland habitats.
Cefn Gwrhyd	2.6km SE	An upland area supporting types of wetland habitats uncommon in the county. The most important of these is a species-rich valley mire and several small areas of species rich soligenous mire. The surrounding areas comprise good examples of damp acid grassland and drier heath communities in upland areas.
Tairgwaith	2.8km NE	The site of special interest for its species-rich grasslands, which are host to several uncommon plant species. Notable plant species greater butterfly-orchid <i>Platanthera chlorantha</i> and whorled caraway <i>Carum verticillatum</i> .
Gwrhyd Meadows	3.1km SE	An extensive series of meadows and wet pastures and is one of the largest areas of traditionally managed enclosed grasslands in the region. A range of grassland and wetland communities occur within the forty-one enclosures that make up the site which include dry hay meadows, acid grassland, rushy pastures purple moor grass <i>Molinia caerulea</i> as well as base-poor and base enriched wetlands. The site also includes areas of bracken <i>Pteridium</i> sp. and broad-leaved scrub and tracks of woodland. The site supports variety of bird species typical of the habitats present and small pearl-bordered fritillary butterflies <i>Boloria selene</i> and dragonfly species keeled skimmer <i>Orthetrum coerulescens</i> , the broad-bodied chaser <i>Libellula depressa</i> and the golden-ringed dragonfly <i>Cordulegaster boltonii</i> have been recorded.
Coed Cwm Du Cilmaengwyn	3.7km SE	Predominantly sessile oak <i>Quercus petraea</i> woodland with ash <i>Fraxinus excelsior</i> , elm <i>Ulmus</i>

Designated Site	Distance and direction	Details
		sp., birch <i>Betula pendula</i> and alder <i>Alnus glutinosa</i> with locally abundant damp base rich flush areas. Poorly drained wet meadows occur along the upper fringes of the valley.
Caeau nant Garenig	3.7km NW	The site comprises a group of traditionally managed unimproved pastures and hay meadows occupying west-facing slopes which descend gently to a wooded stream.
Rhosydd Castell-Du & Plas-y-Bettws	4.6KM NW	The site is of special importance for its large expanse of fen-meadow and drier, more neutral grassland, as well as several associated stands of damp acid grassland, rush pasture and wet heath. The site supports a population of the nationally-scarce soft-leaved sedge <i>Carex montana</i> and the scarce wood bitter-vetch <i>Vicia orobus</i> .

Non-statutory Designated Sites

- 8.3.6 The Site does not form part of any non-statutory designated sites for nature conservation. Four non-statutory designated sites for nature conservation were identified within 2km of the Site. A summary of non-statutory designated sites within 2km of the Site is presented in **Table 8.8**.

Table 8.8: Non-statutory Designated Sites (SINC: Site of Importance for Nature Conservation)

Designated Site	Distance and direction	Details / Reason for Selection
Abernant Colliery SINC	80m SE	Qualifying features: H5:1 Lowland meadows; H9:3 Purple moor-grass and rush pasture; H14:3 Open mosaic habitat on previously developed land and H1:4 Scrub communities. A former colliery site, now a levelled plateau in the Upper Clyach River valley. The plateau primarily supports a mosaic of secondary wet grasslands matching the description of rush-pasture and lowland meadows, with scattered scrub.
Mynydd Y Garth SINC	1.4km E	Qualifying features: H16 Mosaic Habitats. Mynydd y Garth is an Upland common supporting acid grassland and some heathland habitat.
Tiroedd Comin Cwm Amman Uchaf SINC	1.2km E	Qualifying features: H16 Mosaic Habitats. The site includes several adjacent registered commons which support typical upland habitats including mat grass <i>Nardus stricta</i> dominated acid grasslands, areas of purple moor grass and rush

Designated Site	Distance and direction	Details / Reason for Selection
		pastures, heathland, and bogs and flushes
Carn Llechart SINC	500m W	Qualifying features: H16 Mosaic Habitats. This site consists of areas of wet heath and acid flushes with <i>Sphagnum</i> spp. scattered throughout the common which is predominantly acid grassland.

Habitats

- 8.3.7 The Phase 1 habitat survey undertaken in 2017 and 2018 and walk-over survey in 2021 comprised the wider FCC landownership boundary. This section describes habitats within or immediately adjacent to the current Application Site (i.e., the southern end of Tip 890, as shown on Figure 8.1), as recorded during the 2021 survey, referencing changes to the baseline habitats that have occurred subsequent to the earlier surveys.

Wet Woodland / Scrub

- 8.3.8 An area to the east of the Application Site comprised willow carr woodland and scrub, grey willow *Salix cinerea* was dominant with goat willow *Salix caprea* and occasional birch *Betula pendula*, hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, alder *Alnus glutinosa*. Rowan *Sorbus aucuparia* was also recorded but was less frequent. In mature more open canopy areas, the ground flora comprised bracken *Pteridium* sp., bramble *Rubus fruticosus*, meadowsweet *Filipendula ulmaria*, soft rush *Juncus effusus*, great willowherb *Epilobium hirsutum*, marsh marigold *Caltha palustris*, wood avens *Geum urbanum* with small numbers of bluebell *Hyacinthoides non-scripta* and garlic mustard *Alliaria petiolata* also recorded. Stands of Himalayan balsam *Impatiens glandulifera* was present within the woodland / scrub. The Wet woodland is listed a priority habitat on Section 7 of the Environment (Wales) Act 2016.

Bare Ground & Ephemeral / short Perennial

- 8.3.9 The central area of the Application Site consisted of bare ground, with the southern areas supporting ephemeral / short perennial species. Vegetation was sparse and consisted ryegrass *Lolium perenne*, meadow foxtail *Alopecurus pratensis*, ox-eye daisy *Leucanthemum vulgare*, black medick *Medicago lupulina*, groundsel *Senecio vulgaris*, ribwort plantain *Plantago lanceolata*, creeping buttercup *Ranunculus repens*, cuckoo flower *Cardamine pratensis*, tufted vetch *Vicia cracca*, white clover *Trifolium repens* and coltsfoot *Tussilago farfara*.

Semi-improved Neutral Grassland

- 8.3.10 Capped areas to the north of Tip 890 but extending within the north west and north east boundaries of the Application Site comprised semi-improved neutral grassland. Grassland species include rough meadow grass *Poa trivialis*, meadow foxtail *Alopecurus pratensis*, Yorkshire fog *Holcus lanatus* with docks *Rumex* sp., creeping buttercup, dandelion *Taraxacum officinale*, daisy, coltsfoot, thistle *Cirsium* sp.

Marshy Grassland

- 8.3.11 Areas around the waterbodies within the Application Site comprise marshy grassland; species included false brome *Brachypodium sylvaticum*, soft rush, hard rush *Juncus inflexus*, sedges, ribwort plantain, meadow buttercup *Ranunculus acris*, cuckoo flower, dandelion, meadowsweet, creeping buttercup, hogweed *Heracleum sphondylium*, lesser trefoil *Trifolium*

dubium, red clover *Trifolium pratense*, tufted vetch, thistles, field wood-rush *Luzula campestris*, with scattered willow, birch, gorse *Ulex europaeus*, alder also present.

- 8.3.12 A strip of marshy grassland was present along the edge of the wet woodland and scrub within the eastern part of the Application Site; species comprised soft rush, reeds, sedges, bramble, great willowherb, meadowsweet with occasional willow scrub.

Waterbodies

- 8.3.13 Eleven waterbodies were identified within the Application Site (Waterbodies 2, 3, 4, 5, 6, 7, 9, 23, 25a, 25b and 26) as shown in Figure 8.2. Waterbodies 25a, 25b and 26 appear to have formed recently and were not previously recorded during surveys undertaken in 2017 and 2018. Waterbody 8 which was previously located within the Application Site is no longer present and was recorded as such at time of the 2017 and 2018 surveys. At the time of the 2021 walkover survey, the water levels were high within the wetland habitat to the east of the Application Site and it was likely that a number of these waterbodies had merged.
- 8.3.14 Two waterbodies (Waterbodies 1 and 20) border the Application Site while two waterbodies (Waterbodies 21 and 22) are located to the north of Tip 890, approximately 200m and 330m from the Application Site boundary. Waterbody 19 which was previously located within woodland to the west of the Application Site is thought no longer to be present and was recorded as dry at time of the 2017 and 2018 surveys
- 8.3.15 The waterbodies within the Application Site are considered to fall under the priority habitats 'standing open water and canals as listed on Section 7 of the Environment (Wales) Act 2016.

Table 8.9: Waterbody Descriptions

Waterbody Reference	Description
1	A large rectangular attenuation / settlement waterbody outside the southern Application Site boundary; the waterbody has steep banks with grassland and marginal vegetation. The pond was dominated by broad-leaved pondweed <i>Potamogeton natans</i> . In flow from waterbody 3.
2	A rectangular attenuation / settlement waterbody within the southern boundary of the Application Site; the waterbody has steep banks which were largely unvegetated with the exception of the southern and eastern banks which were grass covered (see semi-improved neutral grassland). No aquatic vegetation present.
3	Waterbody located at the southern end of the Application Site; margins vegetated with sedge, reedmace <i>Typha latifolia</i> and soft rush. The waterbody supported broad-leaved pondweed.
4	A rectangular settlement waterbody within the eastern Application Site boundary, connected by pipe to Waterbody 2. All banks vegetated by willow scrub. Marginal vegetation includes marsh marigold, meadowsweet and soft rush.
5	Waterbody within woodland / scrub to the east of the Application Site and connected to Waterbody 6. The waterbody was partially covered with reed <i>Phragmites australis</i> with more open areas supporting reedmace and horse tail and rush around margins.
6	Waterbody within woodland / scrub to the east of the Application Site and connected to Waterbody 5. No aquatic vegetation with willow growing from within the water. The pond was heavily shaded by surrounding trees and

Waterbody Reference	Description
	scrub vegetation.
7	A linear waterbody located to the east of the Application Site forming a continuation of Waterbody 9. The waterbody was heavily shaded along the eastern margins, the western margins supported reedmace, soft rush and meadowsweet.
8	No longer present.
9	A linear waterbody located to the east of the Application Site forming a continuation of Waterbody 7. Reedmace and soft rush present in more open areas, particularly along the western margins.
20	A waterbody located within the adjacent woodland to the west of the Application Site. Was not accessed during the 2021 walk-over survey but previously described as being shallow and well vegetated with floating sweet grass, sedges reedmace, soft rush and common reed.
21	A long narrow waterbody on the northern margin of Tip 890 (approximately 330m north of the Application Site). Steep banks support grasses and soft rush.
22	Waterbody located on eastern boundary Tip 890 (approximately 200m north of the Application Site). The waterbody was heavily vegetated with reedmace dominant throughout. Dense willow scrub runs parallel to the waterbody to the east.
23	Waterbody could not be accessed during the 2021 walk-over survey. Previously described as rectangular pond on the eastern boundary of the Application Site with abundant marginal and aquatic vegetation at the northern end including reedmace, water plantain, tufted hair-grass, meadowsweet, willowherb and horsetail. The waterbody tapered to the southern end and became shallow and likely ephemeral,
25a 25b	Two small recently formed waterbodies located to the south west corner of the Application Site. The waterbodies have formed in an area of disturbed ground, although eastern body has marginal vegetation with grass and rush present.
P26	A small recently formed waterbody immediately adjacent the Waterbody 4. Steep sided with no aquatic vegetation of marginal plants.

Species

Birds

- 8.3.16 The habitats within and adjacent to the Application Site are likely to support an assemblage of breeding birds, typical of woodland and wetland habitat in the area.
- 8.3.17 The SEWBRc data returned records of protected and notable bird species within the 2km search radius, including species protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), priority species listed on Section of 7 of the Environment (Wales) Act 2016, Biodiversity Action Plan species, and/or red or amber listed 'Birds of Conservation Concern' (BoCCs) (Eaton *et al.*, 2015).

8.3.18 Bird species recorded during a breeding bird scoping survey over three days in May 2018 include blackcap *Sylvia atricapilla*, bullfinch *Pyrrhula pyrrhula*, chiffchaff *Phylloscopus collybita*, cuckoo *Cuculus canorus*, reed bunting *Emberiza schoeniclus*, reed warbler *Acrocephalus scirpaceus*, song thrush *Turdus philomelos*, whitethroat *Sylvia communis* and willow warbler *Phylloscopus trochilus*.

8.3.19 The bird scoping survey also recorded red kite *Milvus milvus* (a species listed on Schedule 1 of the Wildlife and Countryside Act 1981 ((as amended))). No suitable mature trees are present within the Site that could support a red kite nest.

Bats

8.3.20 The SEWBRc data returned records for Common pipistrelle *Pipistrellus pipistrellus*, unidentified *Myotis* sp. and greater horseshoe *Rhinolophus ferrumequinum*. No records related to habitats within or adjacent to the Application Site.

8.3.21 Manual and automated (static) bat activity surveys undertaken within the wider FCC landownership in 2017 and 2018 recorded calls characteristic of common pipistrelle, soprano pipistrelle *P. pygmaeus*, Nathusius's pipistrelle *P. nathusii*, Daubenton's bat *Myotis daubentonii*, unconfirmed *Myotis* sp., noctule *Nyctalus noctule*, brown long-eared *Plecotus auratus* and barbastelle *Barbastella barbastellus*.

Preliminary Roost Assessment

8.3.22 No trees or structures were present within the Application Site suitable to support roosting bats.

Bat Habitat Assessment

8.3.23 The habitats within and immediately adjacent to the Application Site comprising more open habitats with ephemeral and short perennial, semi-improved grassland and open water with marshy grassland and woodland and scrub to the western and eastern boundaries and adjacent Upper Clydach River provide both foraging and commuting bat habitat. Through the boundary woodland and scrub habitats and adjacent river corridor, the Application Site is well-connected to other favourable habitats in the surrounding landscape, including extensive mature woodland.

8.3.24 Habitats within and adjacent to the Application Site were considered to offer 'high' suitability as foraging and commuting habitats in accordance with BCT guidance¹², providing '*continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees or woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland*'.

Badgers

8.3.25 The SEWBRc data returned no records of badger *Meles meles* within 2km search area.

8.3.26 No field signs indicative of badger activity was recorded during the Phase 1 habitat survey (or other surveys undertaken in 2017 or 2018) or during the walkover survey in 2021. However, the Application Site and surrounding habitats including woodland, provide suitable habitat for commuting, foraging badgers and sett creation (in drier areas). Although no evidence of badger activity was noted, it is possible that badgers may still be present and active in the area.

Otter and Water Vole

8.3.27 The SEWBRc data returned no records of water vole *Arvicola amphibius* within the 2km search area. Records of otter *Lutra lutra* were provided, with all records relating to the Upper Clydach River, a section of which passes immediately east of the Application Site. The majority of the records were historical and were dated 2002.

- 8.3.28 The Ecological Appraisal (FPCR, 2018) reports that signs of otters have been observed at several points along the Upper Clydach River and that an otter spraint had at the time, recently been positively identified on the banks of Waterbody 1, which is located just outside of the southern boundary of the Application Site. The report includes anecdotal evidence of a single otter regularly using habitat around Waterbody 1, including laying up during operational hours of the landfill. It was thought likely that Waterbodies 2 and 3, located within the Application Site would also be used by otter.
- 8.3.29 No signs of otter were recorded during the walkover survey in 2021; however, the waterbodies with the Site were considered to provide suitable foraging habitat for otter (e.g. larger more established waterbodies). Opportunities within the Application Site are limited for holt construction but it is likely that the adjacent woodland and river corridor do provide potential for otter holts.
- 8.3.30 Surveys in 2017 and 2018 recorded small mammal burrows along the Upper Clydach River and waterbodies within the wider FCC landownership. Although exhibiting characteristic appearance of water vole burrows, no confirmatory evidence was found to indicate water vole presence and it was possible burrows were made by brown rat *Rattus norvegicus*.
- 8.3.31 No signs of water vole were recorded during the walkover survey in 2021; the habitats along the Upper Clydach River were considered sub-optimal but it is possible that water vole could still be presents along river corridor.

Hazel Dormouse

- 8.3.32 The SEWBRc data returned no records of hazel dormouse *Muscardinus avellanarius* within 2km search area.
- 8.3.33 The majority of the habitats with the Application Site which comprise open bare ground, ephemeral and short perennial vegetation, semi-improved grassland and open water with marshy grassland do not provide suitable habitat for hazel dormouse. The boundary woodland and scrub vegetation provide highly suitable habitat for hazel dormouse as foraging, breeding and shelter and are well connected to other suitable habitat in the wider landscape. It is possible that dormouse may be present within the off-site boundary habitats.

