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EXISTING DEVELOPMENT

2.1 It is proposed to increase the total intake to an existing soil recovery facility (SRF) at Halverstown, south of Kilcullen, Co. Kildare and to extend the life of the facility by up to 3 years to accommodate the planned additional intake (of approximately 860,000 tonnes). The plan extent of the application site, the wider Kilsaran landholding and ground contour levels as of November 2023 are shown on the site layout plan in Figure 2-1.

2.2 Of the lands within the application site, those to the south of the main access road through the site were previously used for sand and gravel extraction, while those to the north of it were only ever previously used for agricultural purposes (principally as grassland).

2.3 The site adjoins Kilsaran's existing concrete manufacturing plant, located to the north of the site which will continue to operate for the foreseeable future. A restored sand and gravel pit, previously operated by Kilsaran, is also located to the north-west of the site.

2.4 The existing soil recovery facility / application site is currently accessed through a long-established entrance to the Kilsaran landholding located on the western side of the R448 Regional Road (the old N9 National Primary Road).

2.5 In 2018, planning permission was obtained for the establishment and operation of a large-scale soil recovery facility at Halverstown providing for the importation of up to 1,200,000 tonnes of natural materials to backfill the worked-out pit to former / surrounding ground level and the restoration of the subject lands to grassland / long-term agricultural use. The permission provided for the shared use of pre-existing, co-located site facilities, structures and infrastructure (including the site access road) with the adjoining concrete manufacturing plant.

2.6 The existing recovery facility has a maximum permitted soil importation rate of 300,000 tonnes per annum within an 8-year period (out to December 2026). The bulk of the materials which have been imported to the facility to date comprise excess soil, stone and/or broken rock generated by construction and development activity in the surrounding (Eastern - Midland) region.

2.7 As the excess soil and stone imported and used for landfilling and restoration purposes at the worked-out pit would be classified as waste and the total intake exceeded 100,000 tonnes, the nature and scale of the activity was such that it also required a waste licence from the Environmental Protection Agency (EPA). After a waste licence was issued by the EPA in July 2020, licenced soil waste recovery activities commenced at the facility in late 2020.

2.8 Since that time, the level of demand for recovery capacity generated by ongoing construction and development activity in the surrounding region has been such that the rate of soil waste intake at Halverstown has been at or close to the maximum permitted rate of 300,000 tonnes per annum between 2021 and 2023.

2.9 Total soil and stone intake to the end of 2023 is estimated to be approximately 820,000 tonnes, meaning that the permitted remaining intake at the start of 2024 was around 380,000 tonnes. It is currently envisaged that the remaining soil and stone will be imported at a rate of approximately 190,000 tonnes per annum over each of 2024 and 2025. Total intake in either year could however be higher in the event of an early grant of planning permission for additional soil intake.

PROPOSED DEVELOPMENT

Development Overview

2.10 In view of the existing sustained high level of demand for soil recovery capacity at the Halverstown facility, the existing backfilling and restoration scheme has been reviewed in order to optimise soil intake and recovery capacity at the existing facility and a revised development scheme prepared to provide for

(i) an increase in the permitted total intake of soil and rock waste to the existing licensed recovery facility, from 1.2 million tonnes to 2.06 million tonnes. The additional intake to the facility will comprise a mix of soil and stone managed as waste (as heretofore) and as (non-waste) by-product;

(ii) an extension to the permitted life of the existing facility of 3 years (to December 2029) in order to accommodate the additional soil and stone intake;

(iii) continued shared use of existing, co-located site facilities, structures and infrastructure (including the site office, staff welfare facilities, weighbridge (with dedicated office), wheelwash, hardstand areas, fuel storage tanks and site access road);

(iv) continued soil and stone intake at a rate of up to 300,000 tonnes per annum, of which no more than 95,000 tonnes (per annum) will be managed as waste;

(v) continued separation of any construction and demolition waste (principally concrete, metal, timber, PVC pipework and plastic) inadvertently imported to the facility, prior to removal off-site to authorised waste disposal or recovery facilities;

(vi) continued use of a section of the existing concrete block curing shed as a waste inspection and quarantine facility;

(vii) continued environmental monitoring of noise, dust and groundwater for the duration of the site recovery and restoration activities and for a short period thereafter (and in accordance with EPA waste licence requirements);

(viii) continued temporary stockpiling of topsoil pending its re-use as cover material for final restoration of the site; and

(ix) ultimate restoration of the modified final landform (entailing harrowing, topsoiling and seeding) to establish a native woodland habitat on the northern side of the access road and grassland habitat on the southern side.

2.11 The additional capacity provided by the proposed development at Halverstown is readily achieved by

- increasing the overall height of backfilling by 1m on the southern side of the access road and steepening of side slopes to approximately 1v:6h (9.5°);
- creating a 3m high, 20m wide screening berm along the northern side of the access road and steepening side slopes to the site boundary to 1v:4v (14°) (which will provide screening and noise attenuation of traffic movements along the access road leading to the concrete manufacturing plant); and
- allowing for the fact that the density of imported soil placed in-situ is approximately 20% greater than was assumed at the time the planning application was submitted. Site records indicate the soil density achieved in-situ is 1.8t/m³ as against 1.5t/m³ (which was initially assumed at the outset) and as a result, there is a shortfall of approximately 240,000 tonnes in the soil intake required to complete the currently approved landform.

2.12 As indicated above, the proposed increase in the total quantity of soil intake

- will not give rise to any increase in the rate of soil importation to the existing licenced recovery facility - the maximum intake rate will remain at 300,000 tonnes / year (in line with the current development permitted by Planning Ref. 18/453);
- will not require any new or replacement site infrastructure, as all existing facilities (permitted by Planning Ref. 18/453) will remain in service.

2.13 As at the present time, imported materials will continue to comprise uncontaminated naturally occurring materials, principally excess soil, stone and/or broken rock generated by construction and development activity in the surrounding region (managed either as waste or as (non-waste) by-product). No peat, contaminated soils or non-hazardous waste will be accepted at the recovery facility.

2.14 With the additional soil import requirement, placement of (non-waste) soil by-product to the north of the main access road will be prioritised initially to achieve early completion of filling and construction of the proposed screening berm (Area 1). Over this initial period, any imported soil waste materials will be placed at a dedicated waste placement area to be located to the south of the access road (Area 2), at its eastern end. The location and projected extent of the different filling areas for waste and non-waste by-product within the application site are shown on the proposed site layout plan in Figure 2-2.

2.15 After the completion of filling at Area 1, all imported soil by-product and waste will be placed at the appropriately designated areas to the south of the access road indicated in Figure 2-2.

2.16 The importation, placement and use / recovery of the additional soil intake will provide for an increase in the total capacity available at the existing facility, facilitate construction of the modified backfilled landform at the former pit and its restoration to native woodland habitat to the north of the access road and grassland to the south of it.

2.17 As alluded to previously (in Paragraph 2.11 above), the increase in intake to the existing facility is partially necessitated by the requirement for an additional 240,000 tonnes of soil to complete backfilling and restoration to the levels required (permitted) by the existing planning permission (Planning Ref. 18/453). In the absence of any permission for increased soil intake to the facility, it will not be possible to complete the backfilling and restoration of the worked-out pit to the currently approved landform.

2.18 The additional soil waste imported to the facility for recovery through deposition on land will have the following EWC waste codes and will continue to be managed in line with the provisions of the existing waste licence (EPA Licence Ref. W0300-01);

- 17 05 04 Soil and stones other than those mentioned in 17 05 03;
- 17 05 06 Dredging spoil other than those mentioned in 17 05 05;
- 20 02 02 Soil and stone from municipal facilities.

2.19 In due course, it will be necessary to submit a waste licence review application to the EPA to accommodate the proposed increase in total soil waste intake and recovery capacity at the existing Halverstown facility.

SITE INFRASTRUCTURE

Site Access

2.20 The existing soil recovery facility at Halverstown and the adjoining concrete manufacturing plant are located approximately 4.5km south of the centre of Kilcullen. The site is located along the R448 Regional Road (the former N9 National Primary Road), approximately 3km south of the M9 (Junction 2) Interchange to the south-west of Kilcullen.

2.21 Vehicular access to Kilsaran's property at Halverstown and the application site is made via a dedicated right-turn junction along the R448 Regional Road. There is no other vehicular access to the recovery facility or to the adjoining concrete manufacturing plant.

Site Security

2.22 At the present time, the pit / property boundary is secured by post and wire fencing and/or hedgerow. There are periodic inspections / surveys of the property boundary and where and when necessary, replacement boundary fencing is erected, existing fencing repaired and hedgerows strengthened or fortified by additional planting.

2.23 All heavy good vehicles (HGVs) importing soil and stone to the recovery facility must pass over the existing weighbridge located along the access road leading into the facility.

2.24 CCTV cameras are installed around the weighbridge and used to inspect all soil and stone being imported for use / recovery at the facility.

2.25 On arrival, HGV drivers will identify themselves to the weighbridge operator before proceeding to the active backfilling location. The weighbridge operator will take a copy of the weigh docket, record the time and date of arrival, the nature and origin of the imported soils, the customer / client, the truck licence plate number and where relevant, the waste collection permit details (as required by the EPA waste licence).

Site Roads, Parking and Hardstanding Areas

2.26 All trucks delivering soil will be confined within the Applicant's landholding. Trucks turn into the recovery facility from the R448 Regional Road and travel north over a short section of paved roadway within the application site towards the existing weighbridge. After being weighed, the HGV's turn eastwards or westwards (depending on the works phasing) to travel over a section of unpaved internal road, after which they will travel over a network of temporary haul roads leading to active filling areas.

2.27 Adequate provision for car parking by employees and visitors is provided to the side of the block curing shed, at the location indicated on the site layout plan in Figure 2-1. Provision is made for future installation of electrical vehicle (EV) recharging points and a covered bicycle rack at this parking area.

Wheelwash

2.28 In order to prevent transport of clay and dust onto the public road network, a wheelwash has been installed along the access road to the site (in compliance with Condition No. 30 of Kildare Co. Co. Planning Ref. No. 15/189). All HGVs / tipper trucks exiting the recovery facility pass through the existing wheelwash, at the location indicated in Figure 2-1.

Weighbridge

2.29 In order to track and record the amount of material imported to (and accepted at) the recovery facility, all HGV traffic importing soil and stones are directed across the existing weighbridge, at the location indicated in Figure 2-1.

2.30 Any separated non-inert construction and demolition waste inadvertently brought to site will be dispatched (in skips) to other licensed waste disposal or recovery facilities and will be weighed out at the existing weighbridge. Records of imported soil and stone tonnages will be maintained for by-product and waste tracking / auditing purposes, in accordance with the published EPA by-product decision[1] and EPA waste licence requirements.

[1] EPA Draft National By-Product Criteria : Reference Number: BP-N002/2023 of the 03rd of October 2023 establishing detailed criteria on the application of the conditions of Regulation 27(1)(a) – (d) when making the decision that greenfield soil and stone can be regarded as a by-product under Regulation 27 of the European Union (Waste Directive) Regulations 2011 – 2020.

Offices and Ancillary Facilities

2.31 Personnel and staff at the recovery facility will continue to share the existing site office and staff welfare facilities at the adjoining concrete plant to the north, at the location indicated in Figure 2-1.

Utilities and Services

2.32 Electrical power is currently provided to the application site via mains supply. Electricity provides the principal source of energy for office lighting and heating.

2.33 Site-based staff overseeing backfilling and recovery operations at the application site are contactable by mobile phone only. Email broadband connections to the site office are currently provided via a mobile (5G) network.

2.34 Staff based at the soil recovery facility use the existing toilet, hand washing and cooking facilities at the site office / staff welfare facilities, located at the adjoining concrete manufacturing plant.

2.35 There is a septic tank located to the west of the existing site office / staff welfare facilities. Effluent from the tank is discharged to ground via a percolation area. The location of the welfare facilities and the existing septic tank is shown in Figure 2-1.

2.36 Staff welfare facilities are supplied with water from an onsite borehole. Bottled water for personal consumption is brought to site by an external supplier as required. The same borehole also supplies water to the concrete manufacturing plant, albeit the plant does not consume large amounts of water as the concrete mix it produces is semi dry.

2.37 Given the lack of combustible waste materials at this site, it is considered unlikely that a fire will break out during backfilling and recovery operations. A range of fire extinguishers (water, foam and CO_2) are kept at the site office to deal with any localised small-scale fires which might occur. Additional fire-fighting capacity can be provided as and if required, by storing water in a mobile bowser on unsealed hardstand areas.

Lighting

2.38 There is no fixed or permanent external lighting across the backfilling areas at Halverstown or along the internal access road leading to the concrete manufacturing plant. Mobile lighting is provided around active working areas at the pit as required and is generally sufficient to permit safe operation of plant and machinery during early morning and late evening periods over winter months. Some low-level lighting can also be fixed to plant and equipment as required to provide transient illumination to working areas immediately around them.

2.39 There is already sufficient lighting in place around staff welfare facilities, the weighbridge and the quarantine area to ensure a safe working environment in hours of darkness and provide for site security. The lighting at these locations is projected down at an angle of 22° to 30° degree, is some distance from the site perimeter and screened by mature vegetation around the property boundary. The nature and location of the on-site lighting is such that there is no potential glare impact onto adjacent roads or households.

Fuel and Oil Storage

2.40 Fuel for plant and equipment used for backfilling and recovery operations is (and will continue to be) stored in the existing fuel storage tanks at the adjoining concrete manufacturing plant, to the north of the site. These tanks are constructed on sealed concrete surfaces and bunded to provide a storage volume equivalent to 110% of the tank storage capacity.

2.41 Similarly, oils and lubricants are (and will continue to be) stored on suitable spill pallets within the existing workshop / maintenance shed.

2.42 Mobile plant and equipment undertaking the backfilling works are (and will continue to be) refuelled over concrete surfaces around the existing bunded fuel storage tanks at the adjoining concrete manufacturing plant or on occasion from mobile, double skin fuel bowsers at hardstanding areas (Clause 804 sub-base materials) with drip trays used to contain any leaks or spills as required.

Waste Inspection and Quarantine Facility

2.43 Any imported soil waste material which is accepted at the recovery facility but is subsequently suspected to be non-compliant with waste acceptance criteria for the licensed facility is re-loaded onto HGV trucks and transferred across the application site to the designated waste inspection and quarantine facility for closer examination and/or testing (in line with waste licence requirements). This facility, which comprises a designated area within an existing concrete block shed is covered and underlain by a sealed concrete floor. Is location, in the north-western corner of the application site, is shown on Figure 2-1.

2.44 As incident rainfall will not come into contact with any consignments of suspected contaminated waste stored at the shed, there is no requirement to install drainage infrastructure to provide for the separate collection and storage of potentially contaminated surface water run-off arising at this location.

2.45 Should any inspection or testing of suspect soil waste at the inspection and quarantine facility identify any non-inert, contaminated or unsuitable material which cannot be accepted or re-used in the backfilling and restoration of the former pit under the terms of the existing waste licence, it is segregated and temporarily stockpiled (quarantined) pending its removal off site by permitted waste collectors for recovery or disposal at an authorised waste facility.

2.46 Provision is also made within the block shed for temporary storage of any separated non-inert construction and demolition (C&D) waste (including metal, timber, plastic etc.) in skips, prior to their removal off site for recovery or disposal at an authorised waste facility.

Equipment Storage Areas

2.47 Mobile plant and equipment used for backfilling and recovery operations is stored on hardstand areas within the application site. As access into the site can be restricted outside of working hours, it is not necessary to provide a secure compound for plant and equipment within the soil recovery facility.

2.48 Maintenance of plant and machinery is routinely undertaken over paved / sealed surfaces at the existing covered workshop / maintenance shed.

Site Preparation Works

2.49 No site infrastructure construction and/or preparatory site works are required to facilitate the additional soil and stone intake to the existing licenced recovery facility other than the ongoing upgrading and/or maintenance of haul roads and hardstanding areas necessary to facilitate routing of HGV / trucks across the site.

SITE OPERATIONS AND PROCEDURES

2.50 The backfilling and restoration of the former landform at Halverstown using imported soil and stone which is classified and managed as waste is deemed to constitute inert waste recovery through deposition for the purposes of land improvement or restoration.

2.51 The restoration scheme has, to date, made provision for direct use of imported soil and stone **waste** for backfilling purposes, without further processing. Going forward, only a portion of the projected additional soil and stone intake will be managed as waste, while the balance will be managed as (non-waste) by-product.

2.52 Backfilling and restoration of the former pit using inert soil and stone **waste** comprises the following classes of waste activity in accordance with the Waste Management Acts 1996 – 2022 (as amended):

- Class No. R3 : Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes). This activity applies to proposed importation and use of topsoil for use in the final restoration of the landform.
- Class No. R5 - recycling and reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials (Principal Activity). This activity is limited to the recovery of inert soil and stone through deposition, for the purposes of improvement or development of land.
- Class No. R13 (storage of waste pending any of the operations R1 to R12). This activity will be limited to the storage of imported wastes for recovery purposes at the facility (e.g. stockpiles of inert soil).

2.53 The current waste licence (Ref. No. W0300-01) permits the following wastes (EWC codes) to be recovered (by deposition on land) at the existing facility:

- 17 05 04 Soil and stones other than those mentioned in 17 05 03;
- 17 05 06 Dredging spoil other than those mentioned in 17 05 05;
- 20 02 02 Soil and stone from municipal facilities.

Any additional soil and stone waste imported to the facility for backfilling and recovery purposes, as provided for in this application, will also comply with the EWC codes identified above.

2.54 Backfilling activities at the application site / existing recovery facility is progressing (and will continue to progress) upwards from the former pit floor. Surface water will continue to infiltrate and recharge to ground, as at the present time, and there is little, if any requirement for any ongoing active management of surface water at the site.

2.55 Following importation of the permitted (increased) soil waste intake and cessation of backfilling and recovery activities, the application site will be restored to native woodland and grassland using natural subsoils and topsoil set aside specifically for this purpose during the recovery operations.

2.56 Woodland planting will be established across the entire area to the north of the site access road. The level ground to the south of the access road will be restored to grassland and woodland planting will be established on the sloping ground around it. When fully restored, the modified final landform will merge into the surrounding landscape.

2.57 An outline of the proposed final restoration scheme and the final ground level contours at the existing facility is shown in Figure 2-2. The changes in final ground level across the application site, relative to that already (previously) approved are indicated in Figure 2-3.

2.58 Cross-sections showing the current landform (as of early 2024) , the permitted final landform and the proposed amended final landform are shown in Figure 2-4.

Phasing

2.59 The phasing of the original restoration plan will be modified to prioritise the importation and placement of soil by-product over the area on the northern side of the site access road leading into the facility. This area is identified as Area 1 on the amended site restoration plan in Figure 2-5.

