



Wheelabrator
TECHNOLOGIES



Draft WKN Ecological Mitigation and Management Plan

Wheelabrator Kemsley (K3 Generating Station) and Wheelabrator Kemsley North (WKN) Waste to Energy facility Development Consent Order

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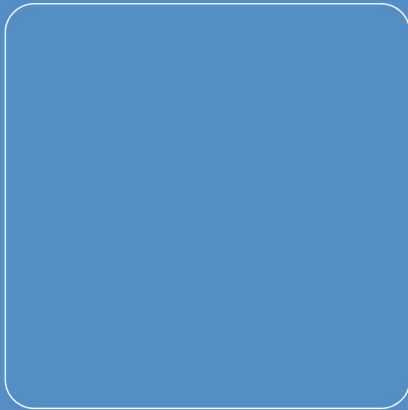
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**WHEELABRATOR KEMSLEY GENERATING
STATION (K3) AND WHEELABRATOR
KEMSLEY NORTH (WKN) WASTE TO ENERGY
FACILITY DCO:**

**DRAFT WKN ECOLOGICAL MITIGATION AND
MANAGEMENT PLAN**





WHEELABRATOR TECHNOLOGIES INC

**WHEELABRATOR KEMSLEY (K3
GENERATING STATION) AND
WHEELABRATOR KEMSLEY NORTH (WKN)
WASTE TO ENERGY FACILITY
DEVELOPMENT CONSENT ORDER:**

**DRAFT WKN ECOLOGICAL
MITIGATION AND MANAGEMENT
PLAN**

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CONTENTS

1	INTRODUCTION	5
2	MANAGEMENT OBJECTIVES	8
3	SPECIES PROTECTION MEASURES.....	10
4	HABITAT MANAGEMENT	16
5	MONITORING	19
6	REFERENCES.....	21

1 INTRODUCTION

Scope of work

- 1.1 In line with Requirement 21 of the draft Development Consent Order (dDCO), this draft Ecological Mitigation and Management Plan (EMMP) has been prepared for the Wheelabrator Kemsley North (referred to as the WKN site) to provide stakeholders confidence that the necessary ecology mitigation can be delivered and will be updated, as necessary, to discharge Requirement 21 pre-construction.
- 1.2 The WKN site is located on land immediately to the north and east of the Kemsley Paper Mill, located 0.8 km east of Kemsley, Sittingbourne, Kent. Directly to the south of the WKN site, is a completed power generation station referred to as K3. An existing EMMP for K3 was prepared as part of the planning process for that development (RPS 2009).
- 1.3 The draft Ecological Mitigation and Management Plan has been prepared to define the measures that will be implemented as part of the WKN development to address potential ecological impacts on species. The report specifically sets out the mitigation measures that will be employed to safeguard biodiversity interests alongside development activities and the broad management actions that will maintain the biodiversity value of landscaped areas over the operational life of the development.
- 1.4 Wheelabrator Technologies Inc. (WTI) will be responsible for its implementation on site during enabling works and construction.

Extent of site and description

- 1.5 The main WKN development site is bare ground following its use as a laydown area for the K3 development to the south. Prior to its use as a laydown area, it comprised a mixture of dense scrub, tall ruderal, bare ground, long grassland habitats with a very extensive spoil heap consisting of uncompacted materials.
- 1.6 The laydown area for the WKN site is located between the main WKN development and Knauf Wharf to the north-east. It comprises 0.5ha bare ground / compacted rubble bounded to the east of the sea wall and 0.9ha of dense hawthorn scrub, with localised areas of grassland, and tall ruderal.
- 1.7 A drainage ditch which runs approximately north-south on the western edge of the WKN Laydown Area (Works Area 6) was heavily overgrown with Common Reed, Hawthorn and Bramble and was largely dry lacking areas of open water.
- 1.8 These habitats would be temporarily lost for the duration of construction but subject to re-instatement as grassland and scrub on completion. The areas that are currently bare ground would be subject to permanent grassland habitat creation.
- 1.9 Construction access to the WKN site will be via the existing road to the Knauf Wharf and a new section of temporary road through the laydown area.

- 1.10 The WKN site lies very close to The Swale Special Protection Area (SPA) / Site of Special Scientific Interest (SSSI) / Ramsar site. A large reedbed is located to the north of the proposed WKN development site and west of the laydown area.

Existing features of relevant conservation interest on site

- 1.11 The following features were identified in the Environmental Statement as habitat or species of conservation interest on or near the site that require consideration within this EMMP.