Amphibians

- 8.3.34 The SEWBRc data returned records for palmate newt *Lissotriton helveticus*, common frog *Rana temporaria* and common toad *Bufo bufo*. The majority of the records related to waterbodies within the Application Site FCC landownership with survey information submitted following the 2018 surveys.
- 8.3.35 Surveys were undertaken on waterbodies within and bordering the wider FCC landownership, including waterbodies within the Application Site; eDNA survey were undertaken in 2017 with conventional surveys undertaken in 2018 to establish the presence or likely absence of great crested newt (this same data is what was provided by SEWBRc).
- 8.3.36 A single waterbody, Waterbody 12, located approximately 210m south of the Application Site tested positive for great crested newt presence during the 2017 surveys. This pond was subject to six survey visits adopting conventional presence or absence survey methodology in 2018 (two more than standard four visits to determine likely presence) but these surveys did not detect great crested newts. The 2018 surveys of 18 waterbodies (out of total 24 waterbodies present at the time) within or close to the wider FCC landownership found no evidence confirming the presence of great crested newt. It was considered likely that the eDNA survey in 2017 had returned a false positive result, with 2018 survey indicating great crested newts are likely absent from the Site and wider FCC landownership. It was also agreed with the local planning authority during consultation that updated GCN surveys would not be required given

the negative 2018 survey results.

- 8.3.37 The 2018 surveys recorded common frog at Waterbodies 9, 10 and 12, common toad at Waterbodies 9 and 12 and palmate newt at Waterbodies 1, 2, 3, 4, 7, 9, 10, 11 and 12. Waterbodies 1, 2 and 10 (Waterbody 2 is located within the Application Site and Waterbody 1 is located just outside the southern boundary of the Application Site) were recorded supporting large populations of palmate newt with peak counts over 100 individuals.

Reptiles

- 8.3.38 The SEWBRc data returned records for slow worm *Anguis fragilis*, common lizard *Zootoca vivipara*, grass snake *Natrix helvetica*. All records related to land over 1km north of the Application Site.
- 8.3.39 Reptile surveys undertaken in 2018 across the wider FCC landownership recorded the presence of common lizard. The Ecological Appraisal (FPCR, 2018) reports anecdotal evidence of adder *Vipera berus* with suitable habitat present in the surrounding landscape.
- 8.3.40 The habitats within the Application Site provide suitable conditions for common and widespread reptile species with grassland and other vegetated area providing foraging opportunities and natural refugia offering places of shelter and protection.

Invertebrates

- 8.3.41 The expanses of bare ground within the Application Site provide limited interest for invertebrate species. However other habitats on and bordering the Site such as areas with developing ephemeral short perennial vegetation, waterbodies, semi-improved / marshy grassland and woodland and scrub vegetation are likely to support an invertebrate assemblage typical of the habitats and location.
- 8.3.42 The Application Site is not considered likely to be important for invertebrate species, although the presence of some notable species cannot be ruled out. The habitats do provide opportunities, particularly for species such as dragonfly and damselfly, butterfly species, bees and aquatic invertebrates.
- 8.3.43 The desk study identified records of priority species including dingy skipper *Erynnis tages*, small heath *Coenonympha pamphilus*, marsh fritillary *Euphydryas aurinia*, Small Pearl-bordered Fritillary *Boloria selene* and cinnabar moth *Tyria jacobaeae* and species considered locally important golden-ringed Dragonfly *Cordulegaster boltonii* (within the Application Site), keeled skimmer *Orthetrum coerulescens* (within the wider FCC landownership), common Carder Bee *Bombus pascuorum* and red-tailed Bumblebee *Bombus lapidaries*.

Other Notable Species

- 8.3.44 Western hedgehogs *Erinaceus europaeus* and brown hare *Lepus europaeus* listed as a priority species may be present within the Application Site. Records of both species were returned as part of the SEWBRc data search.
- 8.3.45 No other protected or notable species are considered likely to be relevant to the assessment.

Non-native Invasive Species

- 8.3.46 The desk study identified records of New Zealand Willowherb *Epilobium brunnescens*, Butterfly-bush *Buddleja davidii*, Japanese Knotweed *Fallopia japonica*, Snowberry *Symphoricarpos albus*, Himalayan balsam *Impatiens glandulifera* and grey squirrel *Sciurus carolinensis*.
- 8.3.47 Occasional stands of Himalayan balsam *Impatiens glandulifera* were recorded during 2021 walkover within the woodland habitat to the east of the Application Site.

Valuation of Ecological Features

8.3.48 The desk study and field surveys have identified ecological features (habitats and species) which have been assigned a value in the context of the site and the Proposed Development. These values have been used to inform the assessment and are shown in **Table 8.10**.

Table 8.10: Valuation of Ecological Features

Ecological Features (Receptor)	Valuation (scale of importance in relation to the site)	Potential Effect Pathways and Rationale for selection of Features for Assessment
Statutory designated sites	International / National (high)	Eight nationally designated sites lie within 5km. The closest SSSI is located approximately 1.6m form the Site. Included in the assessment.
Non-statutory designated sites	County (medium)	There are four SINCs within 2km of the Site. The closest SINC is located approximately 80m form the Site. Included in the assessment.
General habitats	Site / Local (low)	The Site supports Priority habitats. Included in the assessment.
Birds	Site / Local (low)	The site is likely to support a varied bird assemblage. Activities may result in temporary displacement of some breeding and wintering species. Potential for destruction of nests or disturbance to breeding birds depending on the timing of the habitat removal. Included in the assessment.
Bats	Site / Local (low)	The Site provides no bat roost opportunities. The habitats within and bordering the Site provide high value habitat for commuting and foraging. Included in the assessment.
Otter	Local (low)	Evidence of otters has been recorded along the adjacent river corridor and established waterbodies with the Site provide suitable habitat for this species. Included in the assessment
Water vole	Site / Local (low)	No evidence of water vole presence and much of the site is unsuitable for this species. Not considered likely to be present. Considered in relation to standard good practice mitigation measures only.
Badger	Site (low)	No evidence of badger activity was recorded within the Site. Species widespread and common. Considered in relation to standard good practice

Ecological (Receptor)	Features	Valuation (scale of importance in relation to the site)	Potential Effect Pathways and Rationale for selection of Features for Assessment
			mitigation measures only.
Hazel dormouse		Local / Local (low)	Hazel dormouse are potentially present in habitats surrounding the Site. Habitats (grassland, bare ground, ephemeral vegetation) to be affected by the proposals provide negligible suitability. Considered in relation to standard good practice mitigation measures only.
Amphibians (Including great crested newts)		Site (low)	The Site supports suitable breeding ponds and terrestrial habitats (grassland and scrub habitats). Great crested newts are considered likely absent but common and widespread amphibian species are known to be present. Considered in relation to standard/precautionary good practice mitigation measures only.
Reptiles		Site / local (low)	The Site is known to support common and widespread reptile species. Included in the assessment.
Invertebrates		Local (low)	The habitats on Site are likely to support a diverse invertebrate assemblage. Included in the assessment (on a precautionary basis as the presence notable species cannot be discounted).
Other notable species		Site (low)	The site may support hedgehog or other small mammals but these species would not be dependent on the Site at a population level. Considered in relation to standard good practice mitigation measures only.
Non-native Species	Invasive	Site (low)	The Site supports stands of non-native invasive species, Himalayan balsam. Not considered within the assessment but precautionary biosecurity and protection measures to be set in place.

Future Baseline

8.3.49 The future baseline considers the position at the Site, if the proposed revised restoration

proposals were not consented, given the consent that covered Tip 890 has now expired.

- 8.3.50 In this scenario, the landscape restoration would need to be carried out on the incomplete landform or left to natural regeneration. It would probably not be possible to fully implement the landscape scheme (as previously consented) and future management would be difficult. It would also be difficult to confidently predict supply of surface water supply to the attenuation and settlement waterbodies ponds and other connected wetland habitats which could adversely affect adjacent habitats through drying out.
- 8.3.51 If the works to continue operations and complete the restoration phase were not undertaken, the opportunities for Biodiversity would not be realised to the full and it is possible that existing habitats would decline as a result.

8.4 PROPOSED DEVELOPMENT

- 8.4.1 FCC are seeking to revise the restoration profile of Tip 890 to facilitate the safe early closure of tipping operations at the Application Site. The proposals are as follows:

- To create a revised landform (covering a reduced area than previously consented) to complete the landfill and restoration, by constructing a sidewall extension to cell 4 and not developing the previously consented cell 5;
- Localised reprofiling cells 3 and 4 (the cap will be temporarily stripped back with non-hazardous waste deposited to achieve consented levels, to account for settlement that has occurred with shortfalls of up to 2m in places);
- A reduction in void space from that previously consented;
- An amended surface water management scheme to account for the revised restoration profile (the current scheme relies on a gravity drainage system, feeding attenuation and settlement waterbodies before discharge to the Upper Clydach River. The surface water management will not alter significantly for the current scheme);
- Amended phasing; and,
- Amended scheme of landscaping.

- 8.4.2 It is anticipated that with a forecasted residual waste deposition of c. 7000 - 8000 tonnes per month, importation would end in October 2023, with a further two years to the complete the Application Site restoration.

8.5 ASSESSMENT OF EFFECTS

- 8.5.1 This section considers the potential effects on habitats and species associated with continued operations of the Proposed Development and proposed landscape restoration.

- 8.5.2 Potential ecological effects associated with Proposed Development are considered to relate to:

- Direct land take (habitat loss) – the Site operation and preparation works will involve the loss of waterbodies and removal and replacement of some existing vegetation. The working areas do not extend beyond that approved under the previous permissions.
- Temporary disturbance – disturbance to habitats and / or species (including indirect effects such as noise and vibration) over the extended life of the development;
- Fragmentation or isolation – severance of habitat links within and around the Site;
- Pollution – dust, pollution from surface water run-off resulting from material and soil movements, plant and vehicle movements and site workers' activities

- 8.5.3 The potential effects on ecological receptors are summarised in **Table 8.11** and are considered in relation to site operation and preparation works for site restoration. Effects are considered collectively across activity phases of the Proposed Development to minimise repetition, with specific comments provided where additional or different effects are considered possible during specific activity.

Table 8.11: Summary of Working Phases

Activity Phase	Assessment
Operation and preparation for restoration will require loss of waterbodies and removal of habitats within working areas. The preparation and reproofing will involve the removal of some existing vegetation within the Application Site.	Considered in relation to direct habitat loss and associated species effects. However, this does not represent any additional habitat loss (extent) beyond that approved under the current permission.
Final restoration and habitat creation. A Restoration Plan showing the proposed planting and habitat creation is provided at drawing no. WR7816/12/08 and will include new grassland areas, native woodland planting scrubland restoration and hedgerow planting.	No additional habitat removal will be required for habitat creation as part of restoration. Considered in relation to species disturbance.

Incorporated Mitigation

- 8.5.4 Mitigation measures have been incorporated into the Proposed Development to reduce environmental effects of the project.
- 8.5.5 Standard good practice construction methods will form an embedded part of the works and will include good practice construction measures, pollution prevention controls and monitoring to be implemented over the course of the operations, in line with current industry and mandatory statutory guidance.
- 8.5.6 Soil handling and management measures will be implemented for all working areas to prevent sediment spread and water/sediment runoff into neighbouring habitats, waterbodies or watercourses, and methods for soil excavation and handling. Soil management will be guided by the general principles set out in Defra's Code of Practice on Sustainable Soils⁸ and the MAFF Good Practice Guide for Handling Soils by Machine⁹ as appropriate.
- 8.5.7 Biosecurity measures to prevent the introduction or spread of invasive species will also be implemented through the remaining operational and restoration works.

Statutory Designated Sites for Nature Conservation

- 8.5.8 The Application Site does not form part of statutory designated sites for nature conservation; eight SSSI's (Sites of Special Scientific Interest) were identified within 5km of the Site, the nearest, Hafod Wennol Grasslands SSSI is located approximately 1.6km west of the Site. All statutory designated sites are notified for their habitats and associated species.
- 8.5.9 No works will occur outside the redline boundary and all statutory designated sites are sufficiently distant to confidently predict no likely direct or indirect effects.
- 8.5.10 With negligible magnitude impacts on statutory designated sites from direct land take, habitat loss or disturbance during the operation and restoration phases, effects are assessed to be negligible and Not Significant.

⁸ Defra Code of Practice on Sustainable Soils on Construction Sites (2009).

⁹ MAFF Good Practice Guide for Handling Soils by Machine (2000).

Non-statutory Designated Sites

- 8.5.11 The Application Site does not form part of any non-statutory designated sites for nature conservation; four SINC's (Sites of Importance for Nature Conservation) were identified within 2km of the Application Site, the nearest, Abernant Colliery SINC is located approximately 80m south east of the Site.
- 8.5.12 Potential indirect effects on non-statutory designated sites are considered to be limited to airborne emissions (dust) which is localised impact and readily managed through standard good practice dust control and suppression measures.
- 8.5.13 No direct or indirect impacts are anticipated on non-statutory designated sites due to separation distance. Embedded mitigation including pollution prevention and runoff control and dust/noise control measures will further reduce potential for impacts. Effects on non-statutory designated sites assessed to be negligible and Not Significant.

Habitats

- 8.5.14 The majority of the works under the proposed extension of time will be confined to areas that have been operational and comprise bare ground or ground that is starting to develop a sparse occurrence of ephemeral vegetation which are of low ecological value. An area in the south west corner of the Application Site contains two small waterbodies (Waterbodies 25a and 25b) will also be affected by the re-profiling with the waterbodies subsequently lost and replaced with woodland and scrub planting under the restoration proposals. Areas of bare ground and marshy grassland within the Application Site will be retained or seeded as species rich grassland. The wetland habitats within the Site including Waterbodies 2 and 3 and the wet woodland / scrub habitats to the eastern boundary will be retained and protected during works as will all habitats outside the Site boundary. The extent of habitat loss is no greater than permitted under the previous consent. The proposed restoration plan is presented on drawing no. WR7816/12/08.
- 8.5.15 On completion of the landfill, restoration planting and habitat creation will (once established) provide new habitat, predominantly grassland, woodland and scrub habitats.
- 8.5.16 Embedded mitigation including pollution prevention and runoff control and dust/noise control measures will protect adjacent habitats including the retained wetland habitat to the eastern boundary and adjacent Upper Clydach River.
- 8.5.17 The surface water management plan confirms that the scheme will deliver water to maintain the existing wetland habitats within the Application Site. Once the restoration is complete, there will be limited contamination risks in the runoff and passage through the waterbodies and wetland habitats and to the adjacent watercourse. This delivers long-term wetland habitat as part of the restoration.
- 8.5.18 The loss of two small recently formed waterbodies and small extents of marshy grassland and bare ground with short ephemeral vegetation is considered to be a low magnitude impact, on a receptor of Site / Local value. New species rich grassland and areas of woodland and scrub will be created as part of the Site restoration, in most cases replacing existing bare ground or areas sparsely vegetated with ephemeral species. Habitats will be established and managed so that they are maintained in a favourable condition and of value to biodiversity, on a permanent basis.
- 8.5.19 Over the long term, the effects of habitat changes are assessed as minor beneficial and **Not Significant**.

Species

Birds

- 8.5.20 The Application Site is likely to be used by a range of breeding and wintering species; however,

the Proposed Development in the most part will involve working areas that have been operational under the previous consent and as a result comprises largely of bare ground or recently vegetated which has been regularly subject to disturbance and is of limited value as breeding or wintering habitat for birds. Habitats of higher value including wetland habitats within the Application Site including Waterbodies 2 and 3 and the wet woodland / scrub habitats to the eastern boundary will be retained and protected during works as will all habitats outside the Application Site boundary.

- 8.5.21 Birds using habitats within or immediately adjacent to the Application Site may temporarily be displaced as a result of the continued operation of the landfill and restoration. Similar and better -quality habitats are present and available both within retained areas of the Application Site and the wider FCC landownership and beyond, and hence local bird populations are not considered to be solely reliant on the limited area of land that will be affected as part of the Proposed Development, which is considered to form part of a wider network of habitats.
- 8.5.22 There will be an extended period of time where birds may be subject to indirect effects as a result of disturbance from operational activities. However, as a long-term operational landfill, species are likely to have become habituated to the operational activities. As a result, indirect impacts from disturbance are considered to be low magnitude over the medium term.
- 8.5.23 New grassland habitat and woodland and scrub and new hedgerows will be created as part of the Site restoration; habitat creation in the longer term will provide improved breeding and foraging opportunities within the Application Site.
- 8.5.24 Effects of continued operation for two years (with additional restoration works) on breeding and wintering birds are assessed as minor adverse or negligible and will be temporary. Following completion and restoration new habitats are likely to be minor beneficial and **Not Significant** over the long term as they establish to provide replacement breeding and overwintering opportunities. Overall, the Proposed Development is considered to be Not Significant as a result.