2.60 As noted earlier, the amended restoration scheme presented in this application provides for the construction of a 3m high, 20m wide screening berm along the northern and eastern side of the site access road. This berm is intended to provide visual screening and noise attenuation of traffic movements (in and out of the recovery facility and adjoining concrete plant) for surrounding residential receptors, principally those located to the north of the facility.

2.61 The early completion of backfilling and restoration of the lands on this side of the access road to native woodland will deliver these environmental benefits at an earlier stage in the project life cycle.

2.62 Backfilling and restoration work on the lands to the south of the access road (Area 2) will be undertaken using soil and stone managed both as waste and as by-product, at the areas delineated on the proposed final restoration plan in Figure 2-2.

2.63 Intermittent importation and placement of soil waste will take place at Area 2 as backfilling and restoration works progress using only soil and stone by-product at Area 1, on the opposite side of the access road. Backfilling activity across Area 2 area will only progress in earnest once backfilling works have been completed at Area 1.

2.64 Once backfilling works have been completed across Area 2, the required restoration works, including native woodland plantings and grassland seeding will be undertaken (as outlined in Figure 2-5).

Capacity and Lifespan

2.65 Total soil and stone intake to the existing facility based on weighbridge records up to the end of 2023 is approximately 820,000 tonnes, meaning that the permitted remaining intake capacity under the current planning permission was around 380,000 tonnes at the start of 2024.

2.66 Recent topographical survey data looking at intake volumes and changes in ground levels indicate that the corresponding average in-situ density of soil and stone imported to the facility is approximately 1.8 tonnes/m^3. This is 20% higher than the density assumed at the time the original planning application for backfilling and restoration of the pit was submitted in 2018 (which was just 1.5 tonnes/m^3)

2.67 As noted previously, this application provides for an increase in the total soil waste intake to the Halverstown recovery facility, from 1,200,000 tonnes (as currently permitted) to 2,060,000 tonnes in the amended backfilling and restoration scheme.

2.68 The breakdown of additional soil intake capacity provided by the proposed development was previously set out in Paragraph 2.11. The additional soil intake volumes, in excess of that currently permitted, are approximately 110,000m^3 to north of the existing site access road and approximately 250,000m^3 to south of it. These volumes equate to approximately 190,000 tonnes of additional intake to the north of the access road and an additional 430,000 tonnes to the south of it.

2.69 Because in-situ density of compacted soil is higher than assumed at time of the 2018 planning application, there is also a shortfall of c. 240,000 tonnes in the permitted soil and stone intake required to complete the landform which was approved by way of that planning permission (Ref. 18/453).

2.70 Based on the above, a breakdown of past and projected future soil and stone intake to the Halverstown facility (in tonnes) is presented in Table 2-1 below:

Table 2-1
Breakdown of Past (and Future) Soil Intake (as of 01/01/2024)

Existing Permitted Landform				WITH Planned Future Development / Increase	
Current Permitted Capacity	of which		Extra Tonnage Required (due to increased in-situ density)	Proposed Additional Capacity	Proposed Total Capacity
	Used Capacity (2020 - 10/2023)	Remaining Permitted Capacity			
1,200,000	820,000	380,000	240,000	620,000	2,060,000

2.71 An illustrative breakdown of future soil and stone intake to the facility (from 2024) under the existing planning permission and any future grant of permission providing for an increase in the total soil intake capacity and an extension to the life of the facility is provided in Table 2.2 below

(i) by year of operation and

(ii) by material status (waste or non-waste by-product), having particular regard to the proposed limit on future soil waste intake;

Table 2-2
Illustrative Breakdown of Future Annual Soil Intake by Year of Operation

	Year	Waste	Non-Waste Byproduct	Total
Existing Permission (380,0000t)	*2024*	*190,000*	*0*	*190,000*
	2025	*190,000*	*0*	*190,000*
Future Development / Increased Intake (850,000t)	**2026**	**95,000**	**200,000**	**295,000**
	2027	**95,000**	**200,000**	**295,000**
	2028	**95,000**	**80,000**	**175,000**
	2029	**95,000**	**0**	**95,000**
	TOTALS	**760,000**	**480,000**	**1,240,000**

2.72 Note that the breakdown of intake provided above has also had regard to the proposed limits on future soil waste intake, as well as the proposed phasing of site activities on different sides of the site access road.

2.73 On the basis of the phasing proposals and tonnage estimates provided above, the additional soil intake capacity at Area 1 to the north of the access road (approximately 190,000 tonnes) could be imported and placed within 1 year of securing planning permission for the increased intake capacity. It is projected that all of this additional soil will be classified and managed as by-product.

2.74 On the same basis, the additional soil intake at Area 2 to the south of the access road (approximately 670,000 tonnes between soil waste and by-product) could be imported and placed across Area 2 in just over 3 years and by early to mid-2029.

2.75 Notwithstanding the above, the duration of backfilling activities at the application site and existing soil recovery facility will be dictated by the rate at which the remaining permitted intake (and any future increase therein) is imported to the site. There are many factors which influence this, including, but not limited to the:

- Availability of acceptable soil and stone materials at construction sites;
- Prevailing economic climate and related construction industry output;
- Distance of construction projects from the facility (and scale of activity);
- Logistical / programming constraints at sites generating intake materials;
- Climatic conditions (reduced construction activity in wet weather) and
- Disruptions along the existing local and national road network.

2.76 In light of these and other variables, predictions of future intake rates and operational lifespan is not an exact science. Although intake rates to the existing recovery facility have been at a sustained high level, close to the maximum permitted annual intake rate of 300,000 tonnes per annum since the facility commenced under licence in late 2020 and, although desirable, it is not certain this will be sustained in the years ahead.

2.77 If the average rate of soil importation and backfilling at the facility is at, or close to the levels projected in Table 2.2 above, the expected operational life of the facility will be just over 3½ years, extending out to early 2029. If however, it is somewhat lower than projected, the operational life of the facility could be extended past this date.

2.78 In light of these uncertainties and to provide some operational flexibility and additional time for final site restoration and planting (a minimum of 6 months), application is made to extend the operating life of the existing facility by 3 years from its currently permitted end date. Assuming planning permission to increase the soil intake capacity at this facility is achieved in good time, that would extend its operational life out to December 2029.

Site Screening

2.79 There are minimal views of the planning application area from locations to the east, south and west of the site, with the exception of views around the site entrance from the R448 Regional Road. Visual screening is provided by dense, mature vegetation (hedgerow) along all of the northern, western, southern and the majority of the eastern site boundary and is also assisted by the relatively flat topography of the site and the surrounding lands.

2.80 In addition to recent planting, some further long-term planting of native woodland tree species will be undertaken as part of the restoration plan for the site (refer to the Landscape and Restoration Plan in Figure 2-5). Over the longer-term, this planting will afford greater screening of the application site from the public road and from lands and properties to the north of the site (refer to EIAR Chapter 13: Landscape).

Working Hours

2.81 The recovery facility will continue to operate in line with conditions attaching to both the existing planning permission and waste licence, between 08:00 hours and 18:00 hours Monday to Friday, and on Saturday, from 08:00 hours to 13:00 hours (Condition No. 5 of Planning Ref. No. 18/453 and Condition 1.7 of EPA Waste Licence W0300-01). No site activities will be undertaken outside of these times, on Sundays or Public Holidays.

Employment

2.82 At the current time, there is currently one-part time manager and two full time employees based at the soil recovery facility. The provision of additional soil intake capacity and the extension of the permitted lifespan of the development by at least 3 years (and possibly 4 years) will sustain this employment over the short-to-medium term.

2.83 The site (facility) manager is responsible for overseeing and managing site operations and is specifically responsible for (i) checking that the soil and stone being brought to the facility has been pre-cleared and meets site acceptance criteria, and (ii) collating and maintaining all required records of soil intake.

2.84 The two operatives employed at the facility are required to (i) operate site plant and equipment such as a bulldozer or a mechanical excavator on a full-time basis as required, and (ii) visually inspect and monitor the suitability of the soil and stone being imported and accepted at the facility to confirm it is suitable for intake and recovery.

2.85 At least one employee is required to be present at the facility while soil placement / recovery operations are undertaken.

2.86 HGV drivers importing soil and stone to the facility will either be directly employed by Kilsaran, by sub-contract hauliers working on its behalf or by approved haulage contractors operating under an existing approval and permitting system. The majority of the HGV drivers are, and will continue to be employed by, or contracted to, authorised / approved hauliers.

2.87 Site based operatives and staff working at the recovery facility use (and will continue to use) the existing staff welfare facilities at the adjoining concrete plant at Halverstown. Drivers and hauliers importing waste to the recovery facility will also continue to have access to these facilities as required.

Traffic Movements

2.88 Assuming that the established importation limit of 300,000 tonnes per annum remains in place for the extended duration of recovery activities (as provided for by this application) and that the facility accepts soil and stone intake at the maximum permitted rate, this would correspond to an average of

- 11,400 HGV / articulated truck return trips per year (assuming an average payload / consignment weight of 26.3 tonnes per HGV);
- 45 return trips to the facility per day (assuming 5.5 working days per week for 46 weeks in a calendar year) and
- 5 return trips per hour (assuming a 10-hour working day).

Surface Water and Groundwater Management

2.89 In general, all rain which falls across the application site at the present time infiltrates into the backfilled materials or the naturally permeable ground which lies beneath the application site and surrounding area, and ultimately recharges the underlying groundwater table.

2.90 There are also no surface watercourses or surface water bodies within the site (or in the immediate vicinity thereof) and no surface water discharge off-site.

2.91 In the course of backfilling and recovery operations at Halverstown, the upper surface of the backfilled soil is graded so as to ensure that any surface water run-off which may arise will flow over the backfilled materials falls to minor sumps (or closed depressions) at localised low points, either within the backfilled materials, against the former pit sidewalls or on the former pit floor.

2.92 Experience in operating the recovery facility to date is that the volumes of any run-off (in the form of overground rills or minor gullies) is relatively small and that any localised ponding which does arise at localised low points or minor temporary sumps across the site infiltrates to ground within a short time period.

Site Drainage

2.93 Groundwater recharge is largely diffuse and there is no concentrated or point recharge of rainwater run-off to the underlying groundwater table. As a consequence, to date there has been no requirement for a surface water management plan at the existing facility. It is expected that this will continue to be the case if the intake capacity is further increased and the operational life of the facility is extended as proposed.

2.94 Notwithstanding this, and to ensure that there will be no impact associated with surface water run-off from backfilled areas once on-site activities have ceased and restoration works have been completed, perimeter drainage channels will be installed around the backfilled areas to

(i) capture any overground run-off which may arise following extended or intense rainfall events;

(ii) effectively act as swales and facilitate infiltration and recharge to ground through their base and sides (particularly where they are in contact with any more permeable in-situ sand and gravel deposits); and

(iii) channel any excess run-off to collect at ephemeral ponds / closed depressions developed at low points at the end of the channel run (as indicated in Figure 2-5), whereon it will infiltrate slowly to ground.

General Waste Management

2.95 Only materials carried by authorised / pre-approved waste collectors are accepted at the existing soil recovery facility, in accordance with existing waste licence requirements.

2.96 Batteries, waste oils and lubricants, damaged parts and equipment, scrap metal etc. are stored centrally at the on-site workshop / maintenance shed. All wastes are collected and recycled or disposed of at authorised off-site waste facilities by authorised waste contractors. General office and food waste produced at site offices and at staff welfare facilities are minimised insofar as possible and disposed of accordingly.

2.97 Management systems are in place at Halverstown to control and manage all potential waste streams, to avoid generation where possible, to maximise re-use or re-cycling opportunities thereafter and comply with any waste management responsibilities prescribed by the EPA waste licence.

2.98 These arrangements will remain in place if the overall intake capacity in increased and the life of the facility extended, as provided for in this application.

Formation Levels and Gradients

2.99 The **former pit** at Halverstown will be restored to the proposed (amended) final landform in several phases working upwards from the former pit floor level (approximately 116mOD). Final formation levels on completion of the backfilling and restoration works vary on account of the sloped nature of the restored landform, from approximately 125mOD around the perimeter / toe to 129mOD, as indicated on Figure 2-2.

2.100 Original ground levels in the former field to the **North-East** ranged from 120mOD to 124mOD. Final formation levels on completion of the screening berm will vary from 120mOD to 129 mOD, as indicated on Figure 2-2, with maximum levels arising along the proposed screening berm to the north of the access road.

2.101 Temporary access ramps in and out of active filling areas will be developed at a gradient of approximately 1v:10h. Temporary side slopes in soil will be constructed at gradients no greater (steeper) than 1v:1.5h in order to ensure stability. On completion, final gradients across the restored ground surface will be relatively shallow, typically 1v:4v or less.

Stability Analyses

2.102 Temporary side slopes in backfilled soils will be graded at an angle no steeper than 35° (approximately 1v:1.5h), sufficient to ensure no large-scale instability arises over the short-term. Ongoing assessment of slope stability will be undertaken at the application site as filling progresses.

2.103 In the longer-term, once filling and restoration works are complete, there will be no risk of instability, as the final ground surface will be graded to a relatively shallow slope. Permanent restored slopes on completion of the filling and restoration activities will be comparable to those on surrounding lands, generally shallower than 1v:4h (14°) and everywhere shallower than 1v:2h (26°).

2.104 Given that the bulk of the soil materials to be imported to site for restoration purposes are likely to be relatively competent glacial tills, no long-term slope instability is anticipated to occur. This assertion is made in view of the fact that constructed glacial till slopes at 1v:2h are routinely constructed for infrastructure projects across Ireland and are demonstrably stable.

Laboratory Testing

2.105 Laboratory testing of soil, soil water percolate and groundwater is undertaken at an off-site at an ILAB / UKAS accredited geo-environmental laboratory. Any validation testing and laboratory testing, required to confirm soil and stone intake complies with acceptance limits set by EPA guidance[2] and/or the EPA waste licence are undertaken at an accredited laboratory. All samples taken on-site are forwarded to the laboratory and test results are typically forwarded to site within ten working days.

2.106 No environmental monitoring equipment (such as pH and temperature meters, conductivity meters, flow meters and dissolved oxygen meters etc.) is stored at the facility. This equipment is brought to site by in-house environmental scientists and/or independent environmental consultants as and when required.

2.107 These arrangements will remain in place if the intake capacity in increased and the life of the facility extended, as provided for in this application.

Bund and Liner Design

2.108 Given the inert and uncontaminated nature of the soil and stone materials being imported and recovered in restoring the application site, there is no requirement for perimeter / containment bunds at the base or sides of the backfilled areas, nor is it necessary to provide a basal liner, side slope liner or drainage blanket beneath the backfilled materials.

Leachate and Landfill Gas Management Systems

2.109 Given the inert and uncontaminated nature of the materials being used to restore the application site, there is also no requirement for either a leachate management system or a landfill gas management system at the recovery facility.

Progressive Restoration

2.110 Topsoil will be imported to the recovery facility on an ongoing basis and will not be used immediately in backfilling the former pit. Imported topsoil will be stockpiled separately pending re-use toward the latter stages of backfilling works at separate fill areas.

2.111 It is envisaged that topsoil will be stockpiled at the northern end of Area 2, at the location indicated in Figure 2-5 and away from active ongoing backfilling or recovery activities.

[2] Guidance on waste acceptance criteria at authorised soil recovery facilities, EPA, Wexford, January 2020

These stockpiles will be managed to minimise any temporary adverse visual impacts or dust nuisance.

2.112 On completion of backfilling works, the application site will be restored to the landform indicated in Figure 2-2 and final cross-sections shown in Figure 2-4. These works will effectively see the site restored to former / surrounding ground level to the south of the site access road and provide for a 3m high visual / noise screening berm to the north of it.

2.113 Once backfilling is complete and the level of the filled materials approaches final surface levels, lands will be progressively restored by placing a cover layer comprising 150mm of topsoil (and approximately 150mm of subsoil) over the imported soil and stone fill. The topsoil will initially be seeded with a suitable grass mix to promote stability, minimise soil erosion and dust generation, pending final site restoration works (described in later sections).

SOIL ACCEPTANCE AND HANDLING

2.114 All soil and stone intake to the recovery facility is imported by way of heavy goods vehicles (HGVs), principally rigid body (tipper) trucks or articulated trucks. All HGVs importing pre-approved intake to the facility are required to pass over the existing weighbridge located along the access road into the facility.

2.115 On arrival, HGV drivers carrying materials to the soil recovery facility identify themselves to the weighbridge operator before proceeding further. The operator retains a copy of the weigh docket, record the time and date of arrival, the nature and origin of the imported materials, the customer, the truck licence plate number and where relevant, any waste collection permit details.

2.116 Insofar as practicable, the source of each consignment of soil imported to site for backfilling and/or recovery purposes is identified in advance and subject to either

- basic assessment and/or characterisation testing to confirm that the soils originating at that location meet the relevant **by-product** criteria (as per EPA Decision BP-N002 / 2023); or
- **waste** acceptance criteria set under the terms of the waste licence.

Ideally, such testing should be undertaken by customers / clients / contractors in advance of forwarding soil and stone for backfilling and/or recovery at the facility.

2.117 Operating procedures at the facility require all soil and stones forwarded for backfilling and/or recovery purposes to be pre-sorted at source, uncontaminated and largely free of construction or demolition (C&D) waste or any non-hazardous / hazardous domestic, commercial or industrial wastes.

2.118 Any materials that are deemed unacceptable for backfilling and/or recovery at the facility on the basis of a visual inspection at the weighbridge are immediately rejected and directed to an appropriately authorised waste facility.

2.119 All soil and stone waste imported to the facility is unloaded (end-tipped) from trucks at active filling areas. It is visually inspected by site personnel at that point to ensure that there is no intermixed construction or demolition (C&D), non-hazardous or hazardous waste within it. Any consignments forwarded to site which are found to have excessive quantities of these materials intermixed within them are immediately rejected, reloaded onto HGVs and directed to leave site.

2.120 Any minor inclusions of non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) inadvertently imported to the site are separated out and temporarily stored in skips at the waste quarantine area prior to being transferred off-site to appropriately authorised waste disposal or recovery facilities.

2.121 If, following intake and acceptance of soil and stone, there are subsequent grounds for concern about the nature of the material imported to site, it will be segregated and transferred to the waste inspection and quarantine area for closer inspection and classification. A detailed record is kept of all such inspections, as required by the waste licence.

2.122 Should detailed inspection and/or subsequent testing indicate that the quarantined materials cannot be accepted and/or used for backfilling purposes, they will be removed off-site by permitted waste collectors to appropriately authorised waste disposal or recovery facilities.

2.123 Representative test samples are taken by the site operator (the Applicant) for every 2,000 tonnes of soil **waste** imported and accepted at the facility (as required by the current waste licence). These samples are subject to compliance testing which is less extensive than characterisation testing and focuses on key contaminant indicators. The test results are used to confirm that the soil and stone intake is acceptable and complies with the facility's acceptance criteria.

2.124 The intake arrangements outlined above will remain in place if the overall intake capacity is increased and the life of the facility extended, as provided for in this application.