The Swale SPA/SSSI/Ramsar

- 1.12 The Swale SPA/SSSI/Ramsar site is located close to the eastern site boundary. This site is designated for the wide variety of bird species it supports over winter, on passage during spring/autumn and during the breeding season. It is also designated for the diversity of invertebrates and rare plants it supports.
- 1.13 Wintering bird surveys have shown that the stretch of The Swale adjacent to the WKN development site is used extensively by intertidal species, including citation species for both the SPA and Ramsar, over winter and at both low and high tide, including black-tailed godwit, curlew, greenshank, grey plover, red shank and teal.
- 1.14 Additionally, marsh harriers have regularly bred in the reedbed in Kemsley Marshes to the north of the WKN development with a nesting pair recorded every year that surveys have been undertaken. A pair of marsh harriers continued to nest in the Kemsley Marshes during the construction of K3 with the implementation of screening and working restrictions to successfully avoid indirect disturbance.
- 1.15 As part of the K3 development, off-site wetland habitat was created to provide alternative breeding opportunities for Marsh Harrier within their core breeding area on the Isle of Sheppey.

Reptile Population

- 1.16 The potential reptile habitat within the working area for the WKN development is limited to habitats within the proposed laydown area.
- 1.17 The existing habitat in the centre of the WKN laydown area is compacted soil and stone which is subject to disturbance from operational activities and unlikely to support any reptiles. The laydown area also extends into an area of dense hawthorn scrub and grassland with tall ruderal, and sparsely vegetated ground, approximately 0.9 ha in extent. The vegetated habitats are potential reptile habitat will be subject to temporary removal for the duration of construction.
- 1.18 A 7.8 ha area of extensive reedbed bounded by grassland and scrub habitats is located to the west of the WKN laydown area. Based on the quality of the habitat and understanding of local reptile populations, it is anticipated that good populations of slow worm, common lizard and grass snake will be resident in this area.
- 1.19 Only a small proportion of the habitats of value for reptiles fall within the temporary working area. A targeted reptile survey in 2018 confirmed the presence of populations of both common lizard and slow worm. The peak counts were five common lizards and six slow worms equating to low population densities of both species. Although grass snake was not recorded during the

presence/absence surveys they are known to be active in the local area and would be expected to use vegetation habitats around the laydown area, at least on an occasional basis.

- 1.20 The main WKN development area was subject to a reptile capture/ exclusion in 2016 as part of the consented K3 development. The trapping area included extensive areas of undisturbed loose tipped rubble, alongside scrub and grassland, contributing to the size of the populations that were moved. The reptile population was relocated into areas of advanced habitat creation on the eastern side of the K3 development and into new reptile habitats establishing on adjoining land.

Annual Beard-Grass

- 1.21 Annual Beard-grass is a pioneer plant species found on the K3 development site during botanical surveys. The plant is classified as scarce at a national level (have been recorded in less than 50 4x4 km squares throughout the UK).
- 1.22 It is typically found in sparsely vegetated bare ground near the coast in marshes, the edges of brackish pools and ditches, and industrial areas such as docks. There is potential for annual beard-grass to be present in the WKN laydown area.

Other ecological features

- 1.23 In addition to the above, two other Schedule 1 bird species know to breed the local area; bearded tit *Panurus biarmicus* and Cetti's warbler *Cettia cetti* are known to use scrub/reedbed habitat in the area surrounding the site.
- 1.24 Also, the matrix of scrub, rubble, grassland and bare ground present on site pre development of K3 was also considered to have value for invertebrates, in line with similar brownfield sites.
- 1.25 Finally, there are other designated sites in the surrounding landscape (the Medway Estuary and Marshes SPA/SSSI/Ramsar, in particular).
- 1.26 For all of these, the ecological mitigation/enhancement measures adopted for the other features descried above will also help protect/enhance these features both during construction and operation of the development.

2 MANAGEMENT OBJECTIVES

2.1 Table 2.1 sets out specific ecological management objectives for the WKN site. The ecological features that are to be incorporated within the final development are shown on Figure 2.1.