Bats

- 8.5.25 There will be no adverse effects on bat roosts due to the absence of suitable features within the Site. The majority of the proposed working area comprises bare ground or open ground with sparse vegetation which offers limited opportunities for bats as foraging habitats. Foraging and commuting opportunities and connectivity in the landscape will be maintained, by the retention of habitats with high bat suitability, notably the waterbodies and wet woodland / scrub to the east of the Application Site and mature woodland adjacent to the western boundary. The Site will not be lit during the landfill operations or restoration phases and will maintain 'dark' corridors for bats.
- 8.5.26 Any reduction in foraging opportunities during the proposed landfill operation is not considered likely to affect the favourable conservation status of local bat populations, with extensive suitable foraging opportunities available locally. Over the longer term, once newly created grassland, woodland and scrub habitats and new hedgerows have established, these will provide suitable foraging and commuting habitats across the Site and improving connectivity, with such habitats replacing areas which currently comprise bare ground and more open areas with negligible foraging value. The restored Application Site will not be lit, maintaining an extensive area of 'dark' land suitable for a range of bat species.
- 8.5.27 Effects of continued operation for two years on bats is assessed as negligible and will be temporary. Following completion and restoration, new habitats are likely to be minor beneficial and **Not Significant** over the long term as they establish to provide valuable foraging opportunities and improved habitat connectivity. Overall, the Proposed Development is considered to be Not Significant as a result.

Otters

- 8.5.28 Otters have been recorded present in the local area with signs reported along the Upper Clydach River valley; an otter spraint has also previously been identified on the banks of Waterbody 1, which is located just outside of the southern boundary of the Site. The larger waterbodies (Waterbodies 2 and 3) provide suitable foraging habitat for otter but there are limited opportunities for holt construction within the Application Site. The Application Site is considered likely to form part of a wider territory but is unlikely to be depended upon by the local population, with opportunities for shelter and foraging available in the wider area. The adjacent woodland habitat may support holt holts.
- 8.5.29 The larger waterbodies within the Application Site will be retained and therefore there will be no loss of suitable foraging habitats. Even with the continuation of works within the Application Site, this is unlikely to result in additional disturbance, with field signs of otter activity indicating that otters are tolerant of the existing background levels of activities associated with the landfill operations.
- 8.5.30 Embedded mitigation will include measures to control surface water runoff and pollution prevention protects receiving watercourses and downstream habitats from indirect effects that may impact upon otter and other wildlife.
- 8.5.31 The proposal to complete the landfill is not considered likely to affect individual otters or the favourable conservation status of local otter populations, with the retention of the most favourable habitat features within the Application Site and suitable foraging opportunities being widely available locally. Over the longer term, once newly created habitats have established, the Application Site may provide further opportunities for otter in offering places of shelter and improving connectivity across the Site.
- 8.5.32 As a result, impacts on otter are assessed to be negligible or minor adverse over the medium term on receptors of local value, and negligible over the long term as new habitats establish. This is considered to be Not Significant as a result.

Reptiles

- 8.5.33 The wider FCC landownership is known to support common lizard. Habitats present within the Application Site have variable suitability to support common and widespread reptile species; the grassland and other vegetated area provide foraging opportunities and natural refugia offering places of shelter and protection. The more extensive areas of open bare ground provide less favourable conditions and would leave reptiles more susceptible to predation, it is considered unlikely that reptiles would be commonly encountered in these more exposed locations away from natural cover.
- 8.5.34 The majority of the working area will involve areas of bare and more sparsely vegetated ground, with retained habitats, particularly to the east of the Application Site maintaining habitat connectivity and provide refuge habitat, in addition to the extensive suitable habitat that is found across the wider FCC landownership and surround landscape. The continued operations to complete the landfill is not considered likely to affect local reptile populations.
- 8.5.35 Upon restoration, which will incorporate new species rich grassland, woodland and scrub habitats and new hedgerows, the Application Site will offer enhanced opportunities for foraging as well as places of shelter and refuge and improved connectivity, with such habitats replacing areas which are sub-optimal for reptiles currently comprise bare ground.
- 8.5.36 Effects on reptile species are assessed to be minor adverse over the medium term on receptors of site value, and minor beneficial over the long term as new habitats establish. This is considered to be Not Significant as a result.

Invertebrates

- 8.5.37 Habitats on Site comprising waterbodies, woodland, scrub and grassland are likely to support an invertebrate assemblage typical of the habitats and location. The large expanses of bare ground provide limited interest for invertebrate species. The majority of the works to complete the landfill will involve areas of bare ground and areas with sparse vegetation. On a precautionary basis, the invertebrate assemblages have been assigned County value on the basis that the Site may support some notable species.
- 8.5.38 The loss of small areas of terrestrial habitat largely consisting of bare ground and sparsely vegetated areas and two small recently formed waterbodies to complete the landfill and create the restoration landform is not considered likely to affect the status or distribution of local invertebrate populations. Habitats considered most favourable for invertebrates including the larger more established waterbodies (Waterbody 2 and 3) and wet woodland along the eastern boundary will be retained. Similar value habitats are present both within retained areas of the Application Site and the wider FCC landownership and beyond, and hence local invertebrate populations are not solely reliant on the habitats which will be lost or modified, which is considered to form a small part of a wider network of habitats.
- 8.5.39 New grassland, woodland and scrub habitats and new hedgerows will be created as part of the Site restoration benefiting a diverse range of invertebrate species. The majority of these new habitats will replace areas which are currently bare or sparsely vegetated ground of limited value.
- 8.5.40 Invertebrate species utilising the habitats on the Application Site and affected by the Proposed Development will therefore experience a temporary medium-term reduction in habitat availability.
- 8.5.41 Effects of habitat removal and operational activities on invertebrate assemblages within the Application Site are assessed as negligible for the medium term. Following completion and restoration, new habitats are likely to be minor beneficial and **Not Significant** over the long term as they establish to provide replacement for existing low value habitats. Overall, the Proposed Development is considered to be Not Significant as a result.

8.6 PROPOSED MITIGATION & ENHANCEMENT

- 8.6.1 Mitigation and enhancement are integrated as part of the Proposed Development through the Site restoration. The Site restoration proposals include the creation of species rich grassland, woodland and scrub habitat and hedgerows as illustrated on drawing no. WR7816/12/08.
- 8.6.2 The habitat creation provides mitigation not only in terms of habitats but also for protected and notable species including birds, bats, otters, hazel dormouse and other small mammal species, amphibians, reptiles and invertebrates for which these habitats provide breeding, foraging commuting opportunities as well as places of shelter and refuge.
- 8.6.3 Integrated mitigation is also proposed through the implementation of standard good practice construction methods to include pollution prevention controls and monitoring over the course of the development in line with current industry and mandatory statutory guidance.
- 8.6.4 Hydrological processes have been considered and the landform designed to ensure that proposed and current waterbodies and wetland habitats are supplied with sufficient water to remain wet. This delivers long term benefit in maintaining wetland features and associated habitats and species.
- 8.6.5 With the inclusion of the above integrated mitigation as part of the design and implemented throughout the proposed continuation of works, no significant ecological effects requiring specific mitigation have been identified as part of this assessment; however, good practice measures will be set in place are summarised below.

- 8.6.6 A project ecologist will be appointed, to co-ordinate and advise on measures to protect wildlife. The ecologist will be responsible for briefing site teams and undertaking and/or co-ordinating pre-commencement surveys or checks as necessary for protected species for example for nesting birds, water voles, or as part of Reasonable Avoidance Measures (RAMs).

Species

Birds

- 8.6.7 All wild birds, their nests, eggs and dependent young are, with few exceptions, protected under the Wildlife and Countryside Act 1981 (as amended). Additional protection is also afforded to those species listed on Schedule 1 of the Act, with regards to disturbance at or around their nest sites.

- 8.6.8 In order to avoid impacts on nesting birds and to ensure compliance with the provisions of the Wildlife and Countryside Act 1981 (as amended), any vegetation removal will take place outside of the bird breeding season (March-August inclusive) as far as practicable. If vegetation works are necessary during the breeding season, suitable nesting habitat to be affected by works will be checked by a suitably experienced ecologist prior to works commencing. Works would be permitted to proceed only when the ecologist is satisfied that no offence will occur under the legislation.

Badger

- 8.6.9 No evidence of badger activity was recorded within or adjacent the Application Site. The woodland and scrub along the eastern margins of the Application Site were considered too wet to be suitable for badger sett creation but sett construction in drier areas of the Application Site or at different times of year cannot be totally discounted in the future.

- 8.6.10 As a precautionary measure reflecting the legal protection afforded to this species under the Protection of Badgers Act, 1992, checks by an ecologist will be undertaken ahead of vegetation removal or works within new areas not previously operated within. Should evidence of badger presence be identified, suitable measures to protect badgers and their setts will be set in place, including applying for and working under a disturbance licence issued by Natural Resources Wales (NRW), if required.

Water Vole

- 8.6.11 Prior to any works that may disturb existing waterbodies or marginal habitats (up to 10m from the waterbody), a pre-commence water vole survey will be undertaken to check for any new evidence of water vole presence.

- 8.6.12 Should evidence of water vole presence be identified, suitable measures to protect water vole and their burrows will be set in place.

Hazel Dormouse

- 8.6.13 Woodland and scrub habitat around the with the Application Site and to the Application Site boundaries which provide suitable habitat for hazel dormouse will be retained and protected from damage during the extended operational phase and during restoration. Where required, tree and woodland will be protected in accordance with in-line with *BS 5837:2012 Trees in relation to design, demolition and construction*.

Amphibians & Reptiles

- 8.6.14 To avoid the risk of inadvertent disturbance or harm to individual amphibians or reptiles present during the removal of vegetation and waterbodies, a Reasonable Avoidance Measures (RAMs) Method Statement will be adopted such as phased vegetation management and timing of works (e.g. to avoid when amphibian are most likely to be present in waterbodies).

Other Notable Species

- 8.6.15 Other species, such as hedgehog or brown hare, may experience periods of reduced habitat availability or low levels of disturbance, however the areas of suitable habitat for these species is limited in extent in landscape context and are not considered to be depended upon by local populations of these species.
- 8.6.16 While not considered to be subject to any significant adverse effects, other wildlife, including hedgehogs, which have the potential to be present in the wider area will be safeguarded through the implementation of standard precautionary good practice wildlife protection measures designed to safeguard individual animals that may occasionally venture on to Site. Measures will include any excavations left overnight to be covered in order to prevent animals falling in and becoming trapped. If it is not possible to cover them, a suitable means of escape will be provided. This mitigation measures will beneficial all terrestrial species.

Invasive Species

- 8.6.17 A pre-construction survey will be undertaken ahead of any vegetation clearance works or works within new areas not previously operated within, to establish if any stands of invasive non-native species are present. Upon identification, invasive species present within or immediately adjacent to proposed working areas will be cordoned off with fencing erected around the stand(s) (with suitable signage), to highlight the presence of invasive species and avoid the accidental spread. The species will be managed and treated in accordance with best practice guidelines.

Biodiversity Enhancements

- 8.6.18 The restoration proposals include for long term, low intensity management practices to maintain created habitat in a condition favourable to biodiversity, including periodic vegetation control in certain areas.
- 8.6.19 Hibernacula features / habitat piles will be created to provide refuge and overwintering opportunities for a range of species including amphibian and reptiles, small mammals and invertebrates.

8.7 ECOSYSTEM RESILIENCE

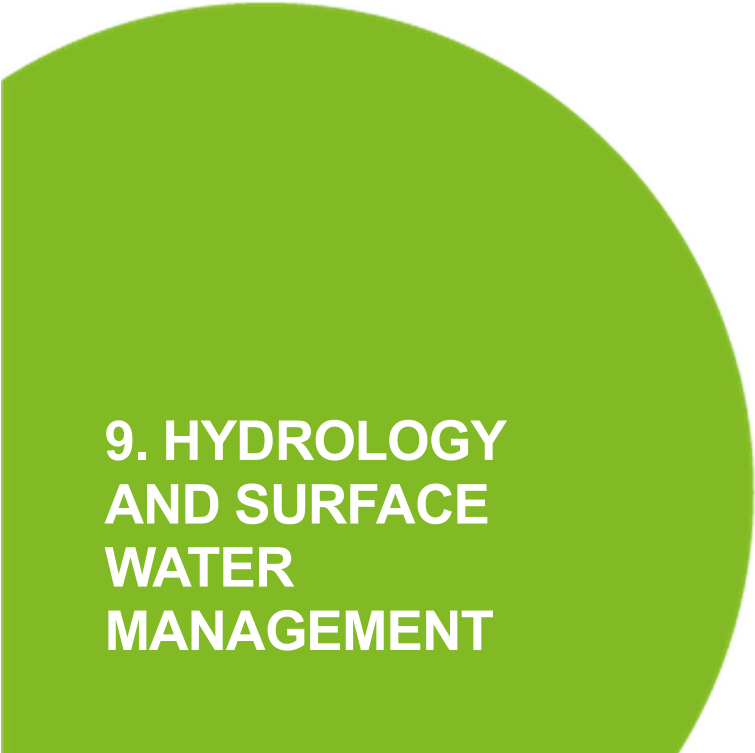
- 8.7.1 The Proposed Development has been assessed for Ecosystem Resilience; this has been undertaken using four ecosystem attributes (diversity, extent, condition and connectivity) as proxy for resilience as recommended by NRW.
- 8.7.2 The Application Site currently comprises areas of bare ground and short ephemeral and perennial vegetation with smaller extents of semi-improved neutral grassland and marshy grassland. The Application Site also supported number of waterbodies with wet woodland and scrub habitat down the eastern Site boundary.
- 8.7.3 Overall, the current habitats within the Application Site are considered to be no more than local value and are unlikely to support a high diversity of species. The more valuable habitat within the Application Site, notably Waterbodies 2 and 3, are not particularly well connected with established habitats within the wider FCC landownership surrounding landscape. It is acknowledged that established habitat around the Site boundaries particularly wet woodland and scrub to the east along the Upper Clydach River valley and the mature woodland to the west will likely provide movement corridors within the local landscape; however, connectivity within the Application Site itself is limited.
- 8.7.4 The restoration proposals which include the creation of species-rich grassland and woodland, scrub hedgerow planting in-line with the original consented scheme which has already been implemented over restored area outside the Application Site to the north of Tip 890. This restoration will improve the extent of grassland habitats across the wider FCC landowner with

woodland and scrub planting enhancing the habitat diversity and associated species diversity. The woodland, scrub and hedgerow planting will improve connectivity between established and retained habitats within the Application Site boundary and the surround wider landscape.

- 8.7.5 The restoration of the Application Site will improve all four ecosystem attributes, enhancing biodiversity (allowing for great for adaptability, recovery and resistance to change) and overall ecosystem resilience as part of the wider landscape.

8.8 RESIDUAL IMPACTS AND CONCLUSIONS

- 8.8.1 Minor adverse effects have been identified in relation to habitats and species including birds and reptiles using habitats on Site for foraging, breeding and shelter prior to final restoration and habitat creation.
- 8.8.2 Mitigation is integrated as part of the Proposed Development through the Application Site restoration and includes the creation of species rich grassland, with areas of woodland and scrub planting. New hedgerows are also proposed as part of the Site restoration. The objective of the Site restoration is to create high quality and diverse habitats, replacing habitats lost during the operation period, providing permanent habitat for species including birds, terrestrial mammals, amphibian and reptile species and invertebrates for which these habitats provide breeding, foraging commuting opportunities as well as places of shelter and refuge.
- 8.8.3 Through habitat creation, residual effects in the long term are considered to minor beneficial in relation to habitats and species they support. Good practice measures will be implemented to avoid impact on protected species and ensure legislative compliance.
- 8.8.4 Standard protection measures in place, incorporating pollution control and drainage management will safeguard and protect retained habitats within the Application Site and adjacent habitats which include habitats associated with the Upper Clydach River and adjacent woodlands.