ENVIRONMENTAL CONTROLS

General

2.125 Safeguards in place to ensure that only acceptable materials are received and handled at the Halverstown recovery facility include;

- All material arriving on site is subject to visual inspections on site, prior to and during unloading;
- Any unacceptable materials identified at the facility at the time of delivery are immediately returned to the source site or forwarded to an authorised waste disposal or recovery facility; and
- Any Contractor who persistently carries unacceptable material to the facility is denied further access to, and use of, the facility.

Noise Generation and Control

2.126 The principal noise sources at the existing soil recovery facility / application site arise from intermittent grading and compaction of soil and stone using a bulldozer and/or mechanical excavator, movements of front-end loaders and HGVs around the facility.

2.127 The nearest noise sensitive properties to the soil recovery facility occur along the local road approximately 50m to the south of the application site – refer to EIAR Chapters 4 and 10.

2.128 Ongoing operations at the existing facility include a number of mitigation measures with respect to noise, including:

- Retaining existing boundary vegetation and boundary hedgerows to provide acoustic screening; and
- Working below surrounding ground level and behind stockpiled materials where practicable to provide further acoustic screening.

2.129 Noise levels attributable to the ongoing operation of the soil recovery facility do not exceed those set out in the current waste licence or in the EPA's *Guidance Note for Noise In Relation to Scheduled Activities* which states that *"the noise level at sensitive locations*

should be kept below an L(AR, T) value of 55 dB(A) by daytime" when measured at the nearest noise sensitive location or site boundary.

Dust Control

2.130 In dry, windy weather conditions, the backfilling and recovery activities may give rise to dust blows across, and possibly beyond the recovery facility / application site. In order to control dust emissions, the following measures are implemented on site:

- water is sprayed from a tractor drawn bowser on any dry exposed surfaces (roads and hardstand areas);
- dust blows are partially screened on some sides by the existing pit side walls as backfilling progresses upwards;
- soils are placed and compacted immediately after unloading and stockpiling of soil is minimised;
- if temporary stockpiling of soil is required, it will be placed as far as practicable from nearby residences / sensitive receptors.
- soil drop heights are minimised when tipping;
- as the level of the filled materials approaches final surface levels, the site will be seeded with grass on a phased basis, as soon as practicable after placement of cover soils (topsoil), in order to minimise soil erosion and potential dust emissions;
- the area of bare or exposed soils will, insofar as practicable, be kept to a minimum. If excessive dust emissions arise, consideration will be given to establishing temporary vegetation cover over exposed soil surfaces and/or stockpiles pending subsequent filling and restoration to proposed final ground level;
- all HGV's exiting the site are routed through the existing wheelwash facility in order to minimise transport of mud and/or fines by HGVs onto the public road network; and
- internal haul roads across backfilled materials will be constructed using minor quantities of imported aggregate if required.

2.131 The amount of dust or fines carried onto the public road network will be further reduced by periodic sweeping of internal paved site roads and the existing public roads, as required.

Traffic Control

2.132 Traffic to the soil recovery facility generally travels along the existing M9 Motorway, either heading south from Naas / Newbridge direction or heading north from the Carlow / Castledermot direction. Traffic generally turns off the dual carriageway at the existing grade separated junction at Kilcullen (Junction 2) and turns onto the R448 Regional Road, before travelling southwest to the application site.

2.133 Internally, within the soil recovery facility, warning notices, direction signs and speed restriction signs have been erected where appropriate along paved and/or unpaved roads leading to and from the active backfill area(s) and/or the waste inspection and quarantine area.

2.134 All HGV traffic entering the application site is required to pass over the existing weighbridge, while all egressing HGV traffic is routed through the existing wheelwash facility.

Invasive Species

2.135 The existing invasive species management plan prepared in respect of ongoing backfilling and recovery activities at Halverstown (reproduced in Appendix 2-A) will be updated and

extended to cover future operations. The current plan sets out how the site operator has established, maintained and implemented an invasive species prevention and eradication programme at the site and covers specific invasive species including, but not limited to, Japanese Knotweed, Giant Knotweed and Bohemian Knotweed.

2.136 The invasive species plan identifies specific actions for the prevention of acceptance of invasive species in consignments of imported soil and stone, as well as requirements for periodic surveys of backfilled areas for the detection of invasive species. The plan describes methods of plant detection, identifies remedial actions for eradication of invasive species (if necessary) and sets out requirements for staff training on plant identification and eradication. It also sets out validation requirements to confirm the absence of invasive species on completion of restoration.

Bird Control

2.137 As the soil and stones being placed / recovered at the application site are free of putrescible (food / kitchen) waste, site activities do not attract scavenging birds such as gulls and crows. Accordingly, there is no requirement to implement any specific bird control measures at this facility.

2.138 In the unlikely event that any putrescible waste is identified amongst imported material, it will be immediately transferred to the waste quarantine area pending removal off-site to an authorised waste disposal or recovery facility.

Litter Control

2.139 As the materials being placed or recovered at this site are largely free of litter, site activities do not give rise to problems with windblown litter. Accordingly, no specific litter control measures are implemented at this facility.

2.140 In the unlikely event that any litter waste is identified amongst imported material, it will be immediately transferred to the waste quarantine area pending removal off-site to an authorised waste disposal or recovery facility.

Odour Control

2.141 As the soil and stones being placed / recovered at this site are not biodegradable and do not therefore emit odorous gases, site activities do not give rise to odour nuisance. Accordingly, there is no requirement for any specific odour control measures at this facility.

2.142 In the unlikely event that any biodegradable waste is identified amongst imported material, it will be immediately transferred to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

Vermin Control

2.143 As the soils and stones being placed / recovered at this site are free of putrescible (food / kitchen) waste, site activities do not attract vermin (rats). Accordingly, no specific vermin control measures are implemented at the facility.

2.144 In the unlikely event that any putrescible waste is identified amongst imported material, it will be immediately transferred to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

Fire Control

2.145 The soil and stones being placed / recovered at this site are free of flammable materials and biodegradable waste which could create a fire or explosion risk. Site activities will not therefore present a fire risk for the duration of the restoration works. Accordingly, it is not required to implement any specific fire control measures in respect of these activities.

2.146 Notwithstanding this, the following operational practices will be implemented in order to prevent fire at the application site:

(i) smoking at the application site and at the site office or canteen will be prohibited;

(ii) any biodegradable or flammable waste identified or suspected in the materials imported to site shall be immediately transferred to the waste quarantine area pending removal off-site to a licensed waste disposal or recovery facility;

(iii) plant and equipment will be removed if they exhibit signs of overheating etc.

2.147 In the unlikely event that a fire does occur, the local fire stations in Kilcullen will be contacted and emergency response procedures will be implemented. Fire extinguishers (water and foam) are provided at the site office to deal with any small outbreaks which may occur.

ENVIRONMENTAL MONITORING

General

2.148 Kilsaran operates an environmental management programme to monitor and manage emissions at the established waste recovery operation at Halverstown (and at its other licenced waste facilities). The limit values for environmental emissions arising from backfilling and recovery activities at the existing facility / application site are set by way of the existing EPA waste licence (or any future review or amendment thereof).

2.149 Environmental sampling, monitoring and testing required by the existing waste licence is generally undertaken by the Applicant, or agents / contractor working on its behalf. Records of environmental monitoring and testing are maintained on-site and forwarded to the EPA and Kildare County Council as required under the terms of the existing waste licence / planning permission.

Noise Monitoring

2.150 Ongoing noise monitoring will continue at the existing recovery facility / application site, at the 4 existing monitoring locations (designated N1 to N4) shown on the environmental monitoring plan in Figure 2-6.

2.151 Noise monitoring locations are reviewed periodically and will be revised where and when necessary. Noise monitoring results are submitted to the EPA and Kildare County Council on a regular basis for review and record purposes.

Dust Monitoring

2.152 Ongoing dust deposition monitoring will continue at the existing recovery facility / application site, at the 4 existing monitoring locations (designated D1 to D4) shown on the environmental monitoring plan in Figure 2-6.

2.153 Dust monitoring locations are reviewed periodically and will be revised where and when necessary. Dust monitoring results are submitted to the EPA and Kildare County Council on a regular basis for review and record purposes.

Groundwater Monitoring

2.154 There are currently four groundwater monitoring wells in place at the existing recovery facility / application site – at the 4 monitoring locations (designated GW1 to GW4) shown on the environmental monitoring plan in Figure 2-6.

2.155 The following programme of groundwater monitoring is (and will continue to be) implemented at the recovery facility, in accordance with requirements of the current waste licence:

- Groundwater levels are monitored at all wells on a quarterly basis;
- Monitoring of physical properties (pH, conductivity) and a visual inspection are undertaken on a quarterly basis;
- Groundwater quality monitoring for ammonia, nitrates / nitrates, orthophosphates and total dissolved solids is undertaken on a bi-annual basis;
- Groundwater quality monitoring for dissolved metals, hydrocarbons, diesel range organics and petrol range organics is undertaken on an annual basis.

2.156 The groundwater monitoring regime will remain in place for the duration of the ongoing (and extended) backfilling and recovery activities and for a short period thereafter, as required by the waste licence.

Surface Water Monitoring

2.157 There are no surface watercourses in the vicinity of the existing recovery facility / application site. As there are no off-site discharges to any surface watercourse, there is no requirement for surface water monitoring at this facility.

Leachate and Landfill Gas Monitoring

2.158 In the absence of biodegradable waste amongst the soil and stone intake used to backfill and restore the application site, no leachate or landfill gas can be generated and accordingly, there is no requirement for any leachate or landfill gas monitoring at the facility.

Meteorological Monitoring

2.159 No meteorological monitoring is undertaken at the existing soil recovery facility. Temperature, rainfall, sunshine, wind speed and direction are recorded at the weather station at Casement Aerodrome, at Baldonnel in south County Dublin, approximately 30km north-east of the facility. Representative meteorological data may be acquired from the existing weather station at Casement Aerodrome as and when required.

Odour Monitoring

2.160 As the materials being placed or recovered at this site are not biodegradable and do not therefore emit odorous gases, the ongoing backfilling and recovery activities do not give rise to odour nuisance and accordingly, there is no requirement for odour monitoring at the facility.

2.161 Site staff will report and record any odour emissions at the site in the highly unlikely event that a complaint is made about odours emanating from the site.

Stability and Settlement Monitoring

2.162 As required by the waste licence, temporary slopes in the backfilled soils are visually inspected by site staff on an ongoing basis, and records maintained of same. Should these inspections give cause for concern, an inspection of the affected area(s) will be undertaken by a qualified geotechnical engineer and measures implemented to address any instability issues arising.

2.163 Following completion of restoration works, and closure of the facility, the application site will be restored to native woodland and grassland. In view of the planned long-term after-use, it is considered that post-closure stability and settlement monitoring of the backfilled lands is unnecessary.

PROPOSED FINAL RESTORATION

Proposed Restoration Scheme

2.164 On completion of the ongoing backfilling activities, the application site will be restored to the landform indicated in Figure 2-2 and cross-sections shown in Figure 2-4. These works will effectively see the site restored to former / surrounding ground level to the south and west of the main access road and provide for a 3m high visual / noise screening berm to the north and east of it.

2.165 Once the modified restoration scheme provided for in this application is in place, the application site will be restored to a landform which merges into the surrounding natural landscape and screens ongoing traffic movements to and from the adjoining concrete manufacturing plant from the view of properties to the north of the site. The long-term restoration planting for the site is shown on the site restoration plan in Figure 2-5.

2.166 When backfilling with waste soil and stone is almost complete and the upper level of the backfilled materials approaches final surface level, a cover layer comprising 150mm of topsoil (and approximately 150mm of subsoil) will be placed over the imported soil and stone. This will initially be seeded with a suitable grass and/or wildflower seed mix to promote stability, minimise soil erosion and dust generation.

2.167 Long term drainage measures, as described previously and shown in Figure 2-5, will be implemented thereafter. Native woodland planting will then be established across the entire area to the north of the access road, as well as on sloping ground around the perimeter of the backfilled area to the south of it.

2.168 Following completion of the restoration works, and closure of the facility, the application site will be restored to native woodland and grassland and the grassland area will likely be let to a local farmer for grazing purposes or left largely unattended, to be naturally recolonised by native vegetation.

Site Management and Supervision

2.169 The Applicant will clearly define the management responsibility for the site restoration works and will ensure that this person has the necessary information and authority to manage and implement the restoration scheme. Relevant staff will be briefed on the scheme and will be adequately supervised / controlled. A system of record keeping for the key restoration activities will be put in place.

Long Term Safety and Security

2.170 All components of the site security system will remain in place. Existing perimeter fencing will be secured and hedges surrounding the facility will be gapped up and thickened where required. These, combined with the entrance gates along the access road leading to the adjoining concrete plant (which will be locked outside of work hours) will restrict unauthorised third-party access to the site.

Long Term Surface Water and Groundwater

2.171 It is expected, based on on-site observations to date and experience at other similar facilities, that the almost all incident rainwater across the restored site will naturally percolate to ground and that there will therefore be little, if any, surface water run-off generated across the two separate backfill areas.

2.172 However, in order to ensure that there is no long-term uncontrolled or unmanaged run-off across the application area, should a high intensity rainfall event occur when this ground is potentially saturated, drainage channels will be installed at the base of, and surrounding, the backfilled areas, with falls to nearby low points, as shown in Figure 2-5.

2.173 It is likely that if there is any flow arising in these perimeter channels, there will be some infiltration and recharge to ground though the base and sides, particularly where they are in contact with the more permeable in-situ sand and gravel deposits. At the low points at the end of these channels, closed depressions will be formed in which ephemeral / temporary ponds can form, from where any surface water run-off collecting can slowly infiltrate to the underlying ground.

Decommissioning of Plant and Machinery

2.174 On completion of the restoration works, all mobile plant and equipment associated with the backfilling, recovery and final restoration activities will be removed off-site. Any dedicated site accommodation, infrastructure and/or services will also be progressively decommissioned and/or removed off-site.

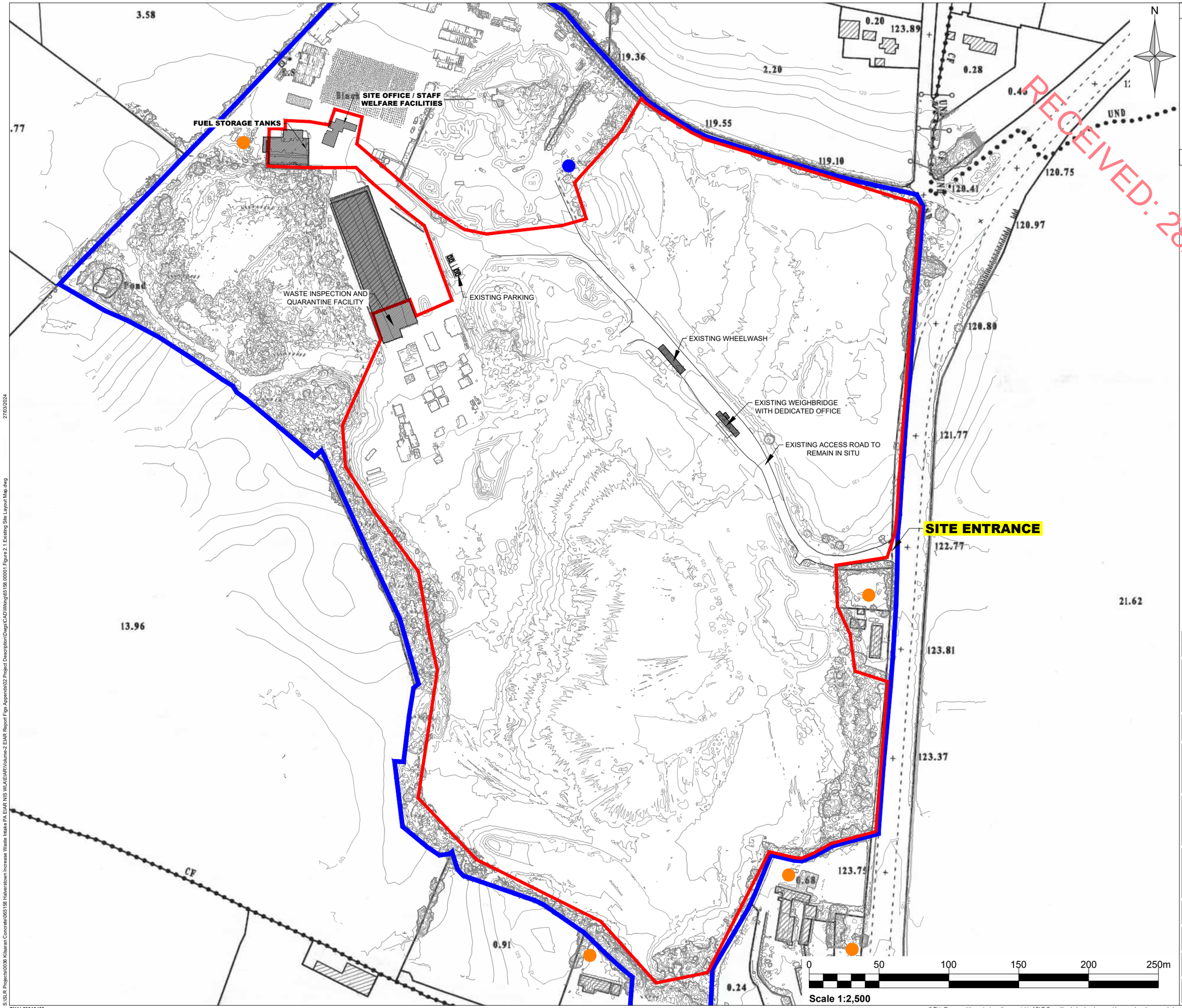
Aftercare and Monitoring

2.175 Establishment maintenance will be carried out for up to 3 years following the planting works (with up to 3 maintenance visits per year across spring, summer and autumn). This will include weed control, replacement planting where required and the adjustment / removal of tree ties and spiral guards.

2.176 Thereafter, the restored grassland area will either be let to a local farmer for grazing purposes or left largely unattended, to be naturally recolonised by native vegetation.

2.177 It is expected that over time, the backfilled site will return to a mixed native woodland / grassland habitat, similar to that which originally existed prior to sand and gravel extraction, and that the restored landform will ultimately merge into the surrounding local landscape which comprises a woodland / grassland mosaic.

FIGURES



Notes:

1. BASED ON ORDNANCE SURVEY MAPPING :

KE028-15 (25 Inch);
3778-C; 3778-D and 3836-B (1:2,500).

Legend:

- KILSARAN CONCRETE LAND INTEREST (c.26.3 Ha)
- PLANNING APPLICATION AREA (c.18.0 Ha)
- SEPTIC TANK LOCATION
- WATER SUPPLY WELL

Rev	Amendments	Date	By	Chk	Auth

SLR

www.slrconsulting.com

Client
KILSARAN CONCRETE

Project
INCREASED INTAKE TO EXISTING
SOIL RECOVERY FACILITY
HALVERSTOWN, KILCULLEN, CO. KILDARE.