Table 2.1. Management objectives for the WKN site

Habitat Type	Management objective	Rationale
Grassland	<p>Establishment and maintenance of species-rich grassland within WKN site and WKN laydown area as part of habitat reinstatement.</p> <p>Maintain the open mosaic of grassland with patches of longer grassland, bare ground and scattered scrub.</p>	<p>To provide foraging habitat and nesting material for a range of wildlife species, particularly reptiles and birds but also harvest mice and invertebrates</p> <p>To provide structural diversity and niches for multiple species particularly reptiles and invertebrates.</p>
Scrub	<p>Establish blocks of dense native scrub in WKN site and WKN laydown area as part of habitat reinstatement.</p> <p>Control the spread of scrub into grassland once established.</p>	<p>To provide nesting and foraging habitat for birds, and shelter for a range of wildlife, including reptiles.</p> <p>To maintain the mosaic of habitats on site.</p> <p>To maintain the extent of the open grassland habitat mosaic.</p>
Open/bare ground	<p>Periodically create pockets of bare ground within the created grassland.</p> <p>Create and maintain low (0.3m-5m high) south facing banks with bare soil faces</p>	<p>To provide open basking areas for reptiles and areas for use by birds for dust baths</p> <p>To, To provide opportunities for a diversity of burrowing invertebrate species.</p>

Dry ditch / reedbed	Re-instate a dry ditch with reed along edge of laydown area as part of reinstatement.	To replace existing habitat as part of the overall habitat mosaic
WKN Balancing Pond	<p>Establish reedbed or marshy grassland in the base of the balancing pond.</p> <p>Establish tussocky grassland on the sides of the balancing pond.</p>	<p>To provide nesting and foraging habitat for birds, and opportunities for a range of other wildlife.</p> <p>To promote invertebrate abundance and provide cover and food for amphibians and reptiles.</p>
Reptile Hibernacula	Create and maintain purpose-built, part-buried structures within reptile habitat.	To provide safe dry spaces, protected from environmental conditions for reptiles to hibernate over winter and shelter throughout the year.

3 SPECIES PROTECTION MEASURES

Marsh Harrier Protection

- 3.1 Experience from K3 suggests that, with the implementation of appropriate protection measures, marsh harriers should continue to nest in the reedbed each breeding season during the WKN construction.
- 3.2 The provision of the new reedbed habitat on the Isle of Sheppey ensures that alternative breeding habitat is also available during the construction of the WKN site, should the birds choose to abandon the Kemsley reedbed due to increased disturbance.
- 3.3 To further avoid any activity disturbance during the previous clearance works for the K3 laydown and human activity during construction, a 2.4 m wooden fence was erected along the northern site boundary. This fence remains in place along the northern boundary of the WKN development area. This fence will be extended along the western boundary of the WKN laydown area being either close boarded or constructed as a plywood faced timber framed hoarding.
- 3.4 The continuous fence screens Kemsley Marshes from site activities with the potential to cause indirect disturbance including the movement of machinery, excavation, concrete pouring, assembly and the movements of people in the development area. The fence will prevent development activities outside the permitted zones and will prevent any direct entry into Kemsley Marshes by people or machinery (or associated rubbish).
- 3.5 The marsh harrier breeding season broadly starts between mid-March and early May. The extension to the fence should be installed and maintained from the outset of construction. Comprehensive checks and repairs would be made as required to maintain a continuous barrier. The status of the fence would be formally documented at start of March during each year of construction.
- 3.6 The continuous fence would also provide protection from disturbance for the two other Schedule 1 species known to breed in the local area; bearded tit and Cetti's warbler.
- 3.7 Additional mitigation measures to prevent indirect effects arising from disturbance are designed around the stage of breeding (nest building, sitting on eggs or feeding chicks) and the nature and duration of the development activity.
- 3.8 The following stand-off distances will be maintained between marsh harrier nests in the Kemsley Marshes and relevant site activities between the start of March and end of August, should they be needed outside of the closed-board fence for any reason.
- 3.9 Activities that only involve the movement of vehicles:
- Nest building 100 m
 - Eggs 100 m
 - Chicks 50 m

- 3.10 Activities that involve people outside of vehicles and construction activities such as excavation, concrete pouring and assembly:
- Nest building 200 m
 - Eggs 200 m
 - Chicks 100 m
- 3.11 Vehicle access along the laydown access road is exempt from the above; the road is intensively used by existing traffic serving the Knauf jetty and, as such, birds are habituated to lorry movement in this area.

Wintering Birds

- 3.12 Site activities will be screened from habitats in The Swale by a combination of the sea wall and close boarded fence / hoarding. The main WKN development activities will be over 100m from the sea wall and intertidal habitat, but the laydown area adjoins the sea wall and is located 20m from the edge of the intertidal habitats.
- 3.13 On the eastern boundary of the WKN laydown area, an additional section of solid 2.4m high fencing will be installed alongside the base of the sea wall to define the boundary of the working area. It will prevent direct access for site personnel from laydown area onto the sea wall and will create a visual barrier wherever the sea wall does not completely screen the internal habitats from site activities.
- 3.14 In addition to the above, impact piling will only be undertaken following the following restrictions:
- January-February: no impact piling;
 - April-August: no impact piling;
 - November-December: no impact piling for more than 10 consecutive days.
- 3.15 Outside of this, piling can be undertaken by any means required.