9. HYDROLOGY AND SURFACE WATER MANAGEMENT

9.1 INTRODUCTION

- 9.1.1 This chapter has been prepared by KRS Environmental Ltd. This chapter sets out the assessment of the environmental impacts of the proposed development relating to hydrology, drainage and flood risk. It describes the baseline conditions, identifies key water resources and sensitivities, and assesses the direct and indirect impacts of the development on the hydrological environment. This chapter also assesses the potential for flood risk in accordance with Welsh Government guidance and the requirements of Natural Resources Wales (NRW). The need for any water resource mitigation measures is addressed and any post-mitigation residual impacts are identified.
- 9.1.2 A Flood Consequence Assessment (FCA) has been undertaken in accordance with CIRIA 624, Planning Policy Wales (PPW) (Edition 11) and the accompanying Technical Advice Note 15: Development and Flood Risk (TAN15) associated Development Advice Maps (DAMs) and Flood Zones.
- 9.1.3 TAN15 (published in 2004) is being replaced by a new TAN15. The current TAN 15 DAMs are being replaced by a new Flood Map for Planning. The existing documents will both be cancelled. These changes will come into effect on 1st December 2021. This FCA uses both the DAMs and Flood Map for Planning.
- 9.1.4 The FCA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed, taking climate change into account. The FCA should identify opportunities to reduce the probability and consequences of flooding. A copy of the FCA is included in Appendix 9.1 to this ES.
- 9.1.5 An updated Surface Water Management Plan (SWMP) will be submitted as part of the planning application. A copy of the SWMP is included in Appendix 9.2 to this ES.

Statement of Competence

- 9.1.6 This chapter was written by Keelan Serjeant BSc (Hons), MSc, MCIWEM who has over 17 years of experience in hydrology, flood risk and the planning process. He is a member of the British Hydrological Society and a Member of the Chartered Institute of Water and Environmental Management (CIWEM). He has written more than 1,000 Flood Risk Assessments and Environmental Statements and has taken training courses in the Flood Estimation Handbook (FEH), Urban Hydrology, SuDS, FRAs, water quality and planning. He has successfully delivered both site and strategic assessments for a range of private and public sector clients nationwide including developers, planning consultants, architects, private individuals, local planning authorities and the Environment Agency.

9.2 CONTEXT

Legislation

- 9.2.1 There is a wide range of legislation associated with drainage and hydrological impact that apply in the UK. The legislation includes:
- Water Industry Act (1991)
- 9.2.2 The Water Industry Act relates to the supply of water and the provision of sewerage services and applies to all Sewerage Undertakers.
- Water Resource Act (1991 as amended)
- 9.2.3 The Water Resources Act relates to the National Rivers Authority, whose activities are now assumed by the Environment Agency (now NRW in Wales) and sets out the responsibilities of NRW in relation to water pollution, resource management, flood defence, fisheries, and in some areas, navigation. The Act regulates activities that may affect the water environment. Discharge to controlled waters is only permitted with the consent of NRW. An aim of the Act is

to ensure that the polluter pays the cost of the consequences of their discharges.

Land Drainage Act (1991)

- 9.2.4 The Land Drainage Act outlines the constitution of Internal Drainage Boards (IDB) and the powers of the National Rivers Authority (now assumed by NRW). It also includes a definition of watercourses; all rivers and streams and all ditches, drains, culverts, dykes, sewers (other than public sewers) and passages through which water flows.

The EU Water Framework Directive (WFD) (2000)

- 9.2.5 WFD has been the cornerstone legislation in the EU and UK planning policy. The aim of the Directive is to generate a more integrated approach to water management ensuring that where possible links with ecology are increased. It also strives to ensure that water quality is improved and that any proposed developments will not have a detrimental impact upon water quality. The WFD was transposed into English & Welsh law via The Water Environment (Water Framework Directive) (England & Wales) Regulations 2003. The purpose of these regulations is to implement a strategic planning process to be established for managing, protecting and improving the quality of water resources within defined river basin catchment areas.

Water Act (2003)

- 9.2.6 The Water Act is an act whose provisions are mainly to amend other legislation, such as the Reservoirs Act 1975, Water Industry Act 1991 and the Water Resources Act 1991.

Flood Risk Regulations (2009)

- 9.2.7 The Flood Risk Regulations transpose the EC Floods Directive into domestic law and implement its provisions.

Water Framework Directive (2000)

- 9.2.8 The European WFD was transposed into UK law in December 2003, as the Water Environment Regulations 2003. The framework commits the UK Government (and all other European Union members) to improving the quality of all water bodies and coastal waters such that they attain at least 'Good' status for chemical and ecological criteria.
- 9.2.9 Any modification to a waterbody and its floodplain are now required to be WFD compliant. Assessments should be undertaken to determine the impacts on interventions within a waterbody on the designated Ecological Status of that waterbody. All water bodies have to achieve a Good Ecological Status or Good Ecological Potential (for heavily modified water bodies) by 2027. Some water bodies have targets to reach a Good Status by either 2015 or 2021.
- 9.2.10 The act puts a duty on local authorities to take into consideration the aims and objectives of the act and any relevant River Basin Management Plan during the completion of their duties and to ensure no adverse effect upon the environment.

European Flood Directive (2007)

- 9.2.11 The aim of the European Floods Directive is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The directive sets out requirements for the UK Government (and all other European Union members) to assess and map flood risk from all major rivers. Preliminary Flood Risk Assessments (PFRAs) have been produced by all Lead Local Flood Authorities, with the flood mapping stage completed by 2013. By 2015, Flood Management Plans will need to be produced, focussing on flood prevention, protection and preparedness. The EU Floods Directive has been transposed into UK law in the Flood Risk Regulations (2009).

Planning Policy

Planning Policy Wales (Edition 11, 2021)

- 9.2.12 PPW11 (February 2021) objective to support sustainable development is for the 'avoidance of development in areas of flooding from the sea or from rivers'. Local Planning authorities are advised to take a precautionary approach on a strategic scale which requires consideration of the catchment as a whole. Development proposals need to decrease not increase flood risk arising from fluvial or coastal flooding or from additional run-off created by new developments.
- 9.2.13 PPW considers flood risk to developments using a sequential characterisation of risk. This is presented in the TAN15 Development Advice Maps (DAMs) which identify flood zones A, B, C1 and C2. The initial study requirement is to identify the flood zones and vulnerability classification relevant to the proposed development, based on an assessment of current and future conditions.

Technical Advice Note 15 Development and Flood Risk (TAN15)

- 9.2.14 TAN15 (published in 2004) is being replaced by a new TAN15. The current TAN 15 DAMs are being replaced by a new Flood Map for Planning. The existing documents will both be cancelled. These changes will come into effect on 1st December 2021.
- 9.2.15 TAN15 provides advice on matters including the use of DAMs and Flood Map for Planning to determine flood risk issues, how to assess the flooding consequences of proposed development and action that can be taken through development plans and development control (management) procedures to mitigate flood risk when planning for new development.
- 9.2.16 TAN15 requires a detailed Flood Consequence Assessment (FCA) to be produced for all developments located within DAM zones C1 and C2. Flood Zone B only requires an FCA if site levels are below the extreme (0.1%) flood level (as defined in Technical Guidance TAN15, Figure 1). The proposed development is located within DAM Zone A and Flood Zone 1 however a small area of the Site is located within DAM Zone B a detailed FCA is therefore required.
- 9.2.17 The vulnerability classification of different development types is identified in Figure 2 of TAN15. The existing and Proposed Development is classified as 'highly vulnerable'. The Proposed Development will not change the vulnerability of the site to flooding. For developments in Zones A, B and Flood Zone 1, TAN 15 guidance states that the *'justification test is not applicable and there is no need to consider flood risk further'*.

Neath Port Talbot Local Development Plan

- 9.2.18 The Development Plan comprises the Local Development Plan adopted 2016. Under the adopted Neath Port Talbot Local Development Plan Proposals Map, the site is allocated as a Waste Management Site.
- 9.2.19 Policy SP19 Waste Management in the Local Development Plan states that:
- "Provision will be made for the delivery of an integrated network of waste management facilities through the following measures: ...
3. Continuation of the disposal of residual non-hazardous waste and inert waste at Pwllfawatkin Landfill Site..."
- 9.2.20 Policy EN8 Pollution and Land Stability is also a key policy for the proposal:
- "Proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and / or local amenity or would expose people to unacceptable risk due to the following will not be permitted:*

Air pollution;

Noise pollution;

Light pollution;

Contamination;

Land instability;

Water (including groundwater) pollution.

Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and / or local amenity to an acceptable level."

9.3 ASSESSMENT APPROACH

9.3.1 In order to establish the environmental impact of the proposed development on the hydrological regimes of the Application Site and its immediate environs, it was necessary to undertake the assessment in a number of stages. The initial stage comprised a desk study review of available information in order to determine (where possible) Site conditions in terms of water features (both surface and ground), water quality and flood risk.

9.3.2 The sources of information used in the desktop study are listed in in **Table 9.1**.

Table 9.1: Data Sources

Topic	Sources of Information
Topography	Ordnance Survey Maps Site topographic survey
Geology	BGS Bedrock and Superficial Geological Map BGS online data
Hydrogeology	NRW online data Relevant scientific literature
Hydrology	Metrological Office Historic Rainfall Data Flood Estimation Handbook (FEH) Webservice National Soil Resource Institute NRW Flood Risk Maps The SuDS Manual

9.3.3 The hydrological regime was considered in terms of existing conditions, and the effects of the proposed development. An assessment of the Site location in terms of flood risk was also undertaken. Existing conditions local to the site (within the Site boundary) were also considered in terms of hydrological management and the collection of surface water.

9.3.4 In terms of assessing the Site, the following phases of the proposal have been considered, namely the construction, operational and decommissioning phases.

9.3.5 There are a number of potential impacts that have to be considered that could have a direct or indirect effect on hydrology, flood risk, water quality and drainage. These impacts may be transitional, but also can be more permanent in nature. The primary concerns relate to potential impacts on controlled water receptors which are considered to be of high significance.

9.3.6 The purpose of the EIA is to identify the likely 'significance' of environmental effects (beneficial or adverse) arising from a development. In broad terms, environmental effects are described as:

- Adverse – detrimental or negative effects to an environmental resource or receptor;

- Beneficial – advantageous or positive effect to an environmental resource or receptor; or
- Negligible – a neutral effect to an environmental resource or receptor.

9.3.7 Effects have been assessed in terms of:

- The magnitude of the impact –the degree of alteration (both positive and negative) from the baseline state; and
- The sensitivity of the receptor(s) subjected to the impact –this may relate to the value of a resource and the reversibility of impacts.
- Any effect of Moderate or Major significance is considered to represent a likely significant effect for the purposes of the EIA Regulations. Significance of effects would be considered before and after mitigation.

9.3.8 The criteria for determining magnitude of impact is set out below in **Table 9.2**.

9.3.9 The sensitivity of a receptor is based on the importance of the receptor using the criteria below in **Table 9.3**.

Table 9.2: Magnitude of Effects and Criteria

Magnitude of Effect	Criteria
High	Total loss or major/substantial alteration to elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Medium	Loss or alteration to one or more elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but the underlying character/composition/attributes of the baseline condition will be similar to the pre-development.
Negligible	Very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable, approximating to a 'no change' situation.

Table 9.3: Degree of Sensitivity Criteria

Sensitivity	Criteria
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high and more than local (but not national or international) importance.
Low	The receptor/resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor/resource can accommodate change without material effect, is of limited importance.

9.3.10 Significance of effect is evaluated as a combination of the sensitivity of the receptor and the magnitude of change the development results in. Although the matrix in **Table 9.4** is designed

to demonstrate an objective rationale to reach a conclusion about the potential significance of impact a degree of professional judgement is a key element in the evaluation process.

- 9.3.11 Likely effects are therefore concluded to be of major, moderate, minor or negligible. The shaded boxes in **Table 9.4** represent effects considered to be significant in terms of the EIA Regulations.

Table 9.4: Significance of Effect

		Sensitivity of Receptor			
		High	Medium	Low	Negligible
Magnitude of Effect	High	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor/ Moderate	Negligible
	Low	Moderate	Minor/ Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

9.4 BASELINE CONDITIONS

- 9.4.1 The assessment of baseline conditions included a review of the pertinent information available.

Site Description and Topography

- 9.4.2 FCC's Pwllfawtakin Landfill Landholding is located approximately 5km to the north of Pontardawe at National Grid Reference (NGR) 269817, 208799. The proposal site measures c. 10 hectares (ha) and is located towards the northern portion of the landholding.

- 9.4.3 The valley floor is at an elevation of approximately 160 metres Above Ordnance Datum (mAOD).

Catchment Hydrology / Drainage

- 9.4.4 The Site is located in the valley of the upper Clydach River, which flows north to south close to the eastern boundary of the site. The current scheme of surface water management relies on a gravity drainage system and includes a ditch collection system excavated into the re-profiled tip, feeding under gravity into an attenuation and settlement ponds prior to discharging to the Upper Clydach River. Whilst an amended restoration profile is sought for Tip 890, the area of land to be drained is not increasing, furthermore, the principles of surface water management across the site will not alter significantly. An updated surface water management plan will be submitted as part of the planning application.

Rainfall

- 9.4.5 The Site is located within an area of HIGH rainfall. The 1961-1990 Standard Average Annual Rainfall (SAAR) for the Site as recorded in the Flood Estimation Handbook (FEH) web service is 1721mm per annum. The UK national average is 832mm per annum.

Source Protection Zone

- 9.4.6 The Site is not located within an NRW Source Protection Zone (SPZ).

Ground Conditions

- 9.4.7 The British Geological Survey (BGS)¹⁰ Map indicates the superficial deposits underlying the site consist of Till, Devensian – diamicton and Alluvium – clay, silt, sand and gravel. The bedrock

¹⁰https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.258706122.1781344018.1634629354-557297800.1574946602

deposits consists of the South Wales Upper Coal Measures Formation – mudstone, siltstone, sandstone, coal, ironstone and ferricrete.

- 9.4.8 Information from the National Soil Resource Institute¹¹ details the Site area as being situated on slowly permeable wet very acid upland soils with a peaty surface with impeded drainage.

Flooding

- 9.4.9 The DAM which accompanies TAN15 shows that the Site is located within Zone A - Considered to be at little or no risk of fluvial or tidal/coastal flooding and Zone B - Areas known to have been flooded in the past evidenced by sedimentary deposits. However, the Site has not flooded within the recent past.
- 9.4.10 The fluvial flood risk can be considered to be limited due to the difference in elevations between the site and the identified watercourses. The ground levels of the Site are considerably above the normal water level of the watercourses. Flood risk to the site from the watercourse can also be considered to be limited, since the watercourses are located on the boundaries of the site well away from the proposed buildings. Any overbank flow would follow the contours of the surrounding area and would flow directly away from the site rather than flowing towards the Site.
- 9.4.11 A review of the Flood Map for Planning indicates that the Site is located within Flood Zone 1 and is not at risk of fluvial or tidal flooding, with less than a 1 in 1000 (0.1%) (plus climate change) chance of flooding in a given year.
- 9.4.12 The Site has an annual fluvial and/tidal flood risk of less than 1 in 1000 (0.1%) (plus climate change) chance of flooding in a given year. Therefore, the risk of fluvial/tidal flooding is considered to be not significant.
- 9.4.13 The existing and Proposed Development is classified as 'highly vulnerable'. The Proposed Development will not change the vulnerability of the site to flooding. 'Highly vulnerable' uses are appropriate within Flood Zone 1. There are no constraints relating to flooding from rivers or the sea, other than to avoid increasing risk elsewhere. The justification test is not applicable. A secondary flooding source has been identified which may pose a low risk to the site. This is surface water flooding.
- 9.4.14 There will be no net loss in flood storage capacity or impact on movement of floodwater across the site. The overall direction of the movement of water will be maintained within the developed site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed.
- 9.4.15 In conclusion, the flood risk to the Site can be considered to be limited; the site is situated in DAM Zone A, B and Flood Zone 1, with a low annual probability of flooding and from all sources. The Site is unlikely to flood except in very extreme conditions.

Surface Water Quality

- 9.4.16 The Water Framework Directive (WFD) water quality information for the Upper Clydach is shown in **Table 9.5**.

Table 9.5: Surface Water Quality

Location	Name	Type		2016
354m S		River	Overall Rating	Good

¹¹ <https://www.landis.org.uk/soilscapes/>

Location	Name	Type		2016
	Upper Clydach - headwaters to confluence with Tawe		Chemical Rating	Good
			Ecological Rating	Good

Surface / Portable Water Abstractions

9.4.17 There are no licensed surface or potable water abstractions within 2km of the Site.

Groundwater

9.4.18 The superficial deposits are designated as a Secondary A Aquifer and a Secondary Undifferentiated Aquifer. The bedrock deposits are designated as a Secondary A Aquifer.