Figure Title
EXISTING SITE LAYOUT MAP

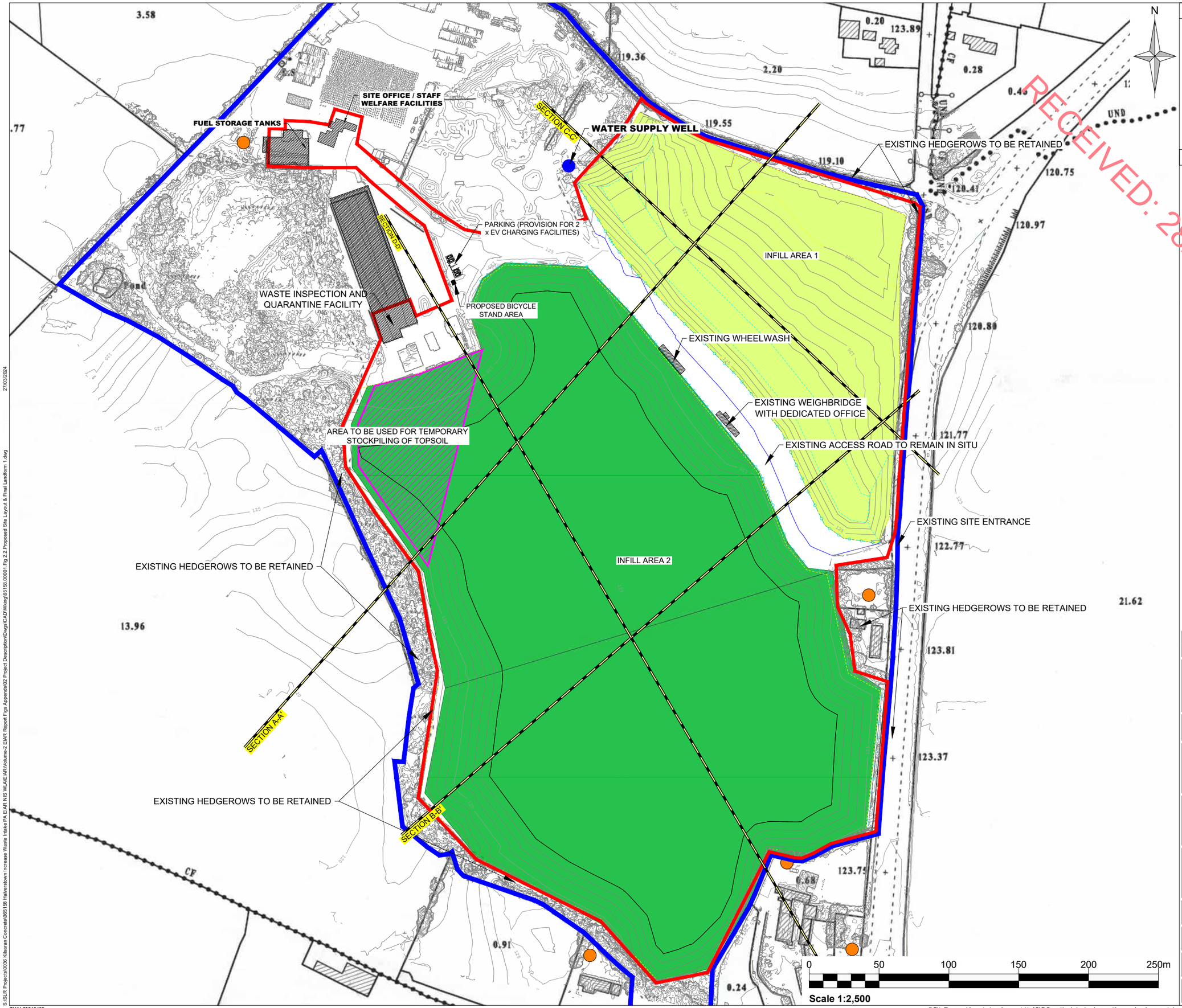
Scale	SLR Project No.
1:2,500 @ A3	065158.00001

Designed	Drawn	Checked	Authorised
EW	EW	DL	DL
Date 08/23	Date 08/23	Date 03/24	Date 03/24

Figure Number **FIGURE 2.1** Rev. **1**

S:\SLR Projects\0036 Kilsaran Concrete\065158 Halverstown Increase Waste Intake PA EIAR NIS WLA\EIAR\Volume-2 EIAR Report Figs Appends\02 Project Description\Dwgs\CAD\Waking\065158.00001 Figure 2.1 Existing Site Layout Map.dwg 27/03/2024

CYAL50316488



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Rev	Amendments	Date	By	Chk	Auth

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Client
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Project
INCREASED INTAKE TO EXISTING SOIL RECOVERY FACILITY
HALVERSTOWN, KILCULLEN, CO. KILDARE.

Figure Title
PROPOSED SITE LAYOUT MAP / FINAL LANDFORM 1

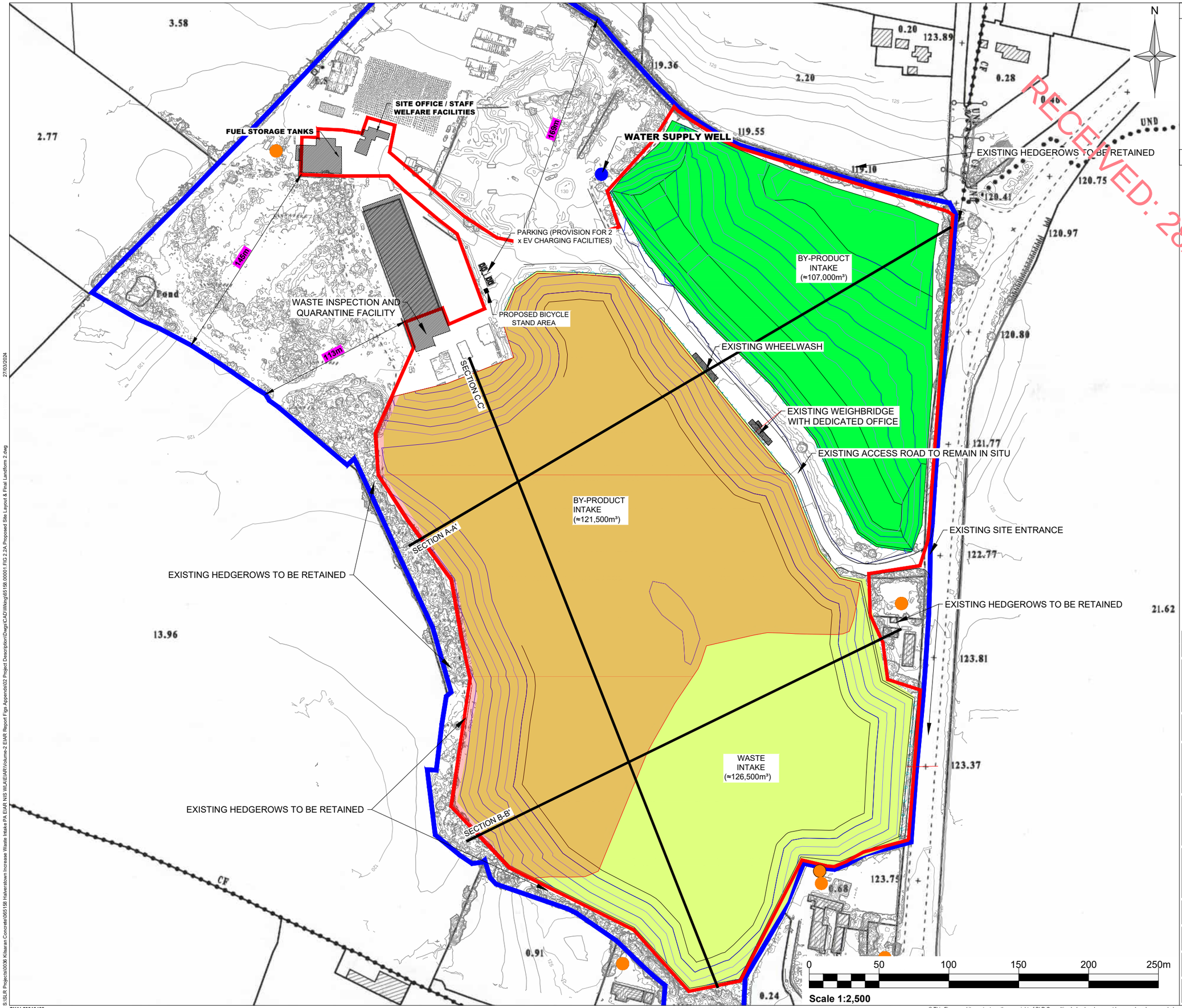
Scale	SLR Project No.
1:2,500 @ A3	065158.00001

Designed	Drawn	Checked	Authorised
EW	EW	DL	DL
Date 08/23	Date 08/23	Date 03/24	Date 03/24

Figure Number **FIGURE 2.2** Rev. **1**

S:\SLR Projects\00036 Kilsaran Concrete\065158 Halverstown Increase Waste Intake PA EIAR NIS WLA\EIAR\Volume-2 EIAR Report Figs Appends\02 Project Description\Dwgs\CAD\Mxtng\065158.00001 Fig 2.2 Proposed Site Layout & Final Landform 1.dwg 27/03/2024

CYAL50316488



RECEIVED: 28/03/2024

Notes:

1. BASED ON ORDNANCE SURVEY MAPPING :

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- PLANNING APPLICATION AREA (c.18.0 Ha)
- SEPTIC TANK LOCATION
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Rev	Amendments	Date	By	Chk	Auth

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Client
KILSARAN CONCRETE

Project
INCREASED INTAKE TO EXISTING SOIL RECOVERY FACILITY HALVERSTOWN, KILCULLEN, CO. KILDARE.

Figure Title
PROPOSED SITE LAYOUT MAP / FINAL LANDFORM 2

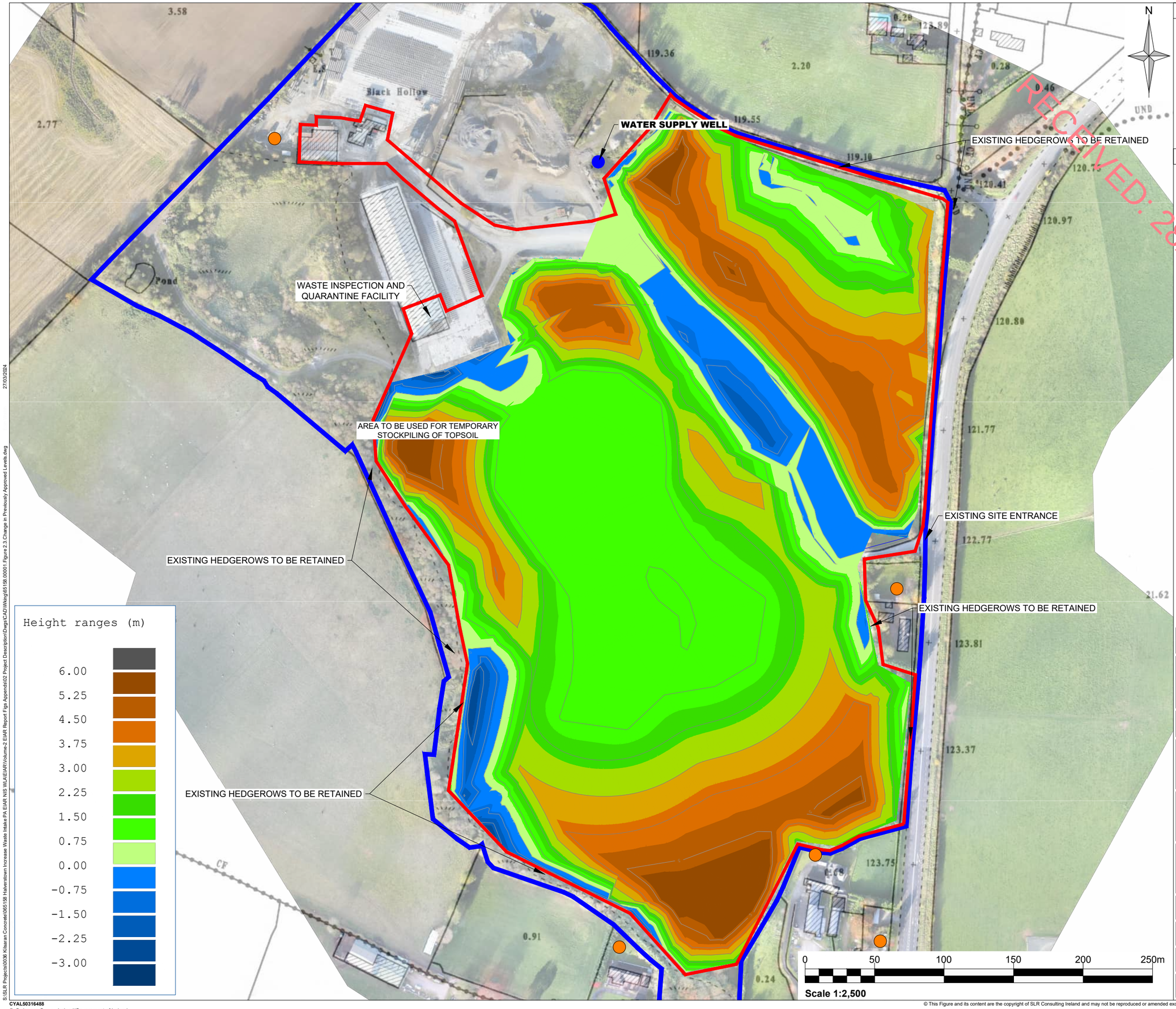
Scale	SLR Project No.
1:2,500 @ A3	065158.00001

Designed	Drawn	Checked	Authorised
EW	EW	DL	DL
Date: 08/23	Date: 08/23	Date: 03/24	Date: 03/24

Figure Number **FIGURE 2.2A** Rev. **1**

S:\SLR Projects\065158 Halverstown Increase Waste Intake PA EIAR NIS WLA\EIAR\Volume-2 EIAR Report Figs Appendix\02 Project Description\Dwgs\CAD\Working\065198.00001 FIG 2.2A Proposed Site Layout & Final Landform 2.dwg 27/03/2024

CYAL50316488



Notes:

1. BASED ON ORDNANCE SURVEY MAPPING :

KE028-15 (25 Inch);
3778-C; 3778-D and 3836-B (1:2,500).

Legend:

- KILSARAN CONCRETE LAND INTEREST (c.26.3 Ha)
- PLANNING APPLICATION AREA (c.18.0 Ha)
- SEPTIC TANK LOCATION
- WATER SUPPLY WELL

Rev	Amendments	Date	By	Chk	Auth

SLR

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Client
KILSARAN CONCRETE

Project
INCREASED INTAKE TO EXISTING
SOIL RECOVERY FACILITY
HALVERSTOWN, KILCULLEN, CO. KILDARE.

Figure Title
CHANGE IN PREVIOUSLY APPROVED LEVELS

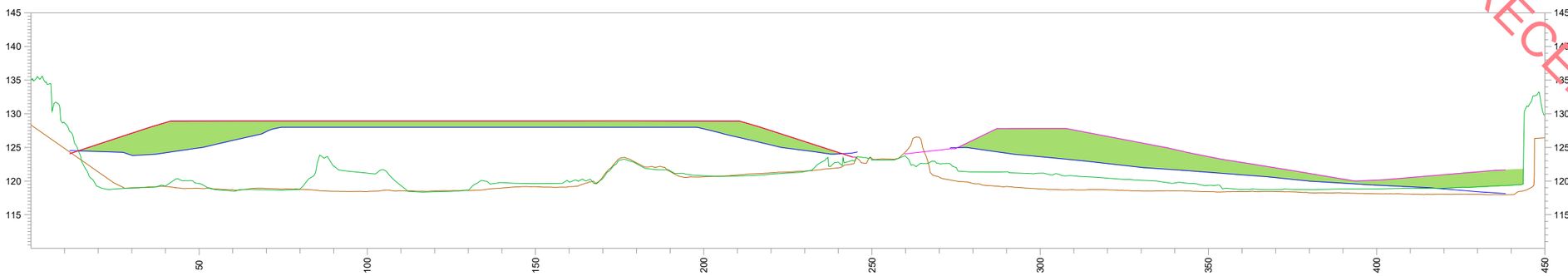
Scale	SLR Project No.
1:2,500 @ A3	065158.00001

Designed	Drawn	Checked	Authorised
EW	EW	DL	DL
Date 08/23	Date 08/23	Date 03/24	Date 03/24

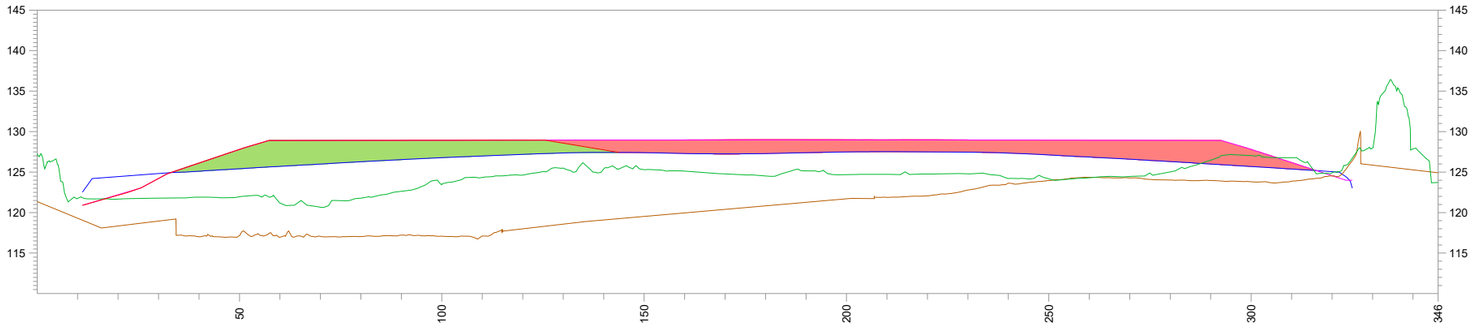
Figure Number **FIGURE 2.3** Rev. **1**

S:\SLR Projects\065158 Halverstown Increase Waste Intake PA EIAR NIS WLA\EIAR\Volume-2 EIAR Report Figs Appendix\02 Project Description\Dwgs\CAD\Wkings\065158.00001 Figure 2.3 Change in Previously Approved Levels.dwg 27/03/2024

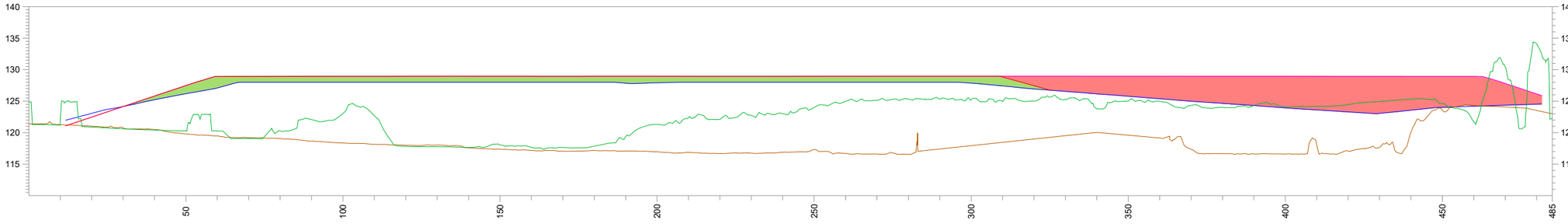
CYAL50316488



Section A



Section B



Section C

Notes:

1. REFER TO FIGURE 2.2 FOR LOCATION OF CROSS SECTIONS
2. 2x VERTICAL EXAGGERATION APPLIED TO CROSS SECTIONS

Legend:

- 2023 SITE TOPOGRAPHIC SURVEY
- 2016 ORIGINAL TOPOGRAPHIC SURVEY
- PERMITTED LEVEL DESIGN (UNDER PLANNING REF. 18/453)
- PROPOSED LEVEL DESIGN (THIS APPLICATION)
- PROPOSED BY-PRODUCT SOIL INTAKE
- PROPOSED ADDITIONAL SOIL WASTE INTAKE

Rev	Amendments	Date	By	Chk	Auth

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Client: KILSARAN CONCRETE

Project: INCREASED INTAKE TO EXISTING SOIL RECOVERY FACILITY HALVERSTOWN, KILCULLEN, CO. KILDARE.