Reptile Relocation

- 3.16 All species of British reptile are protected under Schedule 5, section 9, of the Wildlife and Countryside Act (1981) as amended. It is an offence to intentionally kill, injure or take any native species of reptile and measures will be employed to move animals present in habitats within the working area into an enhanced receptor area with increased carrying capacity.
- 3.17 The main WKN development site was cleared of reptiles and other ecological constraints as part of the construction of K3, prior to the commencement of construction, following the measures Ecological Mitigation and Management Plan (RPS 2009) produced for the original K3 application. Therefore, there is no requirement to move animals from this area prior to the construction of the WKN Proposed Development.
- 3.18 The edge of the mosaic of grassland and scrub in Kemsley Marshes falls within the temporary laydown area for WKN.

- 3.19 The measures detailed in this EMMP will ensure that the population of reptiles are moved via the appropriate methods, to ensure that none are harmed during the works. The reptile population will be conserved on-site, which has been shown in research to have a higher chance of producing a self-sustaining population in the long-term.

Reptile Receptor Area

- 3.20 The tussocky grassland scrub and balancing pond to the east and south of K3 development will be the receptor site for reptiles captured and relocated from the WKN laydown area (Figure 2.1).
- 3.21 This area is part of the landscaping for the K3 development; it was designed to have value for biodiversity and to be able to support large reptile populations, forming part of the overall ecological mitigation for that development. The area comprises extensive tussocky grassland and blocks of native shrubs that will form scrub. The base of a central balancing pond in the K3 landscape will be frequently inundated creating waterlogged conditions into which common reed should rapidly colonise. These habitats are currently being created and will establish during 2020 and into 2021. They are currently free of reptiles as they are fenced off from the areas where reptiles were translocated to previously. As such, this area is ideal as a temporary receptor site from the WKN Laydown. To enhance the area for reptiles, two additional hibernacula will be created at least two months before that start of the translocation
- 3.22 As set out in the EMMP for that development (RPS 2009), part of the mitigation works for K3 included habitat enhancement measures undertaken to the south of the K3 development to encourage the establishment of grassland on an adjoining bare ground with several hibernacula to be created for reptiles. New reptile habitat was established to the south of the K3 development with neutral grassland established on a capped former landfill. The existing reptile exclusion fence on the southern and eastern boundaries of the K3 development will be removed before summer 2021 to allow free movement of reptiles between the K3 landscape and habitats to the south.
- 3.23 The receptor area will therefore have a sufficient carrying capacity to be the temporary receptor area for the duration of construction and will have connectivity to good reptile habitat in the immediate vicinity of the site.
- 3.24 The habitats in the receptor area will be subject to active management to maintain the value of the habitats for the three reptile species present within and adjoining the site.
- 3.25 Following completion of WKN construction, additional landscaping including a balancing pond will be created immediately north of the receptor area and the laydown area would be subject to full habitat re-instatement. Therefore, the final scheme will provide connected habitats of value for reptiles through the developed site, directly linking the Kemsley Marsh reedbed and the restored landfill, through the habitats created on the K3 site.

Reptile Exclusion Fencing

- 3.26 In advance of the reptile relocation, the boundary of the proposed laydown area will be defined by reptile exclusion fencing which will remain in place throughout the construction period. The fencing will enclose the trapping area to be cleared of reptiles in advance of site activities and prevent reptiles moving into construction areas.

- 3.27 Reptile exclusion fencing will be installed by an appropriately experienced contractor, around the perimeter of the release area, under the watching brief of an Ecology Clerk of Works (ECoW). The fences will be made of UV proof polythene sheet to prevent degradation, supported by soft wood timber stakes at approximately 2 metre intervals. The polythene used will be no less than 30 cm high and buried to a depth of 10 cm to discourage any reptiles burrowing under it and gaining access to the development area. This is the specification of exclusion fence.
- 3.28 High visibility netlon-type fencing will be erected around the reptile fencing to prevent accidental damage by construction activity. Clear signage will accompany the high visibility fencing to make clear why these areas should not be disturbed e.g. 'Reptile Area – Keep Out'.