9.4.19 A Secondary A Aquifer is defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

9.4.20 A Secondary Undifferentiated Aquifer is assigned where it is not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Groundwater Quality

9.4.21 The WFD groundwater quality information is shown in **Table 9.6**.

Table 9.6: Groundwater Quality

Name	Location		2016
Swansea Carboniferous Coal Measures	On Site	Overall Rating	Poor
		Chemical Rating	Poor
		Ecological Rating	Good

Groundwater Abstractions

9.4.22 The licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day within 2km of the Site and includes active and historical records are shown in **Table 9.7**. The data may be for a single abstraction point, between two points (line data) or a larger area.

Table 9.7: Groundwater Abstractions

Location	Details
639m E	Status: Historical Licence No: 22/59/1/0028 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING IN FIELD TYN Y COEDCAE Data Type: Point Name: White Easting: 270630 Northing: 209050 Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 22/06/1992 Version End Date: -
689mE	Status: Historical Annual Volume (m³): -

Location	Details	
	Licence No: 22/59/1/0028 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING IN FIELD OS NO. 6600 S E OF TYN Y COEDCAE Data Type: Point Name: Godwin Easting: 270680 Northing: 209020	Max Daily Volume (m ³): - Original Application No: - Original Start Date: 31/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 23/05/2003 Version End Date: -
830m E	Status: Historical Licence No: 22/59/1/0031 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING IN ENC. 1268 AT NANT Y GASSEG Data Type: Point Name: Kempster Easting: 270820 Northing: 208900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 31/01/1966 Version End Date: -
1480m W	Status: Historical Licence No: 22/59/1/0026 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING IN ENC. 151 AT TRESCYRCH FARM Data Type: Point Name: Jones Easting: 268240 Northing: 208870	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 30/03/1966 Version End Date: -
1629m S	Status: Historical Licence No: 22/59/1/0023 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING IN FIELD NO. 2262 AT GARTH Data Type: Point Name: Morris Easting: 270510 Northing: 207410	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/02/1993 Version End Date: -

Licensed Discharges of Controlled Waters

9.4.23 Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991 within 500m are shown in **Table 9.8**.

Table 9.8: Licensed Discharge of Controlled Waters

Location	Address	Details	
109m E	RHYDYFRO STOCKING GROUND LAGOO (ABA, RHYDYFRO STOCKING GROUND LAGOO (, (ABANDONED), UNKNOWN, UNKNOWN, UNKNOWN	Effluent Type: UNSPECIFIED Permit Number: BE0023903 Permit Version: 1 Receiving Water: UNNAMED TRIB OF RIVER CLYDACH	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 29/09/1969 Effective Date: 29/09/1969 Revocation Date: 16/03/1994
110m E	RHYDYFRO STOCKING GROUND LAGOO (ABA, RHYDYFRO STOCKING GROUND LAGOO (, (ABANDONED), UNKNOWN, UNKNOWN, UNKNOWN	Effluent Type: UNSPECIFIED Permit Number: BE0023902 Permit Version: 1 Receiving Water: UNNAMED TRIB. UPPER CLYDACH	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 29/09/1969 Effective Date: 29/09/1969 Revocation Date: 16/03/1994
197m E	ABERNANT COLLIERY O'LETB EMERGENCY, ABERNANT COLLIERY O'LETB EMERGE, O'LETB EMERGENCY DISCHARGE, UNKNOWN, UNKNOWN, UNKNOWN	Effluent Type: UNSPECIFIED Permit Number: BC0011106 Permit Version: 1 Receiving Water: UNNAMED TRIBUTARY UPPER CLYDACH	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 20/05/1987 Effective Date: 20/05/1987 Revocation Date: 16/03/1994
277m SE	ABERNANT COLLIERY EMERGENCY DISCHAR, ABERNANT COLLIERY EMERGENCY DISC, EMERGENCY DISCHARGE, UNKNOWN, UNKNOWN, UNKNOWN	Effluent Type: UNSPECIFIED Permit Number: BC0011105 Permit Version: 1 Receiving Water: NANT-Y-GASSEG	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 23/10/1978 Effective Date: 23/10/1978 Revocation Date: 16/03/1994
334m S	SEDIMENT POND C PWLLFAWATCYN FARM, SEDIMENTATION POND C, PWLLFAWATCYN FARM, RHYD Y FRO PONTARDAWE	Effluent Type: WASTE SITE - UNSPECIFIED Permit Number: BP0264101 Permit Version: 1 Receiving Water: UPPER CLYDACH	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 30/11/1996 Effective Date: 30/11/1996 Revocation Date: -
334m S	SEDIMENT POND C PWLLFAWATCYN FARM, SEDIMENTATION POND C, PWLLFAWATCYN FARM, RHYD Y FRO PONTARDAWE	Effluent Type: WASTE SITE - UNSPECIFIED Permit Number: BP0258001 Permit Version: 1 Receiving Water: UPPER CLYDACH	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 30/11/1996 Effective Date: 30/11/1996 Revocation Date: -

Location	Address	Details	
363m S	ABERNANT COLLIERY SITE, ABERNANT COLLIERY SITE	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: BE0023905 Permit Version: 2 Receiving Water: NANT-Y-GASSEG	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 23/02/1994 Effective Date: 23/02/1994 Revocation Date: 18/05/1998
363m S	ABERNANT COLLIERY SITE, ABERNANT COLLIERY SITE	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: BE0023905 Permit Version: 1 Receiving Water: NANT-Y-GASSEG	Status: REVOKED - UNSPECIFIED Issue date: 27/11/1984 Effective Date: 27/11/1984 Revocation Date: 22/02/1994
384m S	SEDIMENT POND B PWLLFAWATCYN FARM, SEDIMENTATION POND B, PWLLFAWATCYN FARM, RHYD Y FRO PONTARDAWE	Effluent Type: WASTE SITE - UNSPECIFIED Permit Number: BP0263802 Permit Version: 1 Receiving Water: UPPER CLYDACH RIVER	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 21/09/1996 Effective Date: 21/09/1996 Revocation Date: 27/07/1998
384m S	SEDIMENT POND B PWLLFAWATCYN FARM, SEDIMENTATION POND B, PWLLFAWATCYN FARM, RHYD Y FRO PONTARDAWE	Effluent Type: WASTE SITE - UNSPECIFIED Permit Number: BP0262801 Permit Version: 1 Receiving Water: UPPER CLYDACH RIVER	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 16/09/1996 Effective Date: 16/09/1996 Revocation Date: 27/07/1998
392m SE	ABERNANT COLLIERY O'LETA (EMERGENCY, ABERNANT COLLIERY O'LETA (EMERGE, O'LETA (EMERGENCY DISCHARGE), UNKNOWN, UNKNOWN, UNKNOWN	Effluent Type: UNSPECIFIED Permit Number: BC0011107 Permit Version: 1 Receiving Water: UNNAMED TRIB. UPPER CLYDACH	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 20/05/1987 Effective Date: 20/05/1987 Revocation Date: 16/03/1994
406m SE	ABERNANT COLLIERY, ABERNANT COLLIERY, UNKNOWN, UNKNOWN, UNKNOWN, UNKNOWN	Effluent Type: UNSPECIFIED Permit Number: BP0059301 Permit Version: 1 Receiving Water: NANT-Y-GASEG TRIB UPPER CLYDACH	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 01/01/1901 Effective Date: 01/01/1901 Revocation Date: 16/11/1992

Location	Address	Details	
449m S	STOCKING GROUND LAGOON DIS. B (ABAN, STOCKING GROUND LAGOON DIS. B (A, DIS. B (ABANDONED) RHYDYFRO, RHYDYFRO, UNKNOWN, UNKNOWN	Effluent Type: UNSPECIFIED Permit Number: BE0023904 Permit Version: 1 Receiving Water: UNNAMED TRIB. OF NANT-Y-GASEG	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 29/09/1969 Effective Date: 29/09/1969 Revocation Date: 16/03/1994
474m S	SEDIMENT POND D PWLLFAWATCYN FARM, SEDIMENTATION POND D, PWLLFAWATCYN FARM, RHYD Y FRO PONTARDAWE	Effluent Type: WASTE SITE - UNSPECIFIED Permit Number: BP0264102 Permit Version: 1 Receiving Water: UPPER CLYDACH	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 30/11/1996 Effective Date: 30/11/1996 Revocation Date: -

Designated Sites

9.4.24 The designated sites located within 2km are shown in **Table 9.9**.

Table 9.9: Designated Sites

Location	Name	Designation
61m W	Unknown	Ancient Semi Natural Woodland
721m SE	Unknown	Restored Ancient Woodland Site
826m E	Unknown	Ancient Woodland Site of Unknown Category
943m SE	Unknown	Ancient Semi Natural Woodland
1034m S	Unknown	Restored Ancient Woodland Site
1058m NE	Unknown	Ancient Semi Natural Woodland
1312m N	Unknown	Ancient Semi Natural Woodland
1474m S	Unknown	Ancient Semi Natural Woodland
1583m N	Unknown	Ancient Semi Natural Woodland
1610m W	Hafod Wennol Grasslands	Site of Special Scientific Interest (SSSI)
1615m S	Unknown	Ancient Semi Natural Woodland
1706m N	Unknown	Ancient Semi Natural Woodland
1708m S	Unknown	Ancient Semi Natural Woodland
1743m SW	Unknown	Ancient Semi Natural Woodland
1811m S	Unknown	Ancient Semi Natural Woodland

9.5 PROPOSED DEVELOPMENT

9.5.1 FCC are seeking to revise the restoration profile of Tip 890 to facilitate closure of the tipping operation in a safe and environmentally responsible manner. In comparison to the previously consented scheme, this will result in:

- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational cell 4 and not developing the previously consented cell 5;
- Localised re-profiling of cells 3 and 4;
- A reduction in void space from that previously consented;
- An amended scheme of surface water management to account for the revised restoration profile;
- Amended phasing scheme; and
- Amended scheme of landscaping.

9.6 IDENTIFIED RECEPTORS

9.6.1 Based on the baseline conditions presented above, Table 9.10 presents the sensitive receptors which have been considered in the following assessment, along with their sensitivity to change.

Table 9.10: Identified Receptors

Receptor	Sensitivity	Description
Site workers (i.e. construction workers)	Low	Flooding may impact upon workers during the operation phase, but their sensitivity is lowered as a result of their competency in their role as well as operating in teams and/or prescribed systems.
Neighbouring site users	Low	Flooding may impact upon neighbouring site users.
Groundwater	Medium	Any water quality or quantity issues would only be felt over short distance and would be diluted rapidly.
Surface waters	Medium	Any water quality or quantity issues would only be felt over short distance of the watercourses compared to the overall length of the watercourses. Water quality issues would also be diluted rapidly within the watercourses.

9.7 ASSESSMENT OF EFFECTS

Hazard/Risk Source

9.7.1 The following potential sources of hazard/risk have been identified based on a review of the baseline environment, and construction and operational phases of the proposed development:

- Leaks and spills of fuels and oils associated with vehicles and equipment;
- Sediment loading of watercourses;
- Discharge of poor-quality water to watercourses; and
- Flooding of the Site.

9.7.2 The significance of any potential pollution or changes in groundwater levels and flow would be dependent on the nature of the incident, the mitigation measures, timing of the measures, and effectiveness of the measures and sensitivity of the potential receptors.

Conceptual Model and Preliminary Impact (Risk) Assessment

9.7.3 The Site conceptual model and assessment of the environmental risk during both the

construction and operation phases of the development is presented in **Table 9.11** and **Table 9.12**. The potential effects from the decommissioning phase are likely to be similar to the construction phase.

Table 9.11: Conceptual Model and Preliminary Impact (Risk) Assessment – Operation Phase

Hazard/Risk Source	Receptor	Pathway	Magnitude	Sensitivity	Significance of Effect
Leachate escape through breach of engineered containment systems of adjacent non-hazardous landfill cells	Site users, groundwater and surface waters	Surface/sub-surface flows and direct contact	Low	Low to Medium	Minor / Moderate Adverse - failure of engineered containment systems.
Leaks and spills of fuels and oils associated with vehicles and equipment	Site users, groundwater and surface waters	Direct contact, ingestion and inhalation	Low	Low to Medium	Minor / Moderate to Low Adverse - small quantities of fuels and oils to be held onsite.
	Groundwater and hydraulically connected surface waters	Contaminant transport through permeable geology and groundwater	Low	Low to Medium	Minor / Moderate to Low Adverse - cells to be lined to impede transfer of significant level of contaminants to groundwater.
Sediment loading of watercourses	Surface waters	Surface flows	Low	Medium	Minor / Moderate to Low Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during landfilling could result in flooding of site.

Hazard/Risk Source	Receptor	Pathway	Magnitude	Sensitivity	Significance of Effect
Discharge of poor-quality water to watercourses	Surface waters	Surface flows	Medium	Medium	Moderate Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during landfilling could result in flooding of site.
Flooding of development site generating physical hazards and contamination of flood waters	Construction workers and neighbouring sites users	Direct contact	Low	Low	Minor to Low Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during landfilling could result in flooding of site.
	Surface waters	Surface flows	Low	Medium	Minor / Moderate to Low Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during landfilling could result in flooding of site.

Hazard/Risk Source	Receptor	Pathway	Magnitude	Sensitivity	Significance of Effect
	Groundwater	Contaminant transport through permeable geology	Low	Medium	Minor / Moderate to Low Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during landfilling could result in flooding of site.

Table 9.12: Conceptual Model and Preliminary Impact (Risk) Assessment – Restoration Phase

Hazard/Risk Source	Receptor	Pathway	Magnitude	Sensitivity	Significance of Effect
Leachate escape through breach of engineered containment systems of adjacent non-hazardous landfill cells	Site users, groundwater and surface waters	Surface/sub-surface flows and direct contact	Low	Low to Medium	Minor / Moderate Adverse - failure of engineered containment systems.
Leaks and spills of fuels and oils associated with vehicles and equipment	Site Users, groundwater and surface waters	Direct contact, ingestion and inhalation	Negligible	Low to Medium	Negligible - no fuels and oils to be held onsite.
	Groundwater and hydraulically connected surface waters	Contaminant transport through permeable geology and groundwater	Negligible	Medium	Negligible - cells to be lined to impede transfer of significant level of contaminants to groundwater.

Hazard/Risk Source	Receptor	Pathway	Magnitude	Sensitivity	Significance of Effect
Sediment loading of watercourses	Surface waters	Surface flows	Low	Medium	Minor / Moderate to Low Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during restoration could result in flooding of site.
Discharge of poor-quality water to watercourses	Surface waters	Surface flows	Low	Medium	Minor / Moderate to Low Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during restoration could result in flooding of site.
Flooding of development site generating physical hazards and contamination of flood waters	Neighbouring sites users	Direct contact	Low	Low	Minor Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during restoration could result in flooding of site.

Hazard/Risk Source	Receptor	Pathway	Magnitude	Sensitivity	Significance of Effect
	Surface waters	Surface flows	Low	Medium	Minor / Moderate to Low Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during restoration could result in flooding of site.
	Groundwater	Contaminant transport through permeable geology	Low	Medium	Minor / Moderate Adverse - surface water management system is currently in place and working well however, inappropriate management of surface waters during restoration could result in flooding of site.

9.8 PROPOSED MITIGATION

Incorporate Mitigation

- 9.8.1 It is determined that the potential impacts associated with the operational and restoration phases of the development on potential receptors can be adequately controlled by the mitigation measures discussed below.
- 9.8.2 In order to ensure that the Site would be run in an acceptable manner the operator currently has an Environmental Management System (EMS), certified to ISO 14001, for the facility. The EMS forms an integral part of the facility Integrated Management System (IMS) that draws together all the policies and procedures for the facility that would include a site Environmental Management Plan (EMP).
- 9.8.3 The facility general manager is responsible for the day to day management and compliance of the facility with the EMS and the control of these issues is monitored and enforced by Natural Resources Wales through the Environmental Permit.