Figure Title: PROPOSED NEW LANDFORM CROSS SECTIONS

Scale	SLR Project No.
1:1,500 @ A3	065158.00001

Designed	Drawn	Checked	Authorised
AB	AB	DL	DL
Date: 10/23	Date: 10/23	Date: 03/24	Date: 03/24

Figure Number: **FIGURE 2.4** Rev. **1**

27/03/2024

\\sua4\DUBFS1\SLR DATA\SLR Projects\0036 Kilsaran Concrete\065158 Halverstown Increase Waste Intake PA EIAR NIS WLA\EIAR\Volume-2 EIAR Report Figs Appendix\02 Project Description\Dwgs\CAD\Wkings\65158.00001 Figure 2.4 Cross Sections.dwg

Landscape and Restoration proposals

The proposed restoration works at the Halverstown waste recovery site will be carried out in two phases, as described below:

Restoration Phase One - to be carried out on completion of the filling works to the north-east of the internal access road:

Drains: It is expected that the majority of rainwater will naturally percolate into the ground and that there therefore will be little run-off from the two backfill areas. However, in order to ensure that no excess water will escape from the application area, in times of high rainfall, drainage channels will be installed at the base of and surrounding the fill area with falls toward the low points surrounding the area, as indicated on the plan. At these low points, space will be allowed for ephemeral/temporary ponds to form, from where the water can slowly infiltrate the ground.

Native Woodland Planting with Shrub Understorey: The area to be planted, as indicated on the plan, will be covered with good quality topsoil (imported top soil) to a depth of ca. 20cm and planted, as per the planting mix and plant numbers in the table below. This planting will provide ecological enhancement on completion of the filling works and will compensate for the scrub vegetation lost due to the ongoing waste recovery works.

Stockproof Fencing and grass seeding: Stockproof fencing will be installed along the top edge of the fill area on the northeastern side of the internal access road, to prevent access to the slope facing the road, which will be grass seeded.

Restoration Phase Two - to be carried out on completion of all filling works:

Drains and Woodland Planting: The same works described for Restoration Phase One regarding drains will be carried out during Restoration Phase Two for the fill area to the south-west of the internal access road. Also Native Woodland Planting with Shrub understorey will be carried out. However, only around the edges of the fill area, as indicated on the plan. The central section of the fill area will be restored to agricultural land, as per the below.

Agricultural Land: The area to be restored to agricultural land, as indicated on the plan, will be covered with topsoil, from stockpiles within the site, to a depth of 15cm topsoil and grass seeded.

Stockproof Fencing: Stockproof fencing will be installed on the inside of the woodland planting surrounding the fill area, to create a field that can be used for grazing. At the same time the woodland planting will be protected from browsing and access to the outer slopes of the fill area is prevented.

General notes - landscape works:

Grass Seeding: As soon as the topsoil is placed on the fill area, the areas will be seeded with a suitable grass and/or wildflower seed mix, whilst suitable weather conditions prevail. The surface preparation and the sowing specifications will be as per the manufacturer's instructions.

Woodland Planting: The plant mix contains locally occurring native species. All stock is proposed to be supplied as transplants at the specified heights, as this type of stock is known to establish more successfully compared to larger stock.

All plant handling, planting and establishment works will be carried out in accordance with current best practice and will take place in the appropriate planting season (e.g. bareroot planting: November to March only) and in favourable weather conditions.

The planting will be carried out by a suitably qualified landscape contractor.

Aftercare: Establishment maintenance will be carried out for 3 years following the planting works (minimum 3 maintenance visits per year; i.e. spring, summer and autumn). This will include weed control, replacement planting where required and the adjustment/removal of tree ties and spiral guards.

Native woodland planting mix with shrub understorey

Woodland planting to be carried out at 3m centres (i.e. 1 plant every 9m²) in the areas indicated on the plan. Approximately 63,900m² (32,700m^2 - Phase One, 31,200m^2 - Phase Two) in total (i.e. 7,100 plants). Main tree species (i.e. birch, wild cherry and oak) to be planted in groups of 5-8 towards the centre of the planting blocks.
Shrub/small tree species to be planted in random same species groups of 8-10. All plants to be protected with spiral guards or alternatively the entire planting block to be enclosed with stock and rabbit proof fencing.

No.	*Plant Name*	*Common Name*	*Height (cm)*	*Age/Pot Size*	*%*
Transplants					
355	Betula pendula	Silver birch	60-90	1+1	5
2485	Corylus avellana	Hazel	60-90	1+0	35
1065	Malus sylvestris	Crap Apple	60-90	1+1	15
355	Prunus avium	Wild Cherry	60-90	1+0	5
355	Quercus robur	Pedunculate oak	60-90	2+0	5
1420	Rosa canina	Dog rose	40-60	1+1	20
Container Grown Shrubs					
1065	Ilex aquifolium	Holly	60-80	2 Lt	15

0 50 100 150 200 250m

Scale 1:2,500

Notes:

1. Survey dated May 2023, supplied by Kilsaran Concrete

Legend:

- Kilsaran land ownership boundary
- Planning application area

Restoration Phase One

- Proposed drains
- Proposed woodland planting
- Areas to be grass seeded
- Stockproof fencing

Restoration Phase Two

- Proposed drains
- Proposed woodland planting
- Area to be restored to agricultural use
- Stockproof fencing

Rev	Amendments	Date	By	Chk	Auth

SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK,
WINDY ARBOUR,
DUBLIN,
IRELAND,
D14 N2Y7

www.slrconsulting.com

Client: KILSARAN CONCRETE

Project: INCREASED INTAKE TO EXISTING SOIL RECOVERY FACILITY HALVERSTOWN, KILCULLEN, CO. KILDARE.

Figure Title: RESTORATION PLAN

Scale	SLR Project No.
1:2,500 @ A3	065158.00001

Designed	Drawn	Checked	Authorised
SH	SH	AM	AM
Date: 11/23	Date: 11/23	Date: 03/24	Date: 03/24

Figure Number: **FIGURE 2.5** Rev.: **1**

N

Notes:

1. BASED ON ORDNANCE SURVEY MAPPING :

KE028-15 (25 Inch);
3778-C; 3778-D and 3836-B (1:2,500).

Legend:

- KILSARAN CONCRETE LAND INTEREST (c.26.3 Ha)
- PLANNING APPLICATION AREA (c.18.0 Ha)
- SEPTIC TANK LOCATION
- WATER SUPPLY WELL
- D1 — DUST MONITORING LOCATIONS
- N1 — NOISE MONITORING LOCATIONS
- GROUNDWATER MONITORING WELL

D3 N3 D4 N4 D2 N2 N1 D1

GW1 GW2 GW3 GW4

SITE OFFICE / STAFF WELFARE FACILITIES
FUEL STORAGE TANKS
WASTE INSPECTION AND QUARANTINE FACILITY
EXISTING PARKING
EXISTING WHEELWASH
EXISTING WEIGHBRIDGE WITH DEDICATED OFFICE
EXISTING ACCESS ROAD TO REMAIN IN SITU
SITE ENTRANCE CE

Halverstown Cottage
Pond
Spring
School

0 100 200 300 400 500m

Scale 1:5,000

Rev	Amendments	Date	By	Chk	Auth

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Client
KILSARAN CONCRETE

Project
INCREASED INTAKE TO EXISTING
SOIL RECOVERY FACILITY
HALVERSTOWN, KILCULLEN, CO. KILDARE.

Figure Title
ENVIRONMENTAL MONITORING PLAN

Scale	SLR Project No.
1:5,000 @ A3	065158.00001

Designed	Drawn	Checked	Authorised
EW	EW	DL	DL
Date 08/23	Date 08/23	Date 03/24	Date 03/24

Figure Number **FIGURE 2.6** Rev. **1**

S:\SLR Projects\065158 Halverstown Increase Waste Intake PA EIAR NIS WLA\EIAR\Volume-2 EIAR Report Figs Appends\02 Project Description\Dwgs\CAD\Working\065158.00001 Figure 2.6 Environmental Monitoring Plan.dwg 27/03/2024

CYAL50316488

APPENDIX 2-A

INVASIVE SPECIES MANAGEMENT PLAN

JAPANESE KNOTWEED MANAGEMENT PLAN (KMP)
(*CONFIDENTIAL*)

Site Name:	Halverstown, Kilcullen, Co. Kildare, R56 DD21
Tender/Project No:	223004.1
Client Name:	Kilsaran Concrete Ltd
Specialist:	Japanese Knotweed Control Ltd
Date Prepared:	14/02/2023
Revision Date:	26/03/2024
Amendment: Customer Release	

Disclaimer
This Management Plan follows the instructions and requirements of the Client. It is provided for sole use of the Client and its professional advisors. Information disclosed is strictly private and confidential. Any use third party use of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. No responsibility is accepted by Japanese Knotweed Control Ltd for the use of this Document, in whole or in part, for any other purpose. This Japanese knotweed Management Plan is subject to Japanese Knotweed Control Ltd's Standard Terms & Conditions.

Terms
This Management Plan is a controlled document forming the basis for certification and is non-transferable. This Japanese knotweed Management Plan may be updated and re-issued periodically by JKC to reflect work completed and specification changes as required.

Duty of Care

INVASIVE ALIEN PLANT SPECIES (Japanese knotweed) AND YOUR OBLIGATIONS

This site has been identified as containing invasive alien plant species (Japanese knotweed) including Japanese knotweed (*Fallopia Japonica*). (*See Appendix 6 for further species information*).

Japanese knotweed require handling in a responsible manner to protect the environment, be socially responsible and prevent property risk.

LEGISLATIVE BACKGROUND

Japanese knotweed are subject to restrictions under Regulations 49 and 50 (the latter not currently commenced) of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477), being listed in the Third Schedule (Part 1) of this legislative Act. Soil taken from a place that is infested with Japanese knotweed (vector material) is also restricted under Part 3 of this Third Schedule.

The law relating to Japanese knotweed and other Japanese knotweed is primarily contained in Regulation 49 (2), which states that it is an offence to 'allow or cause to disperse' plants listed in the Third Schedule, of which Japanese knotweed is one Japanese knotweed. As such, any Japanese knotweed plant material or contaminated soil that is to be removed from an infested site can only be done so under a licence issued by the National Parks and Wildlife Service (NPWS).

This Japanese knotweed management Plan is produced in accordance to: -

Ecological Guidance for Local Authorities and Developers (Scott Cawley, 2013);

- NRA (2009) Guidelines for Assessment of Ecological Impacts of National Road Schemes (National Roads Authority);
- Managing Japanese knotweed on development sites - The Knotweed Code of Practice produced by the Environmental Agency (2013);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine, (CIEEM, 2018);
- Environment Agency 2010. Managing Invasive Non-native Plants in or near Freshwater;
- Environment Agency 'Treatment and disposal of invasive non-native plants: RPS 178 (Nov 2016)' and 'PCA (2014) Code of Practice for the management of Knotweed, (V2.7)'
- The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (National Roads Authority (NRA), 2010);
- Best Practice Management Guidelines Japanese knotweed (Fallopia japonica) Invasive Species Ireland (2015).

GUIDANCE DOCUMENTS

The following list of documents were consulted during the preparation of this report:

- National Parks and Wildlife_ Actions for Biodiversity (2017-2021)
- Environmental Agency (England)_The Knotweed Code of Practice
- National Road Authority_ Guidelines on Management of noxious weed and non-native invasive plant species on national Roads (2010)
- Irish Water_ Information and Guidance Document on Japanese Knotweed Asset Strategy and Sustainability
- Department of the Environment_ An Invasive Alien Species Strategy for Northern Ireland

The spread of Knotweeds and other Japanese knotweed are governed under Regulations 49 and 50 of the European Communities (*Birds and Natural Habitats*) Regulations 2011 make it an offence to:

- plant, disperse, allow dispersal or cause the spread of Knotweeds.
- keep the plant in possession for purpose of sale, breeding, reproduction, propagation, distribution, introduction or release.
- keep anything from which the plant can be reproduced or propagated from without a granted licence.
- keep any vector material, in this case soil or spoil taken from Japanese knotweed, for the purposes of breeding, distribution, introduction or release

PLAN OF ACTION

On September 29th, 2014, the European Council adopted a **Regulation on the prevention and management of the introduction and spread of invasive alien species** [1143/2014]. The Regulation, that is a binding legal tool for all Member States, entered into force January 1st 2015.

The Regulation lays down rules to prevent, minimise and mitigate the adverse impacts of the introduction and spread, both intentional and unintentional, of Japanese knotweed on biodiversity and the related ecosystem services, as well as other adverse impact on human health or the economy.

- List of Invasive Alien Species of Union concern – reviewed every 6 years (*current list of 49 species. First 37 species entry into force August 2016, 12 added species entry into force August, 2017*).
- Member States can request for inclusion of a species based on risk assessment
- Functioning structures for Official controls (*border controls, goods entry points*) by 02/01/2016
- Surveillance system by February 4th, 2018*
- Pathway analysis by February 4th, 2018 and pathway action plans by July 15th, 2019*
- Early detection issue of alert notification to Commission and other Member States
- Rapid Remediation in place within 3 months after alert notification (*If possible/feasible*).
- Management measures put in place for widely spread species by February 4th, 2018*
- Restoration of damaged ecosystems undertaken (*proportionate*)
- Reporting (*by 3 years***) and every 4 years** thereafter on – surveillance system, distribution of species, action plans etc.

INVASIVE ALIEN PLANT SPECIES (Japanese knotweed) MANAGEMENT PLAN

Table of Contents

1 INTRODUCTION

1.1 CONTACTS

1.1.1 INVASIVE ALIEN PLANT SPECIES (Japanese knotweed) SPECIALIST DETAILS

NAME: Japanese Knotweed Control Ltd (JKC)

ADDRESS (ROI): Inniscarra, Main Street, Rathcoole, Co. Dublin. D24 E029
TEL: +353 (0) 86 2508805
WEBSITE: www.jkc.ie

Qualifications

JKC is a specialist Japanese knotweed contractor working throughout Ireland for Commercial and Private Clients.

All our staff are Property Care Association (PCA) trained to undertake their works - we have a 100% CSCS policy for all staff involved with the management and undertaking of operational works on construction sites.

All operational staff that undertake herbicide application works have the statutory NPTC PA1 and PA6 license (*and PA6 AW for those spraying on or near water*). Our technical staff have also completed the PCA Technician Training course.

1.1.2 Client Details

Name:	Kilsaran Concrete Ltd
Address:	Piercetown, Dunboyne, Co. Meath , A86 W820
Contact:	Eftim Ivanoff
Tel:	086 234 7400
Email:	eftim.ivanoff@kilsaran.ie

1.2 METHODOLOGY

A full site assessment/survey was conducted on 14/02/2023 following best practice guidelines* to determine evidence of Japanese knotweed present at Halverstown, Kilcullen, Co. Kildare.

This included a complete ground survey of the entire site (*see section 2.2 within the blue lined area*).

The site was identified as being infected with Japanese knotweed (*Fallopia japonica*).

The areas of JAPANES KNOTWEED have been identified and the locations mapped.

Purpose of survey:

- Identify all areas of Japanese knotweed located at the development site
- Measure instances of Japanese knotweed within the site
- Identify any areas of Japanese knotweed at the site borders
- Provide recommendations for the control/removal of Japanese knotweed within the site
- Provide recommendations for monitoring following remediation

** PCA (2014) Code of Practice for the management of knotweed, (V2.7), Environment Agency 'The Knotweed Code of Practice (2013)' and Environment Agency 'Treatment and disposal of invasive non - native plants: RPS 178 (Nov 2016).*

1.3 MANAGEMENT PLAN OVERVIEW

1.3.1 **Site Address**: Halverstown, Kilcullen, Co. Kildare

1.3.2 **Description of Management Plan**

The management plan should be implemented to control and prevent the spread of Japanese knotweed on and out of the site. The plan details the identified problem areas together with the remedial and management works proposed and/or implemented.

The management plan should be overseen by the Site Manager, and in their absence, a deputy. The management plan, its appendices and revisions shall be kept for future site owners.

1.3.3 **Preventing Further Spread**

Where possible all areas affected by Japanese knotweed should be fenced off and isolated from any activities on site immediately to avoid potential Japanese knotweed spread. The fencing should be erected at least 7 metres away from any visible knotweed growth to protect rhizomes close to the surface from disturbance (*see PCA (2014) Code of Practice for the management of knotweed, (V2.7), The (NRA) Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads - Revision 1 (December 2010), Environment Agency 'The Knotweed Code of Practice (2013) and the Environmental Agency 'Treatment and disposal of invasive non-native plants: RPS 178 (Nov 2016)*)'.

No material is to leave site from the contaminated areas, except as part of specially supervised Japanese knotweed treatment works. No new materials should be stored in, or adjacent to infected areas. Where there is a high risk of infestation from neighbouring land, the land owner should be contacted and a co-ordinated treatment programme should be agreed.