Capture and Relocation

- 3.29 All reptiles relocated from WKN laydown area will be translocated to a pre-determined release locations in the receptor site which is in the direct control of Wheelabrator.
- 3.30 Based on the anticipated size of the reptile population on site, a minimum of 30 suitable trapping days would be undertaken to clear the site as per HGBI (1998). Trapping will only finish once five clear suitable days have been achieved with no reptiles caught. If the numbers of individuals using the working area is higher than expected from the survey data, then the trapping period would be extended over a longer period of time.
- 3.31 The trapping period will then be followed by a destructive search across the site. The relocation is scheduled for late summer / autumn 2021 following the habitat enhancement which will be undertaken during spring 2021.
- 3.32 Following the erection of the temporary exclusion fencing, the capture and relocation phase will be initiated. The methods of capture will essentially be the same as those used for reptile survey. Refuge mats (roofing felt at least 0.5m²) will be placed throughout suitable habitat in the trapping area at least two weeks prior to the first relocation survey visit. The mats will be placed out at high density (approximately 100 traps per ha) to increase the capture rate and aid in finding remaining individuals when the majority of the population has been moved. The mats will be sufficiently close together to give the reptiles that often only travel a few meters away from their preferred areas, a chance to find them.
- 3.33 All the refuge mats will be checked daily targeting periods of appropriate weather conditions. Reptile activity is primarily controlled by weather conditions, and optimal conditions are on warm days with intermittent but regular sunshine and perhaps a little light rain provide good conditions for capture.
- 3.34 All individual reptiles would be humanely caught and safely moved to a nominated release site with the receptor area. The numbers/sex of reptiles found on each day will be recorded in a daily log along with details of the weather conditions (air temperature, cloud cover, rainfall, wind). The implementation of relocation will be documented in a final report including all capture information and information from the daily log.

Habitat Degradation / Destruction Search

- 3.35 Prior to and during the reptile location, selective cutting back of vegetation will be undertaken to reduce the extent of potential cover and encouraging reptiles to use the artificial refugia.

Clearance would only be undertaken using hand held tools under the direct supervision of the ECoW.

- 3.36 On completion of the trapping period, a systematic 'destructive search' would then be carried out, under the watching brief of an ECoW to find and catch any remaining animals within the trapping area. The destructive search would involve the cutting of remaining vegetation to ground level, dismantling and remaining features including piles of rubble and excavating below ground cavities to find animals sheltering below.
- 3.37 Any vegetation clearance in reptile habitat areas that have not been trapped out would be subject to a precautionary working method. The clearance would will be undertaken during the active season for amphibians and reptiles are active (generally mid-March to the end of October). All visits will be timed to coincide with suitable weather when the individuals will be mobile (reasonably warm temperatures, and avoiding periods of rain). The vegetation would be hand strimmed under the supervision of an ECOW to an initial height of 15 cm. It will be strimmed directionally, towards retained habitat. A second cut will be made to ground level at least 24 hours later to enable animals time to move away from the works area. A final destructive search would be performed under the guidance and watching brief of the ECoW.

Annual Beard-Grass

- 3.38 Due to the potential presence of annual beard-grass within the working area a precautionary approach will be employed to review the presence/absence of the species; and if present, translocate the species to defined receptor locations.
- 3.39 Annual beard-grass flowers from June to August and a survey of the working area for populations of the plant would be undertaken in summer 2021.
- 3.40 The location of each group of plants will be mapped and physically marked on the ground. The plants will be allowed to complete flowering.
- 3.41 As an annual species, translocation of individual plants is not possible but the substrate in which the plants are growing will contain viable seed. A shallow layer will be carefully lifted using an excavator, under the watching brief of an ECoW. Seed would also be collected from directly from plants between July to September.
- 3.42 A nominated receptor location in an area of sparsely vegetated nutrient-poor ground would be defined outside of the working area, and the ground subject to preparation prior to the translocation. The receptor areas would be scarified and the translocated substrate spread on the surface. The collected seed will be sown directly into the substrate in the receptor area. It is anticipated that translocation would be completed in late summer / autumn 2021.

General

- 3.43 The following activities/items will be located more than 20 m from the site boundary perimeter: refuelling and maintenance of machines, oil storage tanks, chemical or fuel storage and on-site concrete batching plants (if utilised).
- 3.44 A strict waste management system will be incorporated to prevent the disposal of construction or domestic rubbish entering the adjacent reedbed areas used by breeding marsh harrier.

- 3.45 Any scrub clearance necessary will take place outside of the nesting bird season (March to August inclusive). If this is not possible, vegetation will first be checked for nesting birds by an experienced ECoW. If any active nests are found, they will be left undisturbed with an appropriate buffer until chicks have fledged. The ECoW will provide advice with respect to appropriate buffer distances, depending on the species found.