- 9.8.4 Standard pollution prevention procedures are to be implemented during the operational phase based on industry best practice, NRW guidance, CIRIA document C532 “Control of Water Pollution from Construction Sites” and CIRIA document C753 “The Site SUDS Manual” would mitigate the risks to surface water quality. Examples of some of the measures that would be adopted at the Site are included below, to mitigate potential impacts on the water environment:
- silt traps, straw bales placed within stream channel and temporary settlement lagoons;
 - protective coverings to stockpiles and locations away from watercourses;
 - retention of vegetated strips along watercourses;
 - tanked areas for plant and wheel washing;
 - bunded fuel storage and refuelling areas;
 - provision of spill kits;
 - location refuelling areas away from watercourses; and
 - provision of vegetation/grass cover on earth stockpiles.
- 9.8.5 In accordance with NRW guidance, all fuel tanks on site shall have a bunded containment of a minimum of 110% fuel tank capacity. There would be no drainage point from the bunded containment area; tamperproof taps and valves would be installed, and all empty fuel containers or drums would be stored within a containment area prior to their removal or disposal from the Site. Oil traps would be incorporated in pertinent drainage systems to prevent accidental spillage being discharged into surface runoff. Spill kits would be stored at refuelling areas and would include sand or other suitable containment and absorbent material.
- 9.8.6 Best practice measures would be undertaken when refuelling of plant and machinery. Where fuelling of large machinery is required, drip trays and absorbent mats and pellets would be used to contain or absorb accidental spillages. Plant maintenance would also be undertaken in a designated area and similar contamination prevention measures would be adopted.
- 9.8.7 Spillage and Emergency Procedures outlined in the Environmental Management Plan would be followed in the event of a pollution incident and would be developed in consultation with NRW. The plan would include the provision of appropriate emergency response equipment on-site and staff training in emergency procedures. The PPG, Number 21 – ‘Pollution incident response planning’ would be integrated into the Site emergency procedures.
- 9.8.8 During operation, all site runoff would be intercepted and treated to remove sediment prior to discharge off site.
- 9.8.9 The following guidelines will be observed during the operation of the Site:
- CIRIA. Control of water pollution from construction sites C532 (2001).
 - CIRIA. Environmental Good Practice on Site C650 (2005).
 - CIRIA. The SuDS Manual C753 (2015).
 - Pollution Prevention Guidelines PPG1: Understanding Your Environmental Responsibilities (July 2013).
 - Guidance for Pollution Prevention GPP2: Above ground oil storage tanks (January 2018).
 - Guidance for Pollution Prevention GPP5: Works and maintenance in or near water (January 2017).
 - Pollution Prevention Guidelines PPG6: Working at construction and demolition sites (March 2012).
 - Pollution Prevention Guidelines PPG7: The safe operation of refuelling facilities (July 2011).
 - Guidance for Pollution Prevention GPP8: Safe storage and disposal of used oils (July 2017).
 - Guidance for Pollution Prevention GPP13: Vehicle washing and cleaning (April 2017).
 - Guidance for Pollution Prevention GPP21: Incident Response Planning (July 2017).
 - Guidance for Pollution Prevention GPP22: Dealing with spills (October 2018).
 - Guidance for Pollution Prevention GPP23: Safe storage - drums and intermediate bulk containers (February 2019).

- Government Guidance 'Oil storage regulations for businesses' (2015).
 - Government Guidance 'Manage water on land: guidance for land managers' (2015).
- 9.8.10 Mitigation measures will be included within the EMP, a Site Drainage Plan and as part of the Incident Response Plan. Mitigation will include:
- 8m working standoff from the watercourses/ditches to be retained (excluding works drainage works and the construction of the attenuation ponds);
 - Bunds will be used to prevent run-off entering watercourses;
 - Compounds will have hard surfacing to prevent infiltration;
 - Areas of localised contamination identified during the ground investigation will be remediated/ removed as appropriate;
 - A procedure will be put in place to manage previously unidentified contaminated ground that is encountered during the works; and,
 - Any surplus soil arising from levelling or excavation works that has visual or olfactory evidence of contamination will be stored in sheeted stockpiles placed on hardstanding or sheeting pending its removal or treatment.
- 9.8.11 There is potential for the introduction of contaminated materials to the ground or water due to incorrect storage or spillages of construction materials/fuels. Design of operational pollution prevention measures will be included in the EMP. Impacts due to incorrect storage and spillage will be mitigated by the following:
- Design of a Drainage Plan for the site;
 - Compounds will comprise hardstanding;
 - Environmental training for all personnel;
 - Designated re-fuelling areas on hardstanding with interceptor drainage, bunds, plant nappies or similar;
 - Spill kits will be readily available;
 - Storage areas for materials will be identified; and,
 - Deliveries will be planned in advance.
- 9.8.12 Ongoing monitoring, maintenance and management of the surface water management system and outfall structures would ensure that its integrity is maintained. Regular inspection, testing of the arrangements as well removal of debris and silt would be required.

Surface Water Management Plan

- 9.8.13 An updated SWMP will be submitted as part of the planning application. A copy of the SWMP is included in Appendix 9.2 to this ES.
- 9.8.14 The current scheme of surface water management relies on a gravity drainage system and includes a ditch collection system excavated into the re-profiled tip, feeding under gravity into an attenuation and settlement ponds prior to discharging to the Upper Clydach River. Whilst an amended restoration profile is sought for Tip 890, the area of land to be drained is not increasing, furthermore, the principles of surface water management across the site will not alter significantly. An updated Surface Water Management Plan will be submitted as part of the planning application.
- 9.8.15 All modelling and calculations have been undertaken using the 1 in 100 Year (1% probability) storm frequencies, with an additional 40% climate change allowance, which is required by TAN15 to model the long-term scenario for the site, to ensure that the discharge rate and risk of flooding is not increased for the site as a result of greater rainfall intensity in the future.

9.9 RESIDUAL IMPACTS

- 9.9.1 This section summarises the significance of the anticipated residual environmental effects, which are those that remain after all proposed mitigation measures are implemented. The residual effects are summarised below in **Table 9.13** below.

Table 9.13: Summary of Residual Impacts

Potential Effect	Significance of Effects	Mitigation	Residual Effect
Operational Phase			
Leachate escape through breach of engineered containment systems of adjacent non-hazardous landfill cells	Minor to Moderate Adverse	CEMP, Surface Water Management Scheme	Minor Adverse
Leaks and spills of fuels and oils associated with vehicles and equipment	Minor to Moderate Adverse	CEMP, Surface Water Management Scheme	Minor Adverse
Sediment loading of watercourses	Minor to Moderate Adverse	CEMP, Surface Water Management Scheme	Minor Adverse
Discharge of poor-quality water to watercourses	Medium Adverse	CEMP, Surface Water Management Scheme	Minor Adverse
Flooding of development site generating physical hazards and contamination of flood waters	Minor Adverse	CEMP, Surface Water Management Scheme	Negligible
Restoration Phase			
Leachate escape through breach of engineered containment systems of adjacent non-hazardous landfill cells	Minor to Moderate Adverse	EMP, Surface Water Management Scheme	Minor Adverse
Leaks and spills of fuels and oils associated with vehicles and equipment	Negligible	EMP, Surface Water Management Scheme	Negligible
Sediment loading of watercourses	Minor to Moderate Adverse	EMP, Surface Water Management Scheme	Minor Adverse
Discharge of poor-quality water to watercourses	Minor to Moderate Adverse	EMP, Surface Water Management Scheme	Minor Adverse
Flooding of development site generating physical hazards and contamination of flood waters	Minor Adverse	EMP, Surface Water Management Scheme	Negligible

9.10 SUMMARY AND CONCLUSIONS

- 9.10.1 This environmental impact assessment has considered the potential effects of the proposed development on hydrology drainage and flood risk.
- 9.10.2 An FCA (Appendix 9.1) has been prepared to inform this chapter of the ES for the proposed development. The FCA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed, taking climate change into account. The FCA identifies opportunities to reduce the probability and consequences of flooding.
- 9.10.3 The updated SWMP (Appendix 9.2) ensures that a sustainable drainage solution can be achieved, which manages and reduces the flood risk posed by the surface water runoff from the site as well as providing water quality benefits.
- 9.10.4 The operation of the proposed development has the potential to impact upon flood risk and

surface water quality. However, the effects are likely to be localised, temporary and controlled by embedded mitigation measures and further mitigation measures, such that the residual effects would have a negligible effect and no significant residual effect.

- 9.10.5 Similarly, the potential effects arising during the restoration of the proposed development would be controlled by embedded mitigation measures and further mitigation measures, such that the residual effects would have minor or negligible effect and no significant residual effect.
- 9.10.6 The findings of this chapter have demonstrated that the development would not result in any significant residual adverse impacts on drainage or flood risk.



10. AIR QUALITY AND ODOUR

10.1 INTRODUCTION

- 10.1.1 This chapter has been prepared by Air Quality Assessments Ltd (AQA) and assesses the likely effect that the operation of the proposed development will have on air quality, dust, including fine particulate matter (PM₁₀), and odour.
- 10.1.2 The proposed development would result in a significant reduction in vehicle movements compared to that previously approved; therefore, there would be a positive effect on local air quality due to the reduction in vehicle emissions. Therefore, the impact on local air quality due to vehicle emissions has screened out of the assessment.
- 10.1.3 This chapter describes the existing air quality conditions in proximity to the site, with regard to PM₁₀, and assesses the likely impact that dust and odour from the operation of the proposed development will have on the health and amenity of receptors close to the application site.
- 10.1.4 The assessment has been prepared taking into account all relevant local and national guidance and regulations. The references used in this assessment are shown in the Air Quality, Dust and Odour Appendices.

10.2 ASSESSMENT APPROACH

Air Quality Legislation

EU Limit Values

- 10.2.1 The European Union's Directive on ambient air quality and cleaner air for Europe (European Parliament, Council of the European Union, 2008) set legally binding limit values for PM₁₀. The Air Quality Standards (Wales) Regulations 2010 (HMSO, 2010) implement the EU Directive limit values in Welsh legislation. Achievement of the limit values is a national obligation rather than a local one.
- 10.2.2 The limit values are the same as the objective values (see Table 1); however, the compliance dates differ, and the limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway). The PM₁₀ limit value applied from 2005.
- 10.2.3 The United Kingdom left the European Union on 31st January 2020; however, EU legislation currently remains enshrined in Welsh law through the Air Quality Standards (Wales) Regulations.

Local Air Quality Management

- 10.2.4 Part IV of The Environment Act 1995 required the UK Government to prepare an Air Quality Strategy which includes standards and objectives for air quality and sets out measures which are to be taken by local authorities and the government in order to achieve those objectives.
- 10.2.5 Standards are the concentrations of pollutants in the atmosphere, below which there is a minimum risk of health effects or ecosystem damage; they are set with regard to scientific and medical evidence. Objectives are the policy targets set by the Government, taking account of economic efficiency, practicability, technical feasibility and timescale, where the standards are expected to be achieved by a certain date.
- 10.2.6 Part IV of the Environment Act 1995 also describes the system of Local Air Quality Management (LAQM), which requires every local authority to carry out regular review and assessments of air quality in its area. Where an objective has not been, or is unlikely to be achieved, the local authority must declare an AQMA, and prepare an action plan which sets out appropriate measures to be introduced in pursuit of the objectives.
- 10.2.7 The objectives for PM₁₀, as prescribed by the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002 (HMSO, 2000; HMSO, 2002), are shown in Table 1. The objectives for PM₁₀ were to have been achieved by 2004 and continue to apply in

all future years thereafter.

- 10.2.8 The human health objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. Examples of where the objectives should apply are provided in the Local Air Quality Management Technical Guidance (Defra, 2021a) issued by the Department for Environment, Food and Rural Affairs (Defra). The annual mean PM₁₀ objective should apply at the building façades of residential properties, schools, hospitals, care homes etc.; it should not apply at the building façades of places of work, hotels, gardens or kerbside sites. The 24-hour mean PM₁₀ objective should apply at all locations where the annual mean objective applies, as well as the gardens of residential properties and hotels.

Table 10.1: The Objectives for PM₁₀

Pollutant	Concentration Measured As	Objective
PM ₁₀	24-hour Mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m ³

Environmental Protection Act

- 10.2.9 Nuisances caused by dust and odours are regulated by the statutory nuisance provisions in Part III of the Environmental Protection Act (EPA) (HMSO, 1990). Section 79(1)(d) of the EPA states that a statutory nuisance is:

“dust, steam, smell or other effluvia arising on an industrial, trade and business premises and being prejudicial to health or a nuisance”

- 10.2.10 Local authorities have a duty under the Environmental Protection Act to inspect their districts from time to time for statutory nuisances and to investigate any complaint about an alleged nuisance made by a member of the public.
- 10.2.11 If the local authority finds that a statutory nuisance exists, then it must serve an abatement notice. If the process operates under an environmental permit, any court proceedings should be brought by the Natural Resources Wales (NRW) for failure to comply with the operating permit. This is to avoid an operation being subject to regulatory action by both NRW and the local authority for the same incident.

Planning Policy

National Policies

- 10.2.12 Land-use planning policy in Wales is established within the policy document Planning Policy Wales Edition 11 (PPW), which provides the strategic policy framework for the effective preparation of local planning authority development plans (Welsh Government, 2021).
- 10.2.13 The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales.
- 10.2.14 PPW states that:

“The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to

reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable."

10.2.15 PPW sets out what must be done:

"In proposing new development, planning authorities and developers must, therefore:

- *address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- *not create areas of poor air quality or inappropriate soundscape; and*
- *seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes."*

10.2.16 The PPW states that:

"To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer."

10.2.17 PPW goes on to discuss design and mitigation:

"Good design, for example setting back buildings from roads to avoid canyon effects and using best practice in terms of acoustic design to ensure the appropriate and intended acoustic environment of completed developments should be incorporated at an early consideration in the design and planning process. Other mitigation measures must be capable of being effectively implemented for their intended purpose, and could include those related to:

- *traffic management and road safety;*
- *ensuring progress towards a shift to low or zero emissions means of road transport, such as electrical charging points;*
- *supporting low or zero emissions public transport;*
- *providing active travel infrastructure; and*
- *incorporating green infrastructure, where it can improve air quality by removing air pollution and aiding its dispersal, reduce real or perceived noise levels by absorbing and scattering noise and introducing natural sounds to soften man-made noise, provide areas of relative tranquillity, and reduce exposure by putting a buffer between sources of pollution and receptors."*

10.2.18 PPW also states:

"Proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur. In circumstances where impacts are unacceptable, for example where adequate mitigation is unlikely to be sufficient to safeguard local amenity in terms of air quality and the acoustic environment it will be appropriate to refuse permission."

Local Policies

10.2.19 The Neath Port Talbot Local Development Plan (2011-2026) includes the following relevant air quality policies (Neath Port Talbot County Borough Council, 2016a).

10.2.20 Strategic Policy SP 16 Environmental Protection states:

“Air, water and ground quality and the environment generally will be protected and where feasible improved through the following measures:

- 1. Ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution levels;*
- 2. Giving preference to the development of brownfield sites over greenfield sites where appropriate and deliverable;*
- 3. Ensuring that developments do not increase the number of people exposed to significant levels of pollution.”*

10.2.21 Policy EN 8 Pollution and Land Stability states:

“Proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and/or local amenity or would expose people to unacceptable risk due to the following will not be permitted:

- Air pollution;
- Noise pollution;
- Light pollution;
- Contamination;
- Land instability;
- Water (including groundwater) pollution.

Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level.”

10.2.22 Guidance on the implementation of Policy EN 8 is provided in Supplementary Planning Guidance (SPG) on pollution (Neath Port Talbot County Borough Council, 2016b).

Institute of Air Quality Management Guidance

10.2.23 The Institute of Air Quality Management (IAQM) has published Guidance on the Assessment of Mineral Dust Impacts for Planning (IAQM, 2016). The guidance has been prepared to assist practitioners in undertaking dust assessments for the operational phases of minerals developments. Although the proposed development is not a minerals development, dust emissions from landfill operations will share some similarities; therefore, it is considered appropriate to follow the source-pathway-receptor approach underlying the IAQM dust assessment method for assessing the impacts of the operation of the landfill.

10.2.24 Guidance on the Assessment of Odour for Planning has also been published by the IAQM (IAQM, 2018). The guidance describes what the IAQM considers to be current best practice with regard to odour assessment and sets out a range of methodologies that can be used for assessing odour impacts for planning purposes. The IAQM guidance also includes odour assessment criteria that have been used to determine the odour impact in this assessment.

Methodology

Baseline Conditions

10.2.25 Information on existing air quality within the study area has been collated from the following sources:

- The results of monitoring and the most recent LAQM Air Quality Progress Report (ASR) published by Neath Port Talbot County Borough Council (Neath Port Talbot County Borough Council, 2020);
- Background pollutant concentration maps published by Defra (Defra, 2021b).

Complaints

10.2.26 The Environmental Health Department at Neath Port Talbot County Borough Council was

contacted with regard to complaints relating to current operations at the landfill. Information of historic complaints has also been obtained from the Odour Management Plan (OMP) for the current operations.