1.3.4 Project Management

The Project Manager's responsibilities are:

- Management of the project
- Implementation of the Japanese knotweed Management Plan
- Monitoring the performance of the Japanese knotweed Management Plan and maintenance of records to demonstrate compliance
- Updating the Japanese knotweed Management Plan as necessary
- Ensuring environmental conditions do not deteriorate as a result of project implementation
- Co-ordination of operational personnel
- Health and Safety plan implantation and management
- Induction of personnel operating on the site
- Dealing with public queries and complaints
- Ensure plant and equipment is maintained and thoroughly cleaned prior to arrival and upon leaving the site

2 SURVEY

The Date of Survey: 14/02/2023
Site: Halverstown, Kilcullen, Co. Kildare
See Appendix Report Section for further details

2.1 SITE INVENTORY (*Current State*)

The site is located at Halverstown, Kilcullen, Co. Kildare, in a rural area. A single stand of Japanese knotweed growth was observed at the rear of Halverstown Lodge, R56 F293, (west boundary). The stand is mature, with approximately 2m^2 of visable growth.

2.2 **SITE SURVEY**

The Japanese knotweed survey was undertaken by Japanese Knotweed Control Ltd on 14/02/2023.

2.3 JAPANESE KNOTWEED

During a previous ecological assessment of the site, it was noted that Japanese knotweed (Fallopia japonica) was located within the site boundary. 1 stand (one) Japanese knotweed (*Fallopia japonica*) stand (*KS1*) was identified as present at GPS location 53.533201, -6.453375 and was measured through visual inspection and occupies an area of approximately 4m^2. (*See Appendix 6 for further species information*).

Japanese Knotweed is an herbaceous perennial plant that can grow to heights of 2 - 3 m. In summer it produces dense bushes of bamboo-like stems with large, triangular leaves, and strings of small white flowers. In winter the herbaceous material dies back, leaving standing dead canes.

Plants spread via rhizomes (*underground creeping stems*), and as plants mature, they can create a dense network of rhizomes in the surrounding soil. Most rhizomes are within 1m depth and 2m radius of the above-ground stems, but for mature plants the rhizomes can extend up to 3m underground and 7m horizontally from the parent plant. As plants mature, the bases of dead stems merge to form a robust, woody 'crown' at the surface.

Japanese knotweed Location & RSZ Details

Calculations take into account hard standing areas and reduced RSZ where embankments join hard surfaces/hard standing areas not likely to be contaminated by rhizomes.

Ref. ID	GPS Lat.,-Lon.	Area (m^2)	Growth	Est. Stem Height (m)	Veg. Composition	Proximity To Water (<12m)	Slope / Gradient	Est. RSZ Area (m^2)
KS1	53.533201, -6.453375	4	Mature	2.1	Japanese knotweed	No	Slope	25

25m^2 of in*cluding Rhizome/Root Safe Zone (RSZ)*).

Note: *The extent of Japanese knotweed infestation on the site is likely to severely reduce the market value and it may be difficult for any potential purchaser to secure financial lending or planning whilst the infestations are unmanaged or treated/remediated.*

See below for images (*1a*) showing Japanese knotweed weed distribution (*2.3.1*)
See Appendix for Photographs of the Site and Japanese knotweed

2.3.1 JAPANESE KNOTWEED IDENTIFIED – (APPROXIMATE LOCATIONS)

Image. #01a – Japanese knotweed Location KS1

2.4 APPROXIMATE RHIZOME/ROOT SAFE ZONE (RSZ) AREA

Image. #02a – Japanese knotweed Estimated Rhizome/Root Safe Zone (RSZ) KS1

3 REMEDIATION PROPOSAL, Evaluation of Appropriate Methods (*Japanese knotweed*)

3.1 **PROPOSED DEVELOPMENT** (Ref No. TBA)

3.1.1 Setting Priorities

	Priority		
	High	Med	Low
	Removal	Treatment	Monitoring
Action			
Isolation / Exclusion	Yes	No	No
Monitoring	Yes	No	Yes
Management	Yes	No	Yes

Japanese knotweed Areas Identified			
KS1	Yes	No	Yes

3.1.2 METHODS OF CONTROL AND TREATMENT (*Japanese knotweed*)

The following table displays a range of Japanese knotweed remediation methods and the feasibility of being deployed in relation to this site and any development plan information we have been provided.

✓= Recommended | Y = Feasible* | X = Not feasible

(**Feasible but subject to further details of any proposed development plans, or specific details of the site*)

Japanese knotweed Remediation Method - Site Specific Feasibility Chart																										
Remediation Method		Japanese knotweed Identified Locations (KS1)																								
Treatment Type	Disposal Type	KS1																								
Full Excavation (total lateral & vertical extent of rhizome within site)	Off-Site Landfill (Dig and Dump)	Y																								
	On-Site Sift and Burial (Dig and Sift)	X																								
	On-Site Burial as Cell-Burial (Cell-Burial)	X																								
	On-Site Relocation to bund for Treatment (Dig and Relocate)	X																								
Reduced Level Excavation (remaining rhizome contaminated ground is capped with root barrier membrane)	Off-Site Landfill (Dig and Cap)	X																								
	Off-Site Sift and Burial (Dig and Sift)	X																								
	On-Site Burial as Cell-Burial (Cell-Burial)	X																								
	On-Site Relocation for Treatment (Dig and Relocate)	X																								
Deep Dig, Soil Sift (removed from site to a licenced landfill facility)	On-Site Soil Sift, On or Off-site Relocation for Disposal (Relocate on-site burial cell/bund or off-site to a licenced landfill facility)	X																								
Reduced Level Dig, Soil Sift (disposed of in controlled on-site burial cell)	On-Site Soil Sift, On-site Relocation (Relocate on-site burial cell)	✓																								
Deep Dig & Land spread (material spread in shallow fill area with root membrane and treated with herbicide for a minimum of 2 seasons)	On-Site Relocation for Treatment (Dig and Relocate) On-Site Treatment bund	X																								
Herbicide Treatment Programme*	In-Situ	X																								

See Appendix Report Section 5.1.8 for detail on our remediation methods (with 'Pros' and 'Cons' analysis)

Question: Why is 'Herbicide Treatment' not a feasible remediation strategy where the ground in which the knotweed resides is due for disturbance under development (*or any other planned ground disturbance*)?

Answer: Herbicide application alone can ultimately render the plant unable to produce new growth (*deemed as Remediation*), but it is unlikely to remove viability from 100% of the underground rhizome system. Therefore, disturbance of ground containing herbicide treated knotweed is likely to produce re-growth (*even after a successful herbicide programme, which has resulted in no recordable above ground growth*).

This is an important note, especially for developers. The Environment Agency deem that any ground containing dead knotweed (even after specialist declaration following treatment of sifting), is to be classified as controlled waste if removed from site. This is the same waste classification given to living knotweed material and soils containing live knotweed!

3.2 PROPOSED WORKS (Japanese knotweed)

The following work schedule is proposed to address the requirements for the remediation of Japanese knotweed.

Summary of proposed work activities:-

- IAPS Management Plan
- Biosecurity plan (to prevent spread of Japanese knotweed around or off/on site to allow development work to commence)
- Insallation of security fencing and signage
- Testing for undergound services
- Application to NPWS for a licence to transport Japanese knotweed contaminated soils to a licenced facility for disposal (if appropriate)
- Preperation of an on-site burial cell
- Excavation and relocation of contaminated material to an on-site burial cell location
- Monitoring and Herbicide treatment as required (Minimum 3 [three] Years)

Phase 1 – Preperation:-

- Review and communicate work plan/schedule
- Tool box talk, create IAPS awareness and prevent Japanese knotweed spread
- Tidy site of all debris and vegitation
- Erect fencing and install signage ('keep out', taped off areas at all times) Japanese knotweed warning signage and cameras
- Test for underground services
- Installation of monitored washdown area
- Preperation of burial cell (including the installation of C3 specification barrier membrane)
- Herbicide spray (as appropriate) treatment (to control existing Japanese knotweed.)

Phase 2 – Proposed Remediaton (*summary*):-

Excavation, removal IAPS rhizomes/plant materials and disposal of contaminated materials to an on-site cell-burial location. A biosecurity expert will assess when enough contaminated soils have been excavated.

3.3 SITE CONSIDERATIONS

The procedure for controlling and eradicating Japanese knotweed infested areas will be undertaken following best practice guidelines.

Strategies for the Remediation of Japanese knotweed are dependent on the following factors, for example:

- Proximity to water
- Sensitivity of the site
- Sensitivity of other species growing in the vicinity
- Size of the infestation
- Site size, location
- Timing of treatment
- Proximity of tree roots
- Site access
- Costs
- Time available for treatment
- Public access

JAPANESE KNOTWEED

Fig 1: Royal Institute of Chartered Surveyors (RICS) "Risk" table for Japanese Knotweed.

4	Japanese Knotweed is within 7 metres of a habitable space, conservatory and/or garage, either within the boundaries of this property or in a neighbouring property or space; **and/or** Japanese Knotweed is causing serious damage to outbuildings, associated structures, drains, paths, boundary walls and fences and so on. **Further investigations required by an appropriately qualified and/or experienced person**
3	Although Japanese Knotweed is present within the boundaries of the property, it is more than 7 metres from a habitable space, conservatory, and/or garage.
2	Japanese Knotweed was not seen within the boundaries of this property, but it was seen on a neighbouring property or land. Here, it was within 7 metres of the boundary, but more than 7 metres away from habitable spaces, conservatory and/or garage of the subject property.
1	Japanese Knotweed was not seen within the boundaries of this property, but it is present on a neighbouring property or land where it was more than 7 metres away from the boundary.

Fig.1

3.4 OPTIONS AND RECOMMENDATION FOR SITE REMEDIATION

Due to the client's requirement for future site development and the presence of Japanese knotweed infestations on the site, JKC propose the options for Herbicide treatment (*as appropriate*) together with excavation of contaminated areas, and disposal to an on-site cell-burial location. The installation of Horizontal root barrier for the area excavated is recommended and considered best practice.

Excavation depths will be determined for each location dependent upon individual requirements together with local and environmental conditions.

Note: *Herbicide treatment as a stand-alone treatment would only be appropriate if the area treated is not going to be disturbed by future development works.*

As a result, the following is proposed: -

General Requirements

No ground disturbance should be permitted within a 7m area from Japanese knotweed top growth (*or as site boundary allows*). Test for underground services.

All Japanese knotweed to be excavated under the supervision of a specialist Japanese knotweed contractor, whereby all viable material (*crown, stem, rhizomes, and roots etc.*) and contaminated soil will be excavated, soil sifted, and disposed of to an on-site cell-burial location.

All machinery/equipment used for the removal of the potentially contaminated soil will be thoroughly cleaned within a designated root barrier membrane lined bio-secure area (*TBD)*

All personnel working in the area potentially contaminated with Japanese knotweed species shall clean work-ware, tools, boots and shoes upon egress to ensure that no regenerative plant material is transported from the site. Appropriate signage notifying personnel of the importance of good site hygiene and bio-security must be clearly visible.

There is no seasonal constraint with an excavation option, albeit the elapsed time for the controlled excavation represent an addition to the front end of any construction/development programme. Upon excavation completion and membrane barrier installation, no further limitation will be necessary for the use of the contaminated areas on site during the construction or development stages. A monitoring programme should be maintained to check any re-growth of Japanese knotweed within the entire site area.

[1]7m RSZ area may be reduced depending on the Japanese knotweed type and where infestations are contained in piled/spoil locations or where it is not practical due to walled areas / structures which constitute a barrier for lateral root / rhizome spread.

3.4.1 Japanese knotweed contaminated areas at risk of disturbance

It is understood future site development is likely to disturb the area currently contaminated with Japanese knotweed, the area will require the contamination to be sprayed, excavated and disposed of to an on-site cell-burial location.

Proposed Method (mechanical dig) *(for all identified Japanese knotweed)*:, deep dig and disposed of to an on-site cell-burial location with a Herbicide treatment programme (*as appropriate*).

Due to the likely extent of underground rhizome/root system growth and its highly invasive capacity, control of Japanese knotweed species following herbicide treatment in a single season is not possible. It can take several seasons of herbicidal treatment to deplete the rhizome reserves and to effectively control the target vegetation (*Jones et. al. 2018*). Japanese knotweed, treatments should be applied between mid-August to mid-October when plants have started to flower ensuring an effective kill is achieved during this time in the growth season. Strict biosecurity protocols must be adhered to in all follow up surveys and treatments.

Controls to be applied on site for equipment and moving of contaminated materials. JKC recommend the installation of a root barrier at the excavated location to prevent further infestations from spreading from the site.

This option would be the most cost effective.

3.4.2 Recommendations for Future Management of Japanese knotweed

Treatment Method	Suitability (Y/N)	Reason	Start Date
Foliar herbicide treatment	Y	Herbicide can be applied to emergent growth	August / September
Stem injection of herbicide	N	Emergent stem growth will be too weak for injection	N/A
Cut and fill with herbicide	N	Emergent stem growth will be too thin for this method	N/A
Spot wipe or paint with herbicide	Y	Recommended in shrubberies	August / September

3.5 MANAGEMENT ACTIVITIES

We have established activities for the Japanese knotweed remediation using Herbicide, deep dig excavation of Japanese knotweed contaminated materials/soils, soil sifted (*screened*), and disposed to an on-site cell-burial location. A specialist Japanese knotweed contractor should be appointed to take the responsibility of the monitoring process and Japanese knotweed remedial works.

Fencing/Segregation of Contaminated Areas:

All Japanese knotweed access must be secured with fencing and advisory signage immediately to prevent disturbance and further spread.

A minimum of 7m[1] distance from visible stems should be cordoned off (*where space allows*) as the visible above ground evidence of Japanese knotweed is not necessarily indicative of the underground rhizome spread and contaminated area.

[1]7m RSZ area may be reduced depending on the Japanese knotweed type and where infestations are contained in piled/spoil locations or where it is not practical due to walled areas / structures which constitute a barrier for lateral root / rhizome spread.

Herbicide Treatment:
Herbicide Treatment must be conducted by a qualified professional using an appropriate glyphosate-based weed control formula and the appropriate time (*i.e., according to growth levels, weather conditions, and seasonal considerations etc.*).

Excavation & Disposal/Relocation:
All contaminated areas are to be excavated; soil sifted to facilitate the development of the site.

The excavated contaminated/treated soil and materials will be disposed to a licensed landfill facility.

Stringent biosecurity measures must be undertaken during excavation and transfer/transport of contaminated soils and vector materials.

3.5.1 Proposed Control/Remediation Methods (Per Japanese knotweed)

Area	Description of Control	To Be Completed By
KS1	Remediation Method – *Herbicide spray (as appropriate), mechanical Dig, Soil Sift, and relocated to an on-site treatment burial cell location*	JKC

3.5.2 Projected Costs for Proposed Remedial Works

JKC can prepare quotes for viable Japanese knotweed control methods for your consideration if required. Refer to separate quotation for details

4 JAPANESE KNOTWEED REMEDIATION PLAN

4.1 SUMMARY OF EXCAVATION WORKS

This section of the report is used to detail any remedial works undertaken. Works records (*i.e. photos and waste records if applicable*) in relation to these works will be provided in the appendix.

Activity	Work Description	Started	Commenced (Date)	Completed (Date)
1	Sub Terranean services inspection (LUG)	Yes	14/02/2023	18/04/2023
2	Toolbox and Health / Safety Training	Yes	14/02/2023	18/04/2023
3	Secure area to be treated & erect signage	Yes	14/02/2023	18/04/2023
4	Brush and Tree and Rubbish Clearance	Yes	14/02/2023	18/04/2023
5	Pre-Removal Herbicide treatment (as appropriate) (in-situ)	Yes	14/02/2023	18/04/2023
6	Prepare Treatment Cell Burial Area	Yes	14/02/2023	18/04/2023
7	Excavate Japanese knotweed Contaminated Area	Yes	14/02/2023	18/04/2023
8	Remove Japanese knotweed rhizomes/roots and dispose to on-site treatment cell location	Yes	14/02/2023	18/04/2023
9	Undertake Monitoring / Treatment as required (Minimum 3 seasons or until no further growth is recorded)	Yes	14/02/2023	18/04/2023

4.2 METHOD OF WORKS

Please see the 'Quotation Notes and Method' footnotes on the accepted quote (*Bill of Quantities*), or separately available 'Risk Assessment and Method Statement' (*RAMS*) for excavation works, Contaminated soil and vector materials transportation and disposal. For Methods in relation to Herbicide treatment works please see separately available 'Risk Assessment and Method Statement' (*RAMS*).