4 HABITAT MANAGEMENT

Habitat Reinstatement (WKN Laydown Area)

- 4.1 On completion of the construction phase of the WKN development, the laydown area will be subject to habitat re-instatement. The objective will be to create an open grassland / scrub mosaic to replace the low-value habitats present pre-construction (mainly areas of active spoil).
- 4.2 The whole of the laydown area would be subject to ground preparation in advance of habitat creation. Any surfacing materials laid during construction would be removed. The ground beneath the laydown ground would be subject to decompaction to create a medium into which plants can grow. The planting areas will have a fine tilth to maximise survival rates. Where necessary, soil would be spread at an appropriate depth for the planting of shrubs and creation of grassland. Shallower nutrient poor soils would be used for the grassland areas to encourage wildflower diversity.
- 4.3 A neutral grassland would be re-instated using the appropriate seed mix of native grasses and wildflowers. Patches of areas of bare ground will be incorporated into the design to provide features of specific value for reptiles and invertebrates, including piles of rubble to be created from any surfacing material used during the construction of the laydown.
- 4.4 Areas of tussock-forming grassland with cock's-foot *Dactylis glomerata* and tufted hair-grass *Descampsia cespitosa* will be sown on the boundary to provide ideal basking, foraging areas for reptiles.
- 4.5 The ground will have undulations and low banks with steep south-facing bare soil faces would be created to encourage invertebrate diversity. Rubble/stone debris from on site will be added to some bare ground areas to create variation in substrate texture.
- 4.6 The dry ditch adjoining the working area will be reinstated, if disturbed during construction. In total, 1.4ha of new habitat creation will be re-instated compared to the 0.9ha of habitat that was lost (the additional area is what is currently spoil of no ecological value).
- 4.7 On completion of the landscaping works all the reptile exclusion fencing will then be removed (under the supervision of an ECoW) and the reinstated habitats would be recolonised from the population in Kemsley Marshes as well as populations in the receptor site.

WKN Landscaping and Reptile Receptor Site

- 4.8 The eastern end of the WKN development area will be landscaped at the end of the construction phase including the construction of a further attenuation basin. Habitats within the landscaped area will have value for reptiles and once complete will directly connect re-instated reptile habitats on the laydown area to the reptile receptor area. The final landscape scheme will be prepared as part of the detailed design.
- 4.9 The K3 site landscape area will form the reptile receptor area and is subject to the site management as adopted for the K3 site. Habitat management will set out a regime that ensures that dense structured vegetation does not overtake the grassland habitats on site, whilst still providing enough cover and foraging habitat for reptile species.

Reptile Hibernacula

- 4.10 At least two hibernacula will be constructed in the reptile receptor area, as directed by the ECoW.
- 4.11 Several pits 1 m wide, 2 m long and 0.5 m deep will be excavated in suitably open areas within the reptile receptor site. Stone debris (preferably 150 – 300 mm) from elsewhere on site will be mixed with the excavated soil and used to fill the pits to 1 m above surface level. Each mound will be partially covered with soil, leaving gaps around the edges to allow reptiles access. It is anticipated that these will naturally become vegetated over time. If recolonisation is poor leaving over 30% bare ground after 2 years the mounds may be seeded using the same grass seed mix as used for the grassland.
- 4.12 The management principles are summarised below.
- 4.13 The grass areas will not normally be cut between April and the end of July, allowing plants to flower. Only 20-25% of the tussocky grassland areas will be cut in any one year. Areas of connected long grass will be present every year to provide cover for reptiles and small mammals. Periodic clearance of vegetation to maintain open areas of bare substrate/soil within the grassland habitats.

Grassland Habitats

- 4.14 Management actions for grassland will be aimed at maintain structural diversity with areas of dense grassland, open grassland and pockets of bare ground in sunny locations close to dense ground cover areas. The extent of scrub will be controlled. The banks of the new attenuation basin in the area of the WKN site to be landscaped will be managed as grassland that will remain unshaded by scrub.
- 4.15 The management of new grassland habitats will adopt the following principles.
- 4.16 Grass areas will not be cut between April and the end of July, allowing plants to flower and set seed and maintaining species diversity.
- 4.17 The grassland will be mown no more than twice annually. There will be grass cutting between April and the end of July, allowing plants to flower and set seed and maintaining species diversity.
- 4.18 Only 20-25% of the grass area should be cut at any one time (within a 48 hr period) with all mown vegetation should be removed from the grassland areas.
- 4.19 Piles of dead vegetation, grass clippings etc will be heaped up in discrete piles along the bank of the attenuation pond to provide nesting sites for grass snakes. These will be positioned where they are unlikely to be disturbed during the summer months.
- 4.20 Management may be necessary to prevent infestation by weed species and prevent re-growth of scrub (both on the development site and the landfill site). This will principally be done by mowing.