Operational Dust Impacts

- 10.2.27 Locations sensitive to dust emitted during site operations will be places where members of the public are regularly present. Residential properties and commercial operations close to the application site will be most sensitive to operational dust. Any areas of sensitive vegetation or ecology that are very close to dust sources may also be susceptible to some negative effects.
- 10.2.28 The IAQM minerals guidance describes a qualitative source-pathway-receptor approach to determine the risk of dust effects. The assessment method uses a number of steps to determine the site characteristics and baseline conditions, an estimate of the dust impact risk and an estimate of the likely magnitude of effects. Potential dust sources and activities have been identified and the risk of impacts at sensitive receptors determined based on the prevailing meteorological conditions and topography, the likely magnitude of emissions (with mitigation in place) and the distances over which effects may occur.
- 10.2.29 The IAQM minerals dust guidance divides activities on minerals sites into types to reflect their different potential impacts. The activity types relevant to operations at the landfill and used for this assessment described below:
- Material handling;
 - On-site transportation;
 - Off-site transportation; and
 - Site restoration.
- 10.2.30 A series of steps then consider the potential impact due to:
- the risk of health effects from an increase in exposure to PM10;
 - annoyance due to the deposition of dust;
 - harm to the natural environment.
- 10.2.31 Full details of the dust impact assessment methodology are set out in the Air Quality, Dust and Odour Appendices.

Operational Odour Impacts

- 10.2.32 A qualitative odour risk assessment has been undertaken using the source-pathway-receptor approach set out in Institute of Air Quality Management (IAQM) Guidance on the Assessment of Odour for Planning in order to determine the likelihood of odour annoyance due to the operation of the proposed facility. All three links in the chain would need to be present for an adverse effect to occur. Adverse effects from odour lead to annoyance, which can result in a nuisance if exposure is ongoing.
- 10.2.33 The scale of exposure to odour (the impact) and the sensitivity of the receptor determines the overall effect, with the impact (FIDO) and receptor sensitivity (L) known as the FIDOL factors:
- Frequency – how often an individual is exposed to odour;
 - Intensity – the individual's perception of the strength of the odour;
 - Duration – the duration that individuals are exposed to an odour over time;
 - Offensiveness – the character, or pleasantness/unpleasantness of the odour; and
 - Location – the sensitivity of the location/receptors to odours.
- 10.2.34 The IAQM guidance describes a framework for qualitative odour assessment which incorporates the FIDOL factors and uses a number of steps to determine the overall effect from the source odour potential, the pathway effectiveness and the receptor sensitivity.
- 10.2.35 Full details of the odour impact assessment methodology are set out in the Air Quality, Dust and Odour Appendices.

10.3 BASELINE CONDITIONS

LAQM Review and Assessment

- 10.3.1 Neath Port Talbot County Borough Council has declared an AQMA for exceedances of the 24-hr mean PM₁₀ objective. The AQMA covers land and properties between the Corus Stell Works and the M4 motorway. The AQMA is located approximately 20km to the south-southeast of the application site and would not be affected by emissions from the proposed development.

Local Air Quality Monitoring

- 10.3.2 Neath Port Talbot County Borough Council currently operates five automatic monitoring sites that measure PM₁₀. All but one of the automatic monitoring sites are located within the AQMA, with the other site located close to the mouth of Port Talbot dock. The monitoring sites are all located more than 20km from the application site, and data from them would not be representative of air quality within the study area.

Background Concentrations

- 10.3.3 Defra estimated background annual mean PM₁₀ concentrations across the application site range from 10.1 to 10.6µg/m³ in 2021, well below the annual mean objective value of 40µg/m³.

Odour Complaints

- 10.3.4 An Environmental Health Officer at Neath Port Talbot County Borough Council provided some general information with regard to odour complaints due to current operations at the landfill. A number of complaints have been made, with around 45 cases in 2019. It is alleged that odour is noticeable from around midnight, becoming most severe at around 02:00, and dissipating in the early morning, occurring regularly, but not every single night. No details of the locations from where complaints were made or the dates of the complaints have been provided; therefore, it has not been possible to undertake any analysis with regards temporal and spatial distribution.
- 10.3.5 Further details of historical complaints are included in the OMP. Up to the publication of the OMP (January 2020) the operators had received two incident numbers from NRW relating to site odour. One incident related to a complaint from a resident regarding odour from the landfill, which was unsubstantiated by NRW. The other related to a slight odour detected by an NRW operative at the main gate to the site.
- 10.3.6 The OMP also includes further information with regard to a high number of complaints received since October 2019 from residents in the vicinity of Cwmgors. The operator has investigated these complaints, with no odour detected. NRW have also been on site and conducted walkovers, with very little odour detected. Remedial work was undertaken, and independent weekly odour monitoring arranged and reports of odours reduced after 11th December 2019.

10.4 PROPOSED DEVELOPMENT

- 10.4.1 FCC are seeking to revise the restoration profile of Tip 890 to facilitate the safe early closure of tipping operations at the Application Site. The proposals are as follows:

- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational cell 4 and not developing the previously consented cell 5;
- Localised re-profiling of cells 3 and 4;
- A reduction in void space from that previously consented;
- An amended scheme of surface water management to account for the revised restoration profile;
- Amended phasing scheme; and
- Amended scheme of landscaping.

- 10.4.2 It is anticipated that with a forecasted residual waste deposition of c. 7000 - 8000 tonnes per month, importation would end in October 2023, with a further two years to complete the Application Site restoration and landscape planting.

10.5 ASSESSMENT OF EFFECTS

Dust Impacts

Screening

- 10.5.1 Screening criteria in the IAQM minerals guidance indicates that a detailed dust deposition assessment would usually be required where there is a human or sensitive ecological receptor within 250m of a sand and/or gravel quarry, measured from the nearest dust generating activities. Fugitive dust emissions due to operations at the landfill are likely to be similar to those from a sand/gravel quarry. Where there are no sensitive receptors within 250m of a sand/gravel quarry it would normally be assumed that a detailed dust assessment is not required.
- 10.5.2 There are no dust sensitive receptors within 250m of potentially dust generating activities at the application site; therefore, the requirement for a detailed dust deposition assessment has been screened out of the assessment.
- 10.5.3 Annual mean PM₁₀ concentrations at receptors in the vicinity of the application site are likely to be close to background level, i.e., 10.1 to 10.6µg/m³ in 2021. IAQM minerals guidance takes the approach that there is little risk that a process contribution from a dust source would lead to an exceedance of the objectives where background ambient PM₁₀ concentrations are below 17µg/m³; therefore, the proposed development will have an insignificant effect on health due to emissions of PM₁₀.

Odour Impacts

Source Odour Potential

- 10.5.4 The proposed development would allow continuation of operations and a revised restoration profile at Tip 890 at Pwllfawatkin Landfill to facilitate early closure of the tipping operation in a safe and environmentally responsible manner.
- 10.5.5 There is a risk of odour emissions due to exposed waste during engineering works to reprofile Cells 3 and 4 at Tip 890, and due to ongoing infilling operations. Potentially odorous wastes are included in the waste stream accepted at the landfill, which could emit odour on arrival and during handling and placement of the waste. Odour sources also include landfill gas (LFG) and leachate.
- 10.5.6 The landfill is operated in accordance with an Environmental Permit, originally issued by the Environment Agency, but now maintained by NRW (EPR/BU8819IV), and an OMP has been prepared (FCC Environment, 2020). The OMP is a working document that sets out the management and control procedures in place at the site to manage odour. The OMP aims to ensure that odour assessment forms part of daily inspections, and that odour is primarily controlled by good operational practices, with appropriate measures undertaken to prevent odour beyond the site boundary.

Cap Removal

- 10.5.7 Where, as part of completing the final landform contours, it is necessary to temporarily remove the engineered cap to allow the placement of additional non-hazardous waste. Cover material will be used to ensure that none of the waste in the previously capped areas will be exposed to the air. The cap would be replaced on completion of the tipping works.

Tipped Waste

- 10.5.8 Waste arriving at the site is visually checked by the weighbridge operator prior to placement at

the tipping face to ensure that the waste meets acceptance criteria. The compactor operator at the tipping face undertakes a further visual inspection. Odorous waste is pre-notified to the Landfill Manager before being accepted at the site. The Landfill Manager is also responsible for carrying out compliance checks on accepted wastes.

- 10.5.9 Waste will be progressively compacted during the working day, which will help minimise odour emissions. The active area and tipping face size will be minimised as much as possible. Approximately 6 inches of cover material will be applied to the deposited waste at the end of each working day. Additional intermediate cover of around 0.5m, usually on-site clay, will be applied to areas where landfilling activities are temporarily suspended. Completed areas will be capped with an engineered liner as soon as possible on cessation of waste infilling.
- 10.5.10 When high odour risk waste is accepted, the weighbridge operator will advise site operatives of the arrival so that preparations can be made at the tipping face. The waste deposited at the tipping face will be immediately covered with non-odorous waste material.

LFG

- 10.5.11 LFG is abstracted at the site in order to provide fuel for energy recovery, which utilises gas engines and flares. The flares treat any gas not used by the engines and during normal operation, there should not be any leakage of LFG.
- 10.5.12 There is a risk that LFG will be released when previously emplaced waste is disturbed during the installation of gas and leachate monitoring equipment and gas abstraction infrastructure. When there is a risk that odour may be released, these works will take place during periods of favourable weather conditions when operationally possible.

Leachate

- 10.5.13 The leachate collection system at the site is sealed and connected to the gas abstraction system to prevent fugitive odour release. Regular checks are made to ensure that there are no leaks from the system. Under normal operating conditions there will be no odour releases from the leachate system.

Overall Source Odour Potential

- 10.5.14 Regular odour surveys are undertaken at the site and the perimeter, in accordance with the OMP. Flame ionisation detector surveys are also undertaken in order to detect flammable gases, such as methane, which would indicate leakage of LFG. The OMP also includes comprehensive actions that are undertaken in the event that odour is detected beyond the site boundary. =
- 10.5.15 It is considered that, with the mitigation measures already implemented at the site and compliance with the OMP, the source odour potential would likely be small; however, it is recognised that some fugitive odour emissions may occasionally occur. To provide a conservative assessment, the overall source odour potential is considered to be medium.

Pathway Effectiveness

- 10.5.16 Any residual odour from the landfill operations would have the potential to cause annoyance at nearby receptors. The extent to which odours travel from the sources will be dependent on the meteorological conditions at the time the odour is being emitted. The dispersion of odour emissions will be influenced by wind speed, wind direction, and atmospheric stability. The worst odour dispersion conditions often occur at night under stable atmospheric conditions, when the mixing and dilution of odorous emissions is inhibited; however, these conditions can also occur during the day, when there is a temperature inversion.

Wind

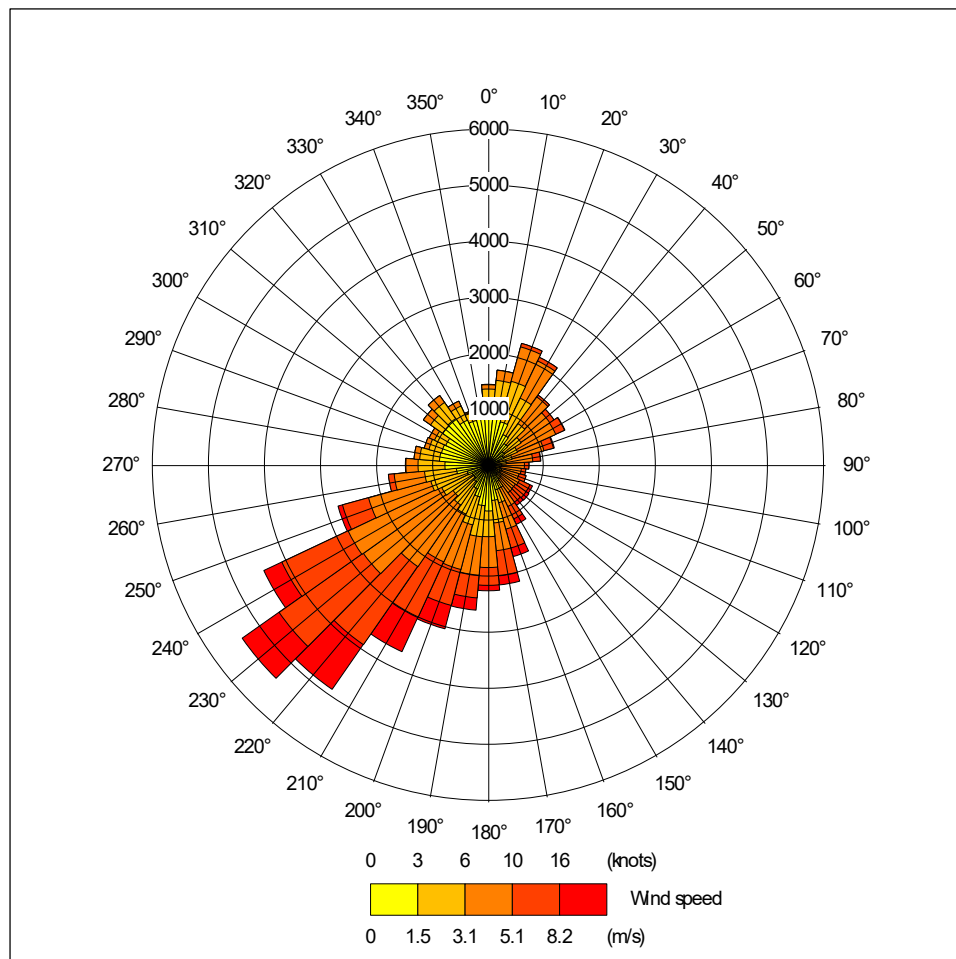
- 10.5.17 Receptors downwind of the odour emissions source, with regard to the prevailing wind, will be

exposed to odour more frequently than those located upwind. An 8-year average wind rose from Sennybridge Meteorological Station, approximately 40km to the northeast of the application site, shows that prevailing winds in the region blow from the southwest (see Figure 1). The frequency distribution of the wind direction is shown in **Table 10.2**.

Table 10.2: 8 Year Average Wind Frequency Distribution, Sennybridge Metrological Station

Direction	Direction (°)	Frequency (%)
N	340-20	10.8
NE	30-60	9.5
E	70-110	6.2
SE	120-150	5.6
S	160-200	16.8
SW	210-240	26.2
W	250-290	12.3
NW	300-330	7.7
Calms	na	1.8
Missing	na	3.2
Total		100.0

Figure 10.1: 1 Year Average Wind Rose, Sennybridge Metrological Station



Receptors

- 10.5.18 The potential effect of odour at receptors is dependent on the distance from the source to the receptor and the sensitivity of the receptors. Odour can travel over a large distance; however, the assessment has focused on the closest receptor locations in each direction. Residential receptors would be regarded as highly sensitive with regard to odour, whereas commercial areas would be described as a medium sensitivity receptors.
- 10.5.19 The residential receptors are all considered to be local to the odour source, whereas, the commercial use is considered to be adjacent to the odour source.
- 10.5.20 For this assessment, it has been assumed that properties within 100m of the odour source are adjacent, those between 100 and 500m of the odour source are local and those more than 500m from the odour source are remote.
- 10.5.21 With regard wind frequencies, winds towards a receptor of less than 10% are considered low frequency, wind towards a receptor between 10 and 20% are medium frequency and wind towards a receptor of more than 20% are high frequency.
- 10.5.22 **Table 10.3** shows a summary of the information used to determine the pathway effectiveness towards the receptor areas. Based on the examples in the Air Quality, Dust and Odour Appendices, the pathway effectiveness is considered to be ineffective to moderate.

Table 10.3: Odour Pathway Effectiveness

Receptor ID	Receptor	Distance from Source	Winds Towards Receptor (°)	Frequency of Wind Towards Receptor	Pathway Effectiveness
1	Nantmelyn	Remote (520m)	140-170	Low (9%)	Ineffective
2	Heol-Y-Gors	Remote (680m)	200-230	High (24%)	Moderate
3	Old Star	Remote (550m)	210-240	High (26%)	Moderate
4	Tyn-Y-Coedcae Farm	Remote (635m)	230-260	High (21%)	Moderate
5	Star Villa	Local (360m)	250-300	Medium (14%)	Moderate
6	Plasnewydd House	Remote (580m)	280-310	Low (7%)	Ineffective
7	Abernant Rental Units	Local (480m)	300-340	Low (9%)	Ineffective
8	Highbury Cottage	Remote (760m)	310-340	Low (7%)	Ineffective
9	Garth	Remote (1,500m)	330-340	Low (3%)	Ineffective
10	Coedcae-Mawr	Remote (1,800m)	350-10	Low (6%)	Ineffective
11	Pwllfawatkin	Remote (520m)	20-50	Medium (11%)	Ineffective
12	Nant-Y-Gafaelau	Local (260m)	60-120	Medium (10%)	Moderate

Risk of Odour Impacts & Magnitude of Effects

- 10.5.23 The risk of odour exposure has been determined by combining the source odour potential with the pathway effectiveness. The risk of odour impacts and the receptor sensitivities have then

been combined to determine the likely magnitude of the odour effect at each receptor, as shown in **Table 10.4**.