4.3 CONTROL/REMEDIATION IMPLEMENTATION SCHEDULE (Proposed Method)

Activity	Work Description	Started	Commenced (Date)	Completed (Date)
1	Initial Herbicide treatment (as appropriate) of Japanese knotweed infected areas	Yes	14/02/2023	18/04/2023

Activity	Work Description	Started	Commenced (Date)	Completed (Date)
1	Prepare Temporary Storage	Yes	18/04/2023	18/04/2023
2	Excavate Japanese knotweed Contaminated Area, soil sift	Yes	18/04/2023	18/04/2023

Activity	Work Description	Started	Commenced (Date)	Completed (Date)
1	Controlled Management of Works Within Infected Area	Yes	18/04/2023	18/04/2023
2	Site Monitoring / Treatment as required	Yes	18/04/2023	

4.4 PROJECT PLAN

Kilsaran Concrete Ltd

Halverstown, Kilcullen, Co. Kildare

Cust. ID: 223004
Contract: 223004.1
Project Start: 14/2/2023
Rev. 1 Today: 18/4/2023
Display Week: 9

JKC - Project Plan - Kilsaran Concrete Ltd - 223004.1 - 45034.1

TASK	RESP.	PROGRESS	START	END
Enquiry/Estimate				
Contract Assignment (from client)	JP	100%	14/2/23	16/2/23
Prepare Biosecurity Plan	JP	100%	14/2/23	16/2/23
Health & Safety Plan	JP	100%	14/2/23	16/2/23
Prepare Remediation Plan	JP	100%	14/2/23	16/2/23
Risk Assessment Review	JP	100%	14/2/23	16/2/23
Finalise Costings	JP	100%	14/2/23	16/2/23
Submit Tender Response	JP	100%	14/2/23	16/2/23
Prepare IAPS Management Plan	JP	100%	14/2/23	16/2/23
Contract Assignment (from client)	JP	100%	14/2/23	16/2/23
Preperation				
Issue Biosecurity SOP's	PJ	100%	15/2/23	15/2/23
NPWS Licence Application	PJ	100%	15/2/23	15/2/23
Issue Health & Safety Documentation	PJ	100%	15/2/23	15/2/23
Finalise IAPS Management Plan	PJ	100%	15/2/23	15/2/23
Finanalise Remediation Plan	PJ	100%	15/2/23	15/2/23
Test For Sub-Terranian Services (LUGS)	PJ	100%	15/2/23	15/2/23
Review & Communication	PJ	100%	15/2/23	15/2/23
Toolbox Talk	PJ	100%	15/2/23	15/2/23
Site Security (Fencing & Signage)	PJ	100%	15/2/23	15/2/23
Install Wash Down Areas (preparation & monitoring)	PJ	100%	15/2/23	15/2/23
Site Clearance (Scrub/Vegetation & Debris Bagging)	PJ	100%	15/2/23	15/2/23
Prepare Burial Cell	PJ	100%	15/2/23	15/2/23
Herbicide Spray	PJ	100%	15/2/23	15/2/23
Site Remediation				
Excavation (Japanese Knotweed Areas)	PJ	100%	18/4/23	18/4/23
Loading & Relocation to On-Site Treatment Bund	PJ	100%	18/4/23	18/4/23
Complete Burial Cell & Install Barrier Membrane Installation	PJ	100%	18/4/23	18/4/23
Install Cell Burial Signage	PJ	100%	18/4/23	18/4/23
Machinery & Equipment Cleandown	PJ	100%	18/4/23	18/4/23
Annual Monitoring & Herbicide Treatment (2023)	PJ	0%	30/8/23	30/8/23
Annual Monitoring & Herbicide Treatment (2024)	PJ	0%	30/8/24	30/8/24
Annual Monitoring & Herbicide Treatment (2025)	PJ	0%	30/8/25	30/8/25
Inspection & Documentation				
Site Inspection	PJ	100%	18/4/23	18/4/23
Review IAPS Management Plan	JP	100%	18/4/23	18/4/23
Review Biosecurity Management Plan	JP	100%	18/4/23	18/4/23
Machinery & Equipment Inspection	JP	100%	18/4/23	18/4/23
Work Completion				
Submit Management Plan To Client	JP	0%		
Issue Compliance Certification	JP	0%		

4.5 PRECAUTIONS AND RISK MANAGEMENT

- Cordon off exclusion area (*including infected area*) immediately, with tape and posts
- Identify infected area with warning signage (*don't cut/don't spray warning signs*). Erect signs at site entrance in advance of work commencement
- Ensure no movement of any soil or material in or out of the exclusion area
- No movement of heavy machinery in or out of the exclusion area
- Exclusion area of 7 metres from infected area to be maintained at all times until successful completion of remediation

Risk Assessment (Excavation)

Site Address	Halverstown, Kilcullen, Co. Kildare	Cust. ID.	223004
Work Activity	Herbicide & Excavation & Relocation to burial cell	Assessment Date	14/02/2023
Assessor	PJ	Review Date	15/03/2023

Hazard	People/Area At Risk	Precautions / Controls Required For Risk Reduction To Lowest Level	Residual Risk
Use Of Machinery	Machine Operatives Site users	• Wear correct PPE (personal protective equipment) and use machinery as per manufacturer's recommendations • Be aware of overhead power lines. • Ensure any persons other than those carrying out excavations are away from working area, and signs stating that machine operation is in progress • Ensure nobody enters the site	Low Risk
Trip Hazards	Machine Operatives Site users	• Ensure hoses / cables are stowed safely, Clear signage in areas of operation in accordance with training received, and safe working practices	Low Risk
Equipment	Machine Operatives Site users	• Survey and assess terrain in which work is to be carried out, taking note of hazardous areas and using caution accordingly • Two people to be present, constantly informed of each other's actions • Ensure refilling points are identified and spill measures are in place	Low Risk
Terrain	Machine Operatives Site users	• Survey and assess terrain in which work is to be carried out, taking note of hazardous areas (including gradients and unstable ground) and using caution accordingly • Ensure sub terranean services have been checked (LUGS) within excavation areas • Two people to be present, constantly informed of each other's actions	High Risk
Effect Of Excavation On Surrounding Area	Harm to non-target vegetation	• Ensure machinery selected for use are appropriate for working area and correct bucket is used • Measures to be taken to ensure non-target vegetation is not affected • Ensure spill and fire control equipment is located at fuel storage and re-fill stations with clear instructions for deployment	Low Risk

Risk:		
	Low	Minor impact/damage quickly repaired
	Med	Moderate impact/partial loss of operations
	High	Disaster/very serious consequences

Biodiversity action plan to be prepared with details of all precautions as required

4.6 METHODOLOGY

- Appoint a suitably trained biosecurity expert to supervise/manage operation
- Use a controlled workplan to ensure minimum movement/disturbance and strictly confined to the working area.
- Install ground cover barrier to avoid soil contamination onsite and off-site
- Provide secure area for herbicide preparation
- Prepare clean-down area at temporary contaminated material storage area with contained drainage run off to collect contaminated materials
- Ensure all contractors/workers are given 'safe practice toolbox' training prior to work commencement
- Observe cleaning protocols in a designated controlled area for: -
    - Brush-clean foot wear or use puttees over foot wear before entering contaminated areas
    - Brush-clean any tools equipment upon entry/exit to contaminated area
    - Ensure clothing is clean of any contaminants before exiting site
    - Remove puttees and safely dispose* at controlled site entrance point
    - Clean and check foot wear before exciting site by use of plastic ground-sheet to contain contaminants from tools, equipment, footwear and clothing
    - Dispose of any contaminants to licenced facility, including materials on protective ground-sheets
    - Dispose* of protective ground coverings upon works completion

** Protective ground covering and other disposable PPI to be disposed of with other contaminated materials*

4.7 METHOD STATEMENTS

4.7.1

Method Statement (Herbicide)

1. Arrive on site Halverstown, Kilcullen, Co. Kildare
2. Sign in (using time sheet TS200616.1)
3. Ensure Spray Operator Details Form is Completed
4. Review and complete COVID19 documentation
5. Review Risk Assessment, check weather conditions and forecast (update if necessary)
6. Conduct any induction needed for the site, ensure signage is clearly visible for personnel on site
7. Put on correct PPE for mixing chemical as per the manufacturer's label, i.e., gloves, face shield, coverall
8. Mix herbicide following manufacturer's instructions on the label and in a safe area, away from public and ground that could be contaminated or produce run-off if concentrate was spilt
9. Complete Health & Safety Checklist
10. Prior to spraying, conduct a visual risk assessment for the particular site, to take into account before starting the work:
    a. Other person's activities on the site
    b. Environmental factors which could be wind direction, wind speed, rain etc.
    c. Any spray drift that could occur while working and how to minimise effect on neighbouring properties
11. Record condition of foliage throughout areas to be treated with photographs (capture surface of leaves, stem condition and general surrounding areas) [Ensure GPS location is enabled for images]
12. Carry out and complete work, following the project plan
13. Complete Herbicide usage record
    a. Other person's activities on the site
    b. Environmental factors which could be wind direction, wind speed, rain etc.
    c. Any spray drift that could occur while working and how to minimise effect on neighbouring properties
14. Record condition of post treatment foliage throughout areas with photographs (capture surface of leaves, stem condition and general surrounding areas) [Ensure GPS location is enabled for images]
15. Remove PPE in the correct manner & store safely
16. Pack into the van correctly
17. Re-pack chemicals and equipment back into the van correctly to avoid spillage
18. Ensure all materials and equipment/tools, including any packaging etc. is cleared from site
19. Issue any verbal instructions and treatment report sheet to the site manager (including photographs)
20. Sign out (using time sheet)
21. Leave site

4.7.2

Method Statement (Excavation)

1. Arrive on site Halverstown, Kilcullen, Co. Kildare
2. Sign in (using time sheet TS200616.1)
3. Ensure Machine Operator Details Form is Completed
4. Review and complete COVID19 documentation
5. Review Risk Assessment (excavation), check weather conditions and forecast (update if necessary)
6. Conduct any induction needed for the site, ensure signage is clearly visible for personnel on site
7. Put on correct PPE for excavation, i.e., ear protection, foot ware
8. Ensure signage is in place for safe working area, secure site from public access
9. Complete Health & Safety Checklist
10. Prior to excavation, conduct a visual risk assessment for the particular site before starting the work:
    a. Other person's activities on the site
    b. Environmental factors including weather conditions.
    c. Overhead power lines
11. Record condition of terrain throughout areas to be excavated with photographs (capture ground surface, foliage condition and general surrounding areas) [Ensure GPS location is enabled for images]
12. Carry out and complete work, following the project plan
13. Complete Excavation record
14. Record condition of post treatment terrain throughout areas with photographs (capture ground conditions including surrounding areas) [Ensure GPS location is enabled for images]
15. Remove PPE in the correct manner & store safely
16. Pack equipment into the van correctly
17. Secure fuel containers and equipment back into the van correctly to avoid spillage
18. Ensure all materials and equipment/tools, including any fuel spillage etc. is cleared from site
19. Issue any verbal instructions and treatment report sheet to the site manager (including photographs)
20. Sign out (using time sheet)
21. Leave site

4.8 BIOSECURITY

For the purposes of this document, biosecurity refers to all practical measures used to manage and prevent the introduction and spread of Invasive Alien Plant Species (*Japanese knotweed*). A number of high impact aquatic and riparian Japanese knotweed are currently present in Ireland and most are continuing to spread aggressively.

Prominent among the terrestrial Japanese knotweed are: Japanese knotweed (*Fallopia japonica*), Japanese knotweed (*Fallopia sachalinensis*), Bohemian knotweed (*Fallopia x bohemica*), Giant hogweed (*Heracleum mantegazzianum*), Himalayan balsam (*Impatiens glandulifera*), Rhododendron (*Rhododendron ponticum*), Cordgrass (*Spartina*) and Buddleja (*Buddleja davidii*).

All of the above are listed in the Third Schedule (Parts 1 and 2) of the Habitats Directive (S.I. 477/2011) and some are included among the list of 49 EU Invasive Alien Plant Species of Union Concern (http://ec.europa.eu/environment/nature/pdf/invasive alien plant species_brochure_species.pdf) in the EU Invasive Alien Species Regulations (1143/2014).

The ecological effects of Japanese knotweed are often irreversible and, once established, they are extremely difficult and costly to control and remediate; hence, the urgent need to prevent their introduction and spread. Prevention is clearly more cost-effective and less environmentally damaging than long-term containment, control or remediation. The most effective measure to reduce introductions and halt the spread of Japanese knotweed is to promote and implement good biosecurity practice.

This Biosecurity SOP applies to all personnel and equipment (including *hand tools, boots and PPE*) present at the site during the control of Japanese knotweed.

The purpose of this SOP is to provide standardised practical methods for cleaning and disinfecting all equipment that comes into contact with Japanese knotweed while carrying out control works.

This Biosecurity SOP will help stop the introduction and spread of Japanese knotweed during operations conducted by the contractor.

Essential Site Biosecurity Measures

JKC recommend the following as essential site biosecurity measures for the future safety of the site from invasive plants:

- An exclusion zone of 7 metres should be established around all areas infested by Japanese knotweed.
- All machinery that moves on or off site must be rigorously cleaned and inspected to ensure no contaminated debris is carried on or off site or within the confines of the site. Vehicles must be cleaned of all earth and loose sediments, with particular attention paid to tyre treads, wheel arches and hinged joints.
- All members of the construction/ design team will be issued with a list of site biosecurity protocols that must be adhered to on site to prevent further spread of the invasive weeds.
- Dry/ cleaning areas will also be signposted to prevent cross contamination on site. The cleaning area should be positioned on a slope so that run-off will flow back into the exclusion zone. This exclusion zone should be marked on site prior to the enabling works commencing on site.
- Only authorised personnel will be allowed to enter these exclusion zones.
- Neighbours and workmen should be informed of the invasive weed on site
- Notices should be placed on the fence to inform construction personnel that the area contains live Japanese Knotweed material and to outline the bio-security measures put in place for the site
- All tools, materials and workwear should be inspected and cleaned using footbaths and clean down zones as necessary with particular attention paid to footwear and tools.
- All removed plant material must be placed in the exclusion zone.

Any breach of these protocols could lead to further contamination to the site which would have a detrimental impact on the construction process.

Biosecurity of all Imported Aggregates/ Soils to Site

JKC request to inspect sources of all material stone/ sand etc. that is being imported on to site to ensure that invasive material does not contain invasive weed roots or plant material.

Biosecurity of all Machinery used on site

- Prior to works commencing on site, all staff are to read and understand appropriate method statements. A toolbox talk will be held prior to works commencing to reiterate the importance of disinfection and decontamination when dealing with invasive plant material.
- Delineate work area and create exclusion zone by setting up pedestrian / traffic barriers along footpaths to the entrance /exit to and from the site.
- Set up a clean-down area at the proposed development site. Location to be agreed between the contractor and ewe inspector. Protective barrier material will be placed on hard-stand areas adjacent to the clean-down area to contain any loose materials. All soils collected from clean-down areas are to be disposed of to an offsite licenced facility.
- All machinery that moves on or off site must be rigorously cleaned and inspected to ensure no contaminated debris is carried on or off site or within the confines of the site. Vehicles must be cleaned of all earth and loose sediments, with particular attention paid to tyre treads, wheel arches and hinged joints.
- Machine operators will use the dry / cleaning areas that will be signposted to prevent cross contamination on site. The cleaning area should ideally be positioned on a slope so that run-off will flow back into the exclusion zone

All staff that are involved in the control operations should have access to disinfection facilities that include but not limited to:

- Detailed guide to proper cleaning and disinfection* procedure and instructions for making the correct disinfection concentration
- A solution of clean water and suitable disinfection of equipment and PPE
- Hard-bristle brushes
- Disposable non-latex gloves for equipment and PPE
- Plastic bags and cable ties (for disposing of infected material removed from equipment)

*Disinfectants must be used with care and in strict accordance with the manufacturer's instructions. Disposable gloves should be worn when using disinfectant solution. Best biosecurity practice will be achieved by ensuring that the following guidelines are adhered to when planning work activities

- Where possible, schedule operations so that uncontaminated site areas can be accessed before sites that are known or suspected to contain Japanese knotweed.
- Where multiple sites must be accessed and there is no opportunity to clean and disinfect the equipment, make sure to have alternative, clean equipment available.
- Clean and disinfect all equipment prior to arrival on site. If this is not possible, clean and disinfect the equipment before entering the site.
- Clean and disinfect all equipment when moving between sites.
- Report suspected Japanese knotweed accompanied by the location (grid reference) and good quality photographs
- It is important that all PPE and equipment used are cleaned and disinfected according to the SOP procedures. These biosecurity measures should be conducted before leaving each site.
- Put on disposable gloves before cleaning and disinfecting the equipment.
- Visually inspect all equipment that has come into contact with water for evidence of attached Japanese knotweed material, or adherent mud or debris. Remove any such material before cleaning and disinfecting the equipment and leaving the site.
- Dispose of any Japanese knotweed material taken from the equipment using the plastic bags provided.
- Spray equipment with the disinfection solution to the point of run-off. Do not rinse in clean water for at least 15 minutes.
- Use the hard-bristle brush to remove all mud and debris from boots and equipment. Then spray with the prepared disinfectant solution onto the cleaned surfaces to the point of run-off. During inspection and cleaning, pay particular attention to places where Japanese knotweed could be accidentally trapped, such as the treads of boots and attachment points on equipment.
- Visually inspect all PPE that has been in contact with vector material and remove any attached Japanese knotweed material, or adherent mud or debris. Wipe down this PPE with an absorbent cloth soaked in the prepared disinfectant solution.
- Where time permits and where practical, it is good biosecurity practice to air dry equipment following cleaning and disinfection.
- Remove disposable gloves and dispose of safely.

4.9 **DRAWING SHOWING PROPOSED DEVELOPMENT & PLANNED REMEDIAL WORKS**

Image #05: Site Plan of proposed site layout showing planned remediation works

5 APPENDICES

5.1 APPENDIX 1 – RECORD OF SITE AND REMEDIAL WORKS

5.1.1 AERIAL PHOTOGRAPH OF CURRENT SITE

5.1.2 PROPOSED DEVELOPMENT PLAN FOR SITE

TBA

5.1.3 **PRE-REMEDIATION - PHOTOGRAPHS OF Japanese knotweed**
[Images/Photos of Japanese knotweed identified on site]

5.1.4 **POST-REMEDIATION - PHOTOGRAPHS OF Japanese knotweed**
[Images/Photos of Japanese knotweed identified on site]

5.1.5 **Site Visit Records (Monitoring) - Herbicide (Pesticide) Application Records**
To be inserted on completion of works

5.1.6 **Site Waste Tracking Record**

To be inserted on completion of works (*As Applicable for Site*)

5.1.7 **Waste Transfer Notes**

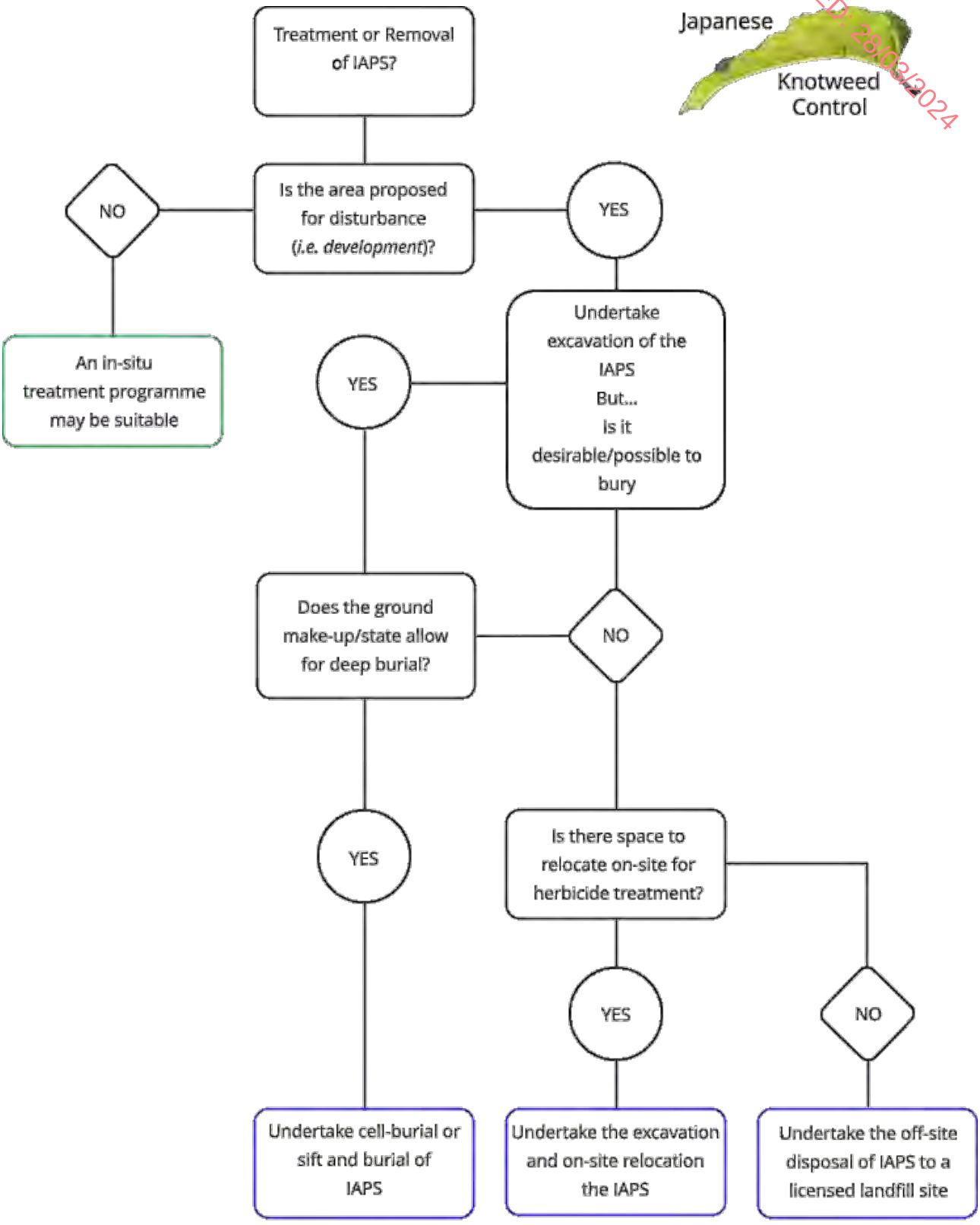
To be inserted on completion of works (*As Applicable for Site*)

5.1.8 **Weighbridge Tickets**

To be inserted on completion of works (As Applicable for Site)

5.2 APPENDIX 2 – REMEDIATION STRATEGIES

5.2.1 The Following chart provides a simple representation of the decision process required in selecting the appropriate Japanese knotweed remediation method(s) that could be deployed:



www.japaneseknotweedkillers.com

5.2.2 The Following chart outlines the decision process required in selecting the appropriate Japanese knotweed remediation method(s) for development sites recommended by the Environmental Agency (Ref. The Knotweed Code of Practice (Environment Agency 2013))

***Reference**: *Environment Agency - Managing Japanese knotweed on development sites, Knotweed Code of Practice (2013)*

(*See Appendix 10*)

There are various options for the control of Japanese knotweed on site. It is not acceptable to do nothing. Existing site conditions, cost, scale of the development and timing will determine which method would be most successful.