- 4.21 Any grass cuts between the end of July and end of October would be subject to a precautionary management practices to protect reptiles from killing or injury. The grassland will be cut first to a height of 15 cm and then subject to a second cut to the desired height.
- 4.22 Any areas of weed or scrub species may be removed mechanically: (1) cut at ground level before the flowers open or (2) hand-pulling.
- 4.23 Ten 3x3m areas of longer grassland should be cleared to bare ground every three years to periodically create open areas of substrate/soil and maintain a mosaic of open grassland habitats.

Scrub

- 4.24 Areas of scrub will be planted in blocks to create dense stands within the grassland. Planting will include native hedgerow-type species including hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and dog rose *Rosa canina*.
- 4.25 Planted native shrub areas should be regularly monitored to assess establishment, growth rate and the need for pro-active management to promote a dense growth structure. Any losses in the first year will be replaced.
- 4.26 Once established, the scrub will be subject to periodic cutting back to encourage dense structure favoured by nesting birds. The blocks of scrub will be allowed to spread slightly as the plants mature but will be controlled. New plants colonising adjoining grasslands removed through cutting or pulling.
- 4.27 Scrub will not be allowed to significantly over grow grassland areas. Bramble would also be subject to regular control. Any significant areas of shrub growth out into the grassland (such as 'suckering' of new shoots growing from mature shrubs) will be controlled by regular cutting back.

5 MONITORING

Construction

- 5.1 All mitigation works should be implemented accordance with the EMMP and compliance documented in a simple log supported by photographs. This will be responsibility of the site construction manager.
- 5.2 The site team will call upon the ecological and landscape expertise as required. Works relating to the relocation of reptiles and translocation of annual beard-grass would be designed with specialist input from the project ecologist and would be subject to supervision by an ECoW.
- 5.3 The 2.4m high fence and reptile exclusion fences must be checked and maintained by the contractor team as continuous barriers for the full duration of the development and landscaping.
- 5.4 During construction, the temporary reptile exclusion fence will be monitored weekly by a designated on-site representative, and a record kept of the checks ensuring their effectiveness and that construction operatives are not accessing the areas. Any noted failed or damaged fences will be replaced immediately. Construction staff should be made aware of the reptile issue on the site and understand the importance of the fences.
- 5.5 Any unforeseen ecology issues to arise during the development process would be discussed with the project ecologist. Appropriate actions would be devised, and their implementation would be documented.

Reptiles

- 5.6 In order to confirm the outcome of the reptile relocation, the receptor area into which the reptile population were moved to facilitate the construction of the WKN, the receptor area and reinstated habitats in the laydown area will be subject monitoring; two years and four years after the completion of the development.
- 5.7 The purpose of the survey will be determine the continued presence/absence of reptile populations in the created habitats and the to estimate the size of the populations of each species.
- 5.8 The hibernacula will be inspected for maintenance annually. If they become degraded (soil is eroded or grass does not grow) they will be maintained to replace any stones or soil, and re-seed if necessary. The hibernacula will be kept clear of scrub so as not to become shaded.

Annual Beard Grass

- 5.9 Should annual beard-grass be found within the working area a translocation would be devised and the outcomes subject to monitoring. The receptor area would be surveyed in summer between June and September in first growing season following the relocation; and in third growing season following relocation. Monitoring will determine the extent to which the populations have been successfully established in the receptor area.

Habitats

- 5.10 Post development, the new areas of habitat that will have been created (grassland, scrub, wetland) will be subject to inspections during the establishment phase to assess germination, planting, plant health etc and identify if remedial actions will be required to achieve the desired biodiversity and landscape outcomes habitats with the key aim of providing new foraging/nesting etc. for birds, reptiles and invertebrates. The status of the created habitats would be formally assessed two years and four years after the completion of the development alongside the reptile monitoring surveys.