- 10.5.24 The risk assessment identifies that there is a negligible risk of odour effects at receptors 1 and 6-11 and a slight risk of odour effects at receptors 2-5 and 12. At receptors where a negligible or slight odour effect have been predicted the effect would not be considered to be significant.

Table 10.4: Risk of Odour Impacts

Receptor	Risk of Odour Impact			Receptor Sensitivity	Likely Odour Effect
	Source Odour Potential	Pathway Effectiveness	Risk of Odour Exposure		
1	Medium	Ineffective	Negligible	High	Negligible
2		Moderate	Low	High	Slight
3	Medium	Moderate	Low	High	Slight
4	Medium	Moderate	Low	High	Slight
5	Medium	Moderate	Low	High	Slight
6	Medium	Ineffective	Negligible	High	Negligible
7	Medium	Ineffective	Negligible	Medium	Negligible
8	Medium	Ineffective	Negligible	High	Negligible
9	Medium	Ineffective	Negligible	High	Negligible
10	Medium	Ineffective	Negligible	High	Negligible
11	Medium	Ineffective	Negligible	High	Negligible
12	Medium	Moderate	Low	High	Slight

10.6 PROPOSED MITIGATION

Dust

- 10.6.1 Given the distance of local receptors from potential dust emissions sources at the proposed development, and low background PM₁₀ concentrations, an assessment of the potential impacts due to dust has been screened out.
- 10.6.2 A Dust Management Plan (DMP) has been produced for the current operations at the application site (FCC, 2021). Continued operation with regard to dust prevention methods set out in the DMP would ensure the appropriate control of dust emissions.

Odour

- 10.6.3 The OMP for operations at the landfill is a working document that sets out the management and control procedures in place at the site to manage odour. The OMP aims to ensure that odour assessments form part of daily inspections, and that odour is primarily controlled by good operational practices, with appropriate measures undertaken to prevent odour beyond the site boundary. The OMP will be updated to incorporate actions to prevent odour emissions during cap removal; however, all other operations at the site will continue and those elements of the OMP will not need to be amended.
- 10.6.4 The OMP includes the following:
- A general description of the site, its location and the on-site operations;
 - A description of the likely odour sources, pathways and receptors;
 - The control procedures used to manage odour at the site on a daily basis;
 - The roles and responsibilities of site personnel;
 - Trigger levels and risk factors and the corrective actions to be taken during abnormal conditions;
 - Complaints procedures;
 - The monitoring and auditing of the effectiveness of the control procedures; and
 - Details of responsibilities regarding record keeping, and the implementation and

maintenance of the OMP.

10.7 SUMMARY OF PREDICTED EFFECTS

10.7.1 A summary of the predicted effects on local air quality due to vehicle emissions and from fugitive dust and odour emissions is shown in **Table 10.5**.

Table 10.5: Summary of Air Quality, Dust and Odour Effects

Potential Impact	Predicted Effect
Road Traffic Emissions	
Effect on Health	Negligible
Dust Emissions	
Effect on Visible Dust	Negligible
Effect on Health	Negligible
Odour Emissions	
Effect on Local Amenity	Negligible to slight

10.8 RESIDUAL IMPACTS

10.8.1 A summary of the residual effects on local air quality due to vehicle emissions and from fugitive dust and odour emissions is shown in **Table 10.6**.

Table 10.6: Summary of Air Quality, Dust and Odour Residual Effects

Potential Impact	Predicted Effect	Mitigation	Residual Effects	Significance of Effects
Road Traffic Emissions				
Effect on health	Negligible	None required.	Negligible	Not significant
Dust Emissions				
Effect on Visible Dust	Negligible	Mitigation measures set out in the DMP	Negligible	Not significant
Effect on Health	Negligible	Mitigation measures set out in the DMP	Negligible	Not significant
Odour Emissions				
Effect on Local Amenity	Negligible to slight	Mitigation measures set out in the OMP.	Negligible	Not significant

10.9 SUMMARY AND CONCLUSIONS

10.9.1 The proposed development would result in a significant reduction in vehicle numbers compared to that previously approved. Therefore, the impact of the proposed development on air quality due to vehicle emissions would not be significant.

10.9.2 Given the distance of dust emissions sources at the proposed development from local receptors, the requirement for detailed assessment of dust deposition has been screened out and the impact would be insignificant. Background PM₁₀ concentrations within the area that might be affected by emissions from the proposed development are low and there is little risk that a process contribution would lead to an exceedance of the PM₁₀ objectives; therefore, the proposed development would have an insignificant effect on health due to emissions of PM₁₀.

10.9.3 The results of the qualitative odour risk assessment indicate that there is likely to be a negligible to slight risk of odour effects. Based on IAQM odour guidance, negligible to slight effects would not usually be considered significant.

10.9.4 There is a history of odour complaints regarding current operations at the landfill; however, investigations of these complaints by the operator and NRW have not identified significant odour emissions at the landfill. Continued implementation of the odour controls set out in the OMP, and ongoing review and amendment of the OMP should ensure that odour emissions do

not have a significant effect on local receptors.

10.9.5 There should be no constraints to the proposed development, with regard to the air quality, dust and odour effects on local receptors, as the proposed development is consistent with the relevant parts of:

- The PPW 11;
- Strategic Policy SP16 and Policy EN 8 of the Neath Port Talbot Local Development Plan.



11. SUMMARY OF EFFECT AND CUMULATIVE IMPACT

11.1 INTRODUCTION

- 11.1.1 Chapter 6 of this ES identified those environmental topics that were scoped out of the assessment and the reasons for doing so.
- 11.1.2 Of those environmental topics that the Local Planning Authority considered necessary to be subject to EIA, the assessments and findings have been provided in Chapters 7 – 10. The individual assessments have been considered the potential environmental effect of the proposed development relative to the current baseline conditions which exist at the site and the surrounding area. Where appropriate, mitigation measures over and above those already existing have been proposed, and the residual effects of the development have been assessed.

11.2 SUMMARY OF IMPACTS

- 11.2.1 **Table 11.1** below presents a concise summary of the predicted residual environment effects of the proposed development from those environmental topics which have been assessed.

Table 11.1: Summary of Predicted Environmental Effects

	Phase	Summary of Predicted Effects
Visual Landscape	Landfilling	Landscape Character – The development is not likely to negatively influence the key characteristics of the landscape (over and above the previously consented scheme) and could accommodate the development with no change in character. Considered a negligible impact. Visual Impact – due to the continuing nature of operations the visual impact on identified receptors is considered at worst to be moderate to minor adverse – not a significant effect.
	Restoration	Landscape Character – the revised restoration profile reducing the southern extents and physical mass and form of Tip 890. Impacts are considered to be Minor-Beneficial. Visual Impact – Outside of the site area the proposed restoration plan remains similar to that previously consented, however the reduced physical form and mass of Tip 890 is concluded to have a positive visual effect. Impacts are considered to be Minor-Beneficial.
Ecology & Nature Conservation	Landfilling	Designated Sites – Distance to identified sites and pollution prevention measures to be employed during operational phase. Impact considered Negligible. Habitats – proposal confined to areas currently that have been operational. Loss of two small recently formed waterbodies due to onsite operations and small extents of marshy grassland and bare ground with short ephemeral vegetation considered to be a low magnitude impact. Overall impacts considered Not Significant. Species – having habitats of low ecological value and continued working in this area is highly unlikely to cause an increase impact. Overall impacts are considered Not Significant.
	Restoration	Designated Sites – Distance to identified sites and pollution prevention measures to be employed during operational phase. Impact considered Negligible. Habitats – In line with the previously consented restoration scheme, new species rich grassland and areas of woodland and scrub will be created as part of the Site restoration. Habitats will be established and managed so that they are maintained in a favourable condition and of value to biodiversity. Over the long term, the effects of habitat changes are assessed as Minor Beneficial and Not Significant.

		Species – The increased diversity of habitat structure provides increased opportunities for species. Over the long term, the effects on species are assessed as Minor-Beneficial and Not Significant.
Hydrology & Surface Water Management	Landfilling	Surface Water Runoff/Flooding – Implementation of temporary control measures. The potential for impact is considered to be Minor Adverse. Surface Water Quality – Temporary holding lagoons and cut-off trenches during the various stages will capture the surface water runoff across the site and allow silt to settle before discharging into the Upper Clydach River – Impacts considered to be Minor Adverse.
	Restoration	Surface Water Runoff/Flooding – The amended restoration planting scheme will still require the site to be vegetated. A formal surface water drainage strategy will be implemented for the site which will improve the management of and attenuate surface water runoff reducing the potential for flooding, it is considered that the proposed development will have a negligible impact beyond that previously consented. Surface Water Quality – Entire site will be vegetated. A formal surface water drainage strategy will be implemented for the site which will improve the quality of flows from the site, it is considered the proposed development will have a Minor Adverse impact.
Air Quality & Odour	Landfilling	Dust – FCC will take a proactive approach to ensure that the potential for fugitive dust emissions is minimised, and is not a cause of nuisance complaints from identified receptors. Impacts considered negligible. Odour – Continued implementation of odour controls set out in the OMP. Impacts considered negligible. Vehicle emissions – Proposed vehicle movements will be considerably less than previously experienced and permitted. Potential contribution to background emissions levels are considered negligible.
	Restoration	Dust – Limited opportunity for dust creation as site will be restored and landscaped (i.e. no bare ground). Impacts considered negligible. Odour – Landfill gas management system will be retained and maintained as appropriate. Impacts considered negligible. Vehicle emissions – Little or no opportunity for regular vehicle movements one site is restored. Impacts considered negligible.

11.3 CUMULATIVE IMPACTS

11.3.1 In isolation, a proposed development may be considered to have insignificant environmental impacts. However, these effects have the potential to be magnified when considered in conjunction with other existing or proposed developments. There are referred to as cumulative impacts and such impacts have the potential to occur in the following ways:

- Whether any of the identified environmental effects of the proposed development will combine to create a cumulative effect that is greater than the sum of the individual effects, this is known as Combined Impacts; and
- How effects from the proposed development could be combined with similar effects from our sites to result in significance cumulative effects.

11.3.2 **Table 11.1** provides a summary of the predicted environmental effects resulting from the proposed development. These effects have been identified by the EIA as those remaining following mitigation, i.e. residual impacts. It must be remembered that the baseline assumed as part of the EIA accounts for current land-uses in the vicinity of the application site.

11.3.3 Of the environmental topic areas considered as part of the EIA, the significance of impacts from the continued operations that are considered to be greater than negligible are limited to:

- Ecology
- Visual Amenity
- Surface water runoff/quality

11.3.4 The potential impacts on ecology were identified during both the operational and restoration phases. With mitigation measures, minor adverse impacts upon ecological features identified can be reduced to a non-significant level. Once restored and through habitat creation the long-term impacts were considered to be minor-beneficial.

11.3.5 Moderate to minor adverse impacts were concluded on visual receptors during the landfill phase, however, during the restoration phase, minor positive impacts were concluded in terms of visual effects as a result of reduced tipping of waste and therefore a reduced physical mass and form.

11.3.6 In terms of the potential minor adverse impacts to surface water runoff and quality these would be controlled by embedded mitigation measures and further mitigation measures, such that the residual effects would be no significant residual effect.

11.3.7 In terms of assessing the cumulative impact from the proposal in isolation, it is considered there are no identified adverse effects that possess synergistic characteristics that would allow for the creation of significant adverse impact on the receiving environment.

11.3.8 In terms of cumulative influences from beyond the application site boundary, it should be remembered that the baseline of the EIA included surrounding land-uses. Consideration has also been given to significant planning permissions which have yet to become fully operational within the vicinity of the application site.

11.4 CONCLUSION

11.4.1 Overall, the effects of the development, including mitigation, are not considered to be significant either by way of the land use and location of the facility or by virtue of the proposed development.

11.4.2 The potential impacts have been fully assessed for the development and where appropriate mitigation as a result of an iterative review process and through careful consideration of process management, and application of relevant mitigation and abatement techniques.

11.4.3 Therefore, as there are no residual impacts which are considered significant in terms of intensity or characteristics, as suggested in **Table 11.1** above, there is limited potential for the creation

of cumulative impacts resulting from the proposed development.



12. SUMMARY AND CONCLUSION

12.1 INTRODUCTION

- 12.1.1 This Environmental Statement accompanies a planning application made by FCC to revise the restoration profile of Tip 890 to facilitate closure of the tipping operation in a safe and environmentally responsible manner.
- 12.1.2 The planning consent that allowed the restoration of Tip 890 expired on 30th September 2018. An application to vary conditions (reference P2018/0512) to allow an extension of time and revised restoration profile to Tip 890, that reduced the remaining site void from that consented, was submitted to Neath Port Talbot County Borough Council in 2018 but was refused at planning committee, against officer recommendation for approval, in December 2020 on alleged odour nuisance grounds.
- 12.1.3 A separate planning application (reference P2018/0511) was submitted in 2018 to vary the conditions of planning permission P2014/0693 to extend the period to complete restoration of Tip 871 and amend the restoration profile. To date, this application was still awaiting a decision.
- 12.1.4 As the consent that covered Tip 890 has expired, FCC are seeking to submit a new planning application to allow a revised restoration profile in order to bring landfill operations a safe early closure. The red line application boundary is limited to the future operational area of Tip 890 and not the entire landfill landholding. The amendments to the restoration profile and scheme for Tip 890 proposed in this application follow on from the restoration scheme previously approved for the wider landfill.
- 12.1.5 In comparison to the previously consented scheme, this will result in:
- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational cell 4 and not developing the previously consented cell 5;
 - Localised re-profiling of cells 3 and 4;
 - A reduction in void space from that previously consented;
 - An amended scheme of surface water management to account for the revised restoration profile;
 - Amended phasing scheme; and
 - Amended scheme of landscaping.
- 12.1.6 The planning consent for the restoration of Tip 890 expired in September 2018 with the site not being fully restored. For long term stability, avoidance of differential or excessive settlement, protect capping integrity and for the long-term function of the environmental control systems for gas, leachate and surface water, it is necessary to complete the site to a designed profile. This can only be achieved through waste importation.
- 12.1.7 Differential or excessive settlement can not only impact on capping, restoration soils and environmental control infrastructure but also the delivery of final restoration and after use with delivering restoration schemes and aftercare management being particularly difficult on differentially settled landforms. Completing the site to a suitable final landform now will reduce the likelihood of needing to return to site at a later date to correct the differential settlement involving cap stripping / repaid, placement of additional wastes or soils.
- 12.1.8 As outlined in Section 5 of the accompanying Environmental Statement, alternative restoration profiles were considered for the site, however the proposed restoration profile enables a domed shaped profile in line with NRW's minimum requirements on slop angles for landfills designed to prevent differential settlement and associated issues outlined above.
- 12.1.9 Tip 890 therefore needs to be completed to a profile that meets NRW guidance and ensure long term stability of the site.

12.2 ENVIRONMENTAL ASSESSMENT

12.2.1 Of the environmental topic areas considered as part of the EIA, the significance of impacts from the continued operations that are considered to be greater than negligible are limited to:

- Ecology
- Visual Amenity
- Surface water runoff/quality

12.2.2 The potential impacts on ecology were identified during both the operational and restoration phases. With mitigation measures, minor adverse impacts upon ecological features identified can be reduced to a non-significant level. Once restored and through habitat creation the long-term impacts were considered to be minor-beneficial.

12.2.3 Moderate to minor adverse impacts were concluded on visual receptors during the landfill phase, however, during the restoration phase, minor positive impacts were concluded in terms of visual effects as a result of reduced tipping of waste and therefore a reduced physical mass and form.

12.2.4 In terms of the potential minor adverse impacts to surface water runoff and quality these would be controlled by embedded mitigation measures and further mitigation measures, such that the residual effects would be no significant residual effect.

12.2.5 In terms of assessing the cumulative impact from the proposal in isolation, it is considered there are no identified adverse effects that possess synergistic characteristics that would allow for the creation of significant adverse impact on the receiving environment.

12.3 CONCLUSION

12.3.1 The potential impacts have been fully assessed for the development and where appropriate mitigated as a result of an iterative review process and through careful consideration of process management and landscape design. Furthermore, as there are no residual impacts which are considered to be significant in terms of intensity or characteristics, there is limited potential for the creation of cumulative impacts resulting from the proposal.

12.3.2 This EIA confirms that the proposed revised restoration profile for Tip 890 at Pwllfawakin Landfill will not lead to any significant adverse impacts so long as the existing and proposed mitigation is implemented.