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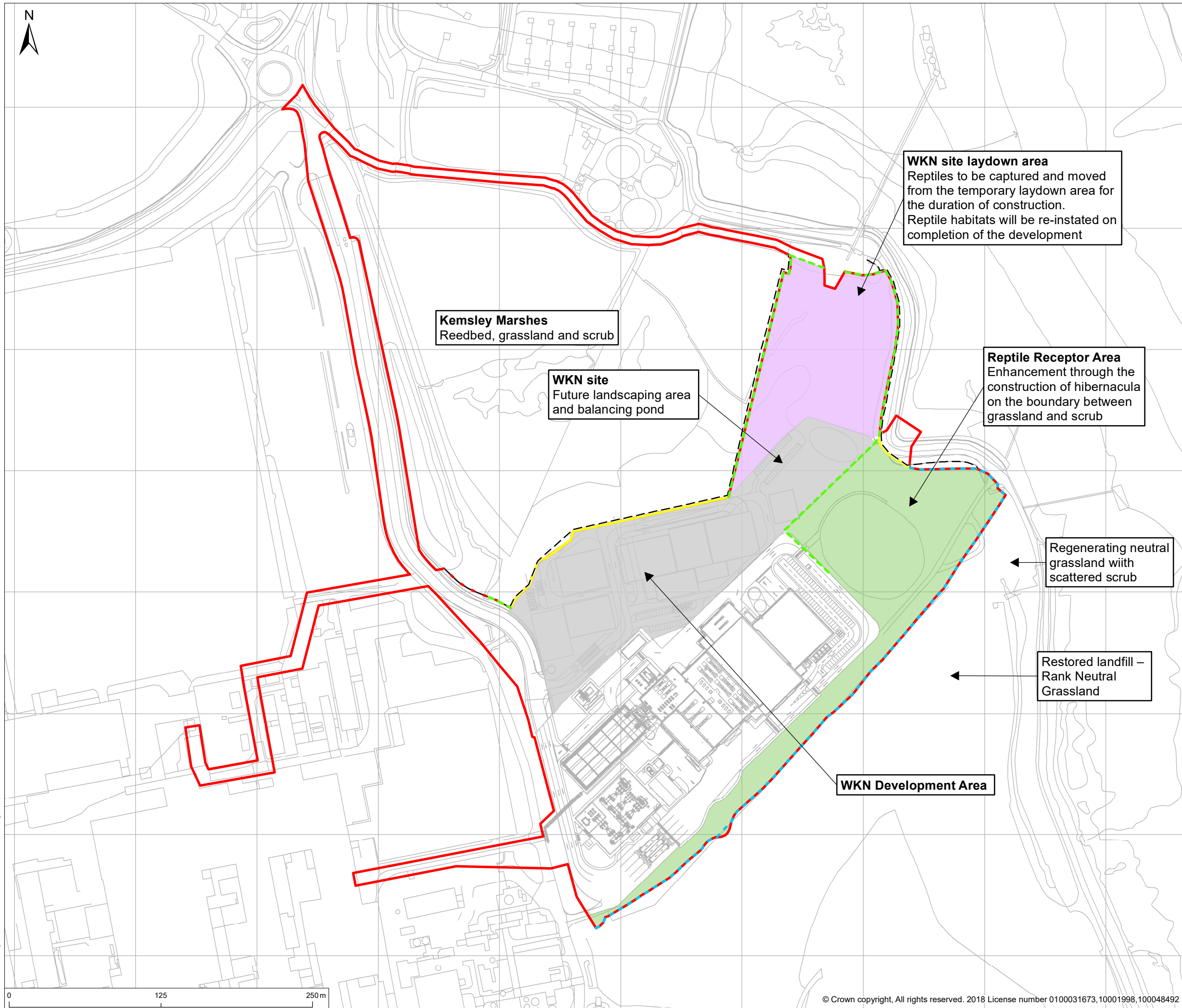
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Figure 2.1



Legend

- DCO Boundary
- WKN Development Area
- WKN site laydown area
- Reptile Receptor Area
- Existing reptile exclusion fencing to be retained
- Existing reptile exclusion fencing (K3) to be removed prior to construction
- New reptile exclusion fencing for duration of construction
- Temporary solid 2.4m high fence – protection of birds

Kemsley Marshes
Reedbed, grassland and scrub

WKN site
Future landscaping area and balancing pond

WKN site laydown area
Reptiles to be captured and moved from the temporary laydown area for the duration of construction. Reptile habitats will be re-instated on completion of the development

Reptile Receptor Area
Enhancement through the construction of hibernacula on the boundary between grassland and scrub

Regenerating neutral grassland with scattered scrub

Restored landfill – Rank Neutral Grassland

WKN Development Area

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Notes

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Project **K3 and WKN DCO**

Title **Ecology Mitigation and Management Plan**

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