To advance with the development of a site it will be necessary to excavate all areas of the Japanese knotweed contaminated material and soils on site. This should be carried out prior to other construction work being carried out on site.

The following treatment methods were considered when dealing with the invasive alien plant species (Japanese knotweed) infestations on site.

5.2.3 **Dig and Dump**

Our dig and dump programme provide an instant, hassle free and impressive rectification method. The Japanese knotweed is fully excavated to remove all material (*all rhizomes*).

The excavation process is monitored by our site supervisors, who not only ensure that all the Japanese knotweed is removed (*via visual identification*), but that only soils contaminated with Japanese knotweed are removed (*i.e. we only excavate what needs to be excavated we don't excavate a blind 7m past the Japanese knotweed growth and to a set 3m depth, where it's not necessary*).

All Japanese knotweed material and Japanese knotweed contaminated arising from these works is removed from site as controlled waste. This requires removal via registered waste carriers to a landfill site fully licensed to receive and dispose of Japanese knotweed contaminated materials. There will be a full waste tracking record on completion.

✓ No restriction left on site	✗ Can be more expensive than other on-site sustainable solutions
✓ Work can continue immediately after removal	

5.2.4 **Dig and Cap**

As with the Dig and Dump method, the Japanese knotweed is accurately excavated, but only down to a depth required by the development or end use of the site. On a development site this will often mean excavation of the Japanese knotweed to construction formation levels only. The excavated Japanese knotweed and Japanese knotweed contaminated material can either be removed from site as controlled waste or disposed/treated on site.

The remaining Japanese knotweed contaminated ground (*beneath the excavation depth*) will then be capped off with Japanese knotweed root barrier to prevent re-emergence of the Japanese knotweed from underneath. Where necessary (*i.e. if the Japanese knotweed rhizome transverse the boundary of the site, or where Japanese knotweed in neighbouring property is in close proximity to the site boundary*) the root barrier is returned vertically at the site boundary.

✓ Limited restrictions left on site	✗ Can be more expensive than other on-site sustainable solutions
✓ Work can continue immediately after removal	

5.2.5 **Dig and Sift**

The Japanese knotweed is excavated either fully or to a reduced level. The excavated spoil is then passed through a mechanical screener. The sifting process crushes and fragments the Japanese knotweed, reducing its regenerative power. The sifted Japanese knotweed materials can then be re-used or buried on-site. The key benefit of this procedure is that the spoil which passes through the screener will only contain very small fragments of Japanese knotweed, which have lowered regenerative power. These fragments can be safely incinerated on site.

This allows for the sifted and incinerated spoil to be re-used on-site as backfill subject to local Environment Agency Officer approval! To exploit the low regenerative power of these fragments the sifted spoil is incinerated, buried, subjected to engineering compaction, and covered with an approved geo-synthetic membrane prior to clean backfill being installed above.

The burial depth should be suitable as to avoid the risk of accidental disturbance and prevent any small Japanese knotweed fragments from producing growth capable of breaking the compaction and reaching the surface.

Alternatively, the sifted spoil can be re-used on site at finished levels to areas of Public Open Space landscaping, but some limited re-growth will be expected.

The re-use area would therefore need to be subject to a monitoring and herbicide treatment programme until successive years of no-growth have been recorded. The Japanese knotweed Management Plan should be used to record the position of the low-level burial or re-use area, with this being marked upon an as-built site drawing.

This will help prevent potential future disturbance of these locations. If these works are part of a site development project the Japanese knotweed Management Plan should then be included in the Operations and Maintenance (O&M) Manuals.

✓ Moderately cost effective	✗ Restrictions remain on site
✓ Allows development to be undertaken whilst treatment takes place elsewhere on-site	✗ Limits use of area above burial site
	✗ Requires a large hole to receive material

5.2.6 **Dig, Sift and On-Site Incineration**

The Japanese knotweed is excavated either fully or to a reduced level. The excavated spoil is then passed through a mechanical screener and the Japanese knotweed material collected and incinerated on-site. The sifting process crushes and fragments the Japanese knotweed, reducing its regenerative power and the Incineration process ensures complete destruction of Japanese knotweed material.

The sifted and incinerated Japanese knotweed materials can then be buried on-site, avoiding the cost of transportation and disposal to a licenced land fill facility. The key benefit of this procedure is that the spoil which passes through the screener will only contain very small fragments of Japanese knotweed, which be safely incinerated on site.

This allows for the sifted and incinerated spoil to be re-used on-site as backfill subject to local Environment Agency Officer approval! To exploit the low regenerative power of these fragments the sifted spoil is incinerated, buried, subjected to engineering compaction, and covered with an approved geo-synthetic membrane prior to clean backfill being installed above.

The burial depth should be suitable as to avoid the risk of accidental disturbance and prevent any small Japanese knotweed fragments from producing growth capable of breaking the compaction and reaching the surface.

Alternatively, the sifted spoil can be re-used on site at finished levels to areas of Public Open Space landscaping, but some limited re-growth will be expected.

The re-use area would therefore need to be subject to a monitoring and herbicide treatment programme until successive years of no-growth have been recorded. The Japanese knotweed Management Plan should be used to record the position of the low-level burial or re-use area, with this being marked upon an as-built site drawing.

This will help prevent potential future disturbance of these locations. If these works are part of a site development project the Japanese knotweed Management Plan should then be included in the Operations and Maintenance (O&M) Manuals.

✓ Very cost effective	✗ Restrictions remain on site
✓ Allows development to be undertaken whilst treatment takes place elsewhere on-site	✗ Limits use of area at storage/treatment area
	✗ Requires suitable storage/treatment area

5.2.7 **Cell-Burial**

Japanese knotweed is excavated either fully or to a reduced level and capped. The excavated Japanese knotweed material is then buried on site in a suitable location. The Japanese knotweed material is buried so it is encapsulated in Japanese knotweed root barrier (the cell) with the top of the cell residing 2m below finished ground levels.

The depth of 2m is a pre-caution against burrowing animals penetrating the cell and bringing out Japanese knotweed material. If burial of Japanese knotweed is to take place without the encapsulation or root barrier it must be done so that the Japanese knotweed resides below a depth of 5m.

Where on-site burial is undertaken, it is strongly advised that to prevent potential disturbance and re-infestation the burial site location is recorded, and any future owners are advised of its position (i.e. on development site the cell-burial locations should be recorded in the O&M manuals for the site manuals for the site).

✓ Does not require a set aside area for control	✗ Limits use of area above burial site
✓ Work can continue immediately after burial	✗ Requires a large hole to receive material
	✗ Restrictions remain on site

5.2.8 **Deep Dig & Land spread**

Japanese knotweed is excavated with deep dig. The excavated Japanese knotweed material is then spread on site in a suitable location prepared with a root barrier membrane to a depth of no more than 0.3m and treated with herbicide as required (*dependent on regrowth rates*), for minimum of 3 seasons.

✓ Moderately cost effective	✗ Limits use of area above treatment site
✓ Allows development to be undertaken whilst treatment takes place elsewhere on-site	✗ Requires a large area for ongoing treatment
	✗ Restrictions remain on site

5.2.9 **Dig and Relocation**

The Japanese knotweed is excavated either fully or to a reduced level, and the arising Japanese knotweed waste is relocated to another area of the site, where it can be treated with herbicide. Relocation is normally carried out by loading the Japanese knotweed to dump trucks and transporting over site on a controlled haul route to a designated location.

At the relocation point the Japanese knotweed is either; Stockpiled, Bunded or resides at ground level via a Cut and Fill procedure. The Cut and Fill procedure has the benefit of not producing a bund or stockpile of Japanese knotweed on site, and it provides back fill to the void created by the excavation of the Japanese knotweed.

✓ Cost effective	✗ Requires undisturbed area
✓ Allows development works to be undertaken whilst treatment takes place elsewhere on-site	✗ Soil from stockpile must remain on site
	✗ Restrictions remain in stockpile area

5.2.10 **Watching Brief (Supervision)**

To guard against accidental spread of Japanese knotweed material, a >2m exclusion zone called a rhizome spread zone (*RSZ*) fencing will be erected around the visible Japanese knotweed growth area.

Watching brief (*site supervisor*) must be present to oversee others in undertaking site clearance/demolition/construction works within the RSZ to ensure Japanese knotweed contamination is not spread from the area.

Arising from within the RSZ which is found to be contaminated with Japanese knotweed will either be; disposed of on-site (*burial/relocation*), removed from site (*to landfill*) or temporarily stockpiled and then returned to area on completion of works.

Root Barriers can be introduced to cap or separate Japanese knotweed contaminated ground from clean or imported clean ground or to protect new services/structures/hard-standing. Watching brief (site Supervisor) will ensure that all personnel and machine are properly decontaminated before leaving the RSZ area.

During and/or post completion of the development works any Japanese knotweed remaining on-site (*original position or relocation area*) should be treated with herbicide application programme(s) to control the plant, and aim at achieving Remediation.

5.2.11 **Root Barrier Control**

Where Japanese knotweed exists either on-site or off-site and is to remain in-situ its spread can be controlled by the insertion of vertical root barrier. Japanese knotweed root barrier can deflect Japanese knotweed rhizome growth and prevent the spread of the plant under the ground.

Root barriers can be inserted to protect structures and services and have a life span of at least 50 years. Where Japanese knotweed exists off-site in close proximity to the site the insertion of root barrier to the boundary can help protect the site from rhizome encroachment. This control should always be backed up by an herbicide or electrolyte treatment programme wherever possible.

5.2.12 **Herbicide Treatment Programme**

Often the most cost-effective treatment and control method is an Herbicide Treatment Programme. This requires methodical and carefully managed visits with correct use of chemical over a sustained period of time (*2-5 years*). It should be noted that Japanese knotweed can take many years to eradicate via chemical application.

Chemically induced Remediation does not mean removal of the plants underground rhizome system. This will remain often in a dormant but viable state and could re-grow if disturbed.

The above is an important note for developers as the Environment Agency recognise the limitations of herbicide control and class the ground which contains Japanese knotweed treated or dead (*even after Japanese knotweed specialist has deemed the Japanese knotweed as eradicated under chemical treatment*) to be classed as controlled waste if removed from site.

This is the same classification that is given to viable living Japanese knotweed material and ground contaminated with untreated alive Japanese knotweed. More often than not, if developing a site, you will need to adopt one of the instant remediation methods.

✓ Cost effective	✗ Takes 3 to 5 years
✓ Treatment can be carried out in situ without risk of spreading plant further	✗ Must be left undisturbed
	✗ Restrictions remain on site
	✗ Restricted use near valuable vegetation and waterways

5.2.13 **Non-chemical (Electrical) Treatment Programme**

A new treatment and control method is the electrocide Treatment Programme (ETP). This requires methodical and carefully managed visits with correct use of a special electrical treatment process (*12 – 24 months*).

Each individual plant is treated in-situ using special electrocide equipment calibrated for the plant size/maturity and monitored throughout the programme. Multiple treatments maybe necessary for mature growth and healthy stands.

Electrocide treatment is useful where herbicide treatment is undesirable, prevented, may affect other surrounding plant growth or where the infected area is in close proximity to a water source. It is also significantly faster than herbicide treatment, as plants are effectively destroyed instantly.

✓ Cost effective	✗ Takes 12-24 months
✓ No Chemical Usage	✗ Must be left undisturbed
✓ Treatment can be carried out in situ without risk of spreading plant further	✗ Restrictions remain on site
	✗ Restricted use near waterways

JKC can undertake any of the above methods of Japanese knotweed control/remediation to resolve infestation problems. It is important to remember that if handled the wrong way, Japanese knotweed infestations can become a long-term problem for developers and land owners.

5.3 APPENDIX 3 – THREATS TO SITE MANAGEMENT OBJECTIVES

A strategy for managing and/or removing the Japanese knotweed problem is required to allow the proposed site development/management objectives to be implemented without compromise of potential property and legal risks caused by Japanese knotweed.

By NOT implementing recommended remedial strategies you may be presented with the following complications and associated costs:

5.3.1 Japanese knotweed IMPACT ON DEVELOPMENT OBJECTIVES

SITE VEGETATION STRIP/CLEARANCE

During vegetation clearance disturbance of the Japanese knotweed can occur resulting in the translocation of Japanese knotweed material to other areas of the site or even unintentional illegal removal of controlled (*Japanese knotweed*) waste from the site.

DEMOLITION

During demolition disturbance of the Japanese knotweed can occur resulting in the translocation of Japanese knotweed material to other areas of the site or even unintentional illegal removal of controlled (*Japanese knotweed*) waste from the site.

FORMATION LEVEL EXCAVATIONS

Ground work excavation to reach construction formations levels (if site levels are to remain the same or be reduced) may encounter ground contaminated with Japanese knotweed rhizome. This can result in the translocation of Japanese knotweed material presenting structural risk and/or unintentional illegal removal of controlled (*Japanese knotweed*) waste from the site.

BUILDING FOUNDATION EXCAVATIONS

Ground work excavation for proposed building foundations may encounter ground contaminated with Japanese knotweed rhizome. This can result in un-controlled or un-treated Japanese knotweed rhizome remaining underbuilding footprints (*i.e. in ground underneath suspended Block and Beam floors*) presenting a structural risks and/or unintentional illegal removal of controlled (*Japanese knotweed*) waste from the site.

MATERIAL MOVEMENTS AND WASTE

The development project may necessitate the removal of material from site and/or the importation of soil material onto the site. It is imperative that all necessary steps are taken to ensure these materials are free of Japanese knotweed.

5.3.2 IMPACTS ON PROPOSED END USE

STRUCTURAL RISK

Japanese knotweed rhizome and crown growth has the potential to cause damage to services, structures and hard standing.

PLOT SALEABILITY

Japanese knotweed is a recognised property risk and will be flagged up on building surveys as part of the conveyance process. Where Japanese knotweed has been identified, it can prevent lending agreements (*i.e. on new residential development site this can stop sales of completed units!*).

CONTAMINATION

Un-managed Japanese knotweed growth can be disturbed by site maintenance activities such as grounds maintenance. This can quickly translocate material to other areas of the site and spread and worsen an infestation and associated risks.

5.3.3 RE-INFESTATION

Any presence of Japanese knotweed off-site can present the likely potential for re-infestation of the site across site boundaries.

5.4 APPENDIX 4 – EXPERIENCE AND QUALIFICATIONS

5.4.1 CONTRACTOR (Japanese knotweed SPECIALIST)

JKC is a private limited company dedicated to the trade of Japanese knotweed Survey, Management, Treatment and Removal.

- Private Individuals
- Housing Associations
- Local and Regional Government
- Commercial Companies
- Construction Companies

5.4.2 QUALIFICATIONS

All our staff are fully trained to undertake their works. We have a 100% CSCS policy for all staff involved with the management and undertaking of operational works on construction sites. All team leaders (Site Foreman) working on construction sites are SSSTS qualified and all plant operators have the applicable CPCS qualification.

All operational staff that undertake herbicide application works have the statutory NPTC PA1 and PA6 license (and PA6 AW for those spraying on or near water). A majority of our technical staff have also now completed the PCA Technician Training course.

5.4.3 BEST WORKING PRACTICES and CODE OF PRACTICE

PCA (2014) Code of Practice for the management of Japanese knotweed, (V2.7) JKC is stringent in ensuring we are working in accordance to the PCA (2014) Code of Practice for the management of Knotweed, (V2.7) at all times!

5.5 APPENDIX 5 – HEALTH and SAFETY

5.5.1 POLICY

All JKC staff are provided with the full Company Health and Safety Policy on joining the company. This is re-issued if amendments are made.

5.5.2 CSCS

Our operational staff are 100% CSCS qualified. All staff who operate machinery also have CPCS qualification. Our site supervisors are SSSTS qualified.

5.5.3 RISK ASSESSMENTS and METHOD STATEMENT

JKC will produce a Risk Assessment following an assessment of the risks involved in carrying out the work.

JKC Method Statement and Risk Assessment (MS/RA) documents will include emergency procedures and the location of all emergency medical equipment.

Operatives will fully review the MS/RA document before works and carry a copy on their persons during operations.

If more than one operative is on-site or other contractors are involved in the work the Lead Foreman (or appropriate appointed persons) will hold a tool box talk with all persons to ensure the MS/RA document is discussed and understood prior to commencement of works.

Welfare arrangements / First Aid will be provided by site personnel.

5.6 APPENDIX 6 – Japanese knotweed INFORMATION

5.6.1 Japanese knotweeds (Includes: Japanese knotweed (Fallopia japonica) Giant knotweed (Fallopia sachalinensis) and Bohemian knotweed (Fallopia x bohemica))

Japanese knotweed: Native to Japan and parts of South East Asia, Japanese knotweed is used to extremely harsh conditions. In its native environment it can be found growing on the side of volcanic mountains and has a very hardy perennial growth cycle. Japanese knotweed and its hybrids are now widely distributed across Ireland causing a major management concern for public authorities and private property owners.

The plant has no natural predators in Ireland and thrives in wet land conditions. It can spread from root fragments left behind when ground is disturbed, which is why it can often be found along waterways and at road sides.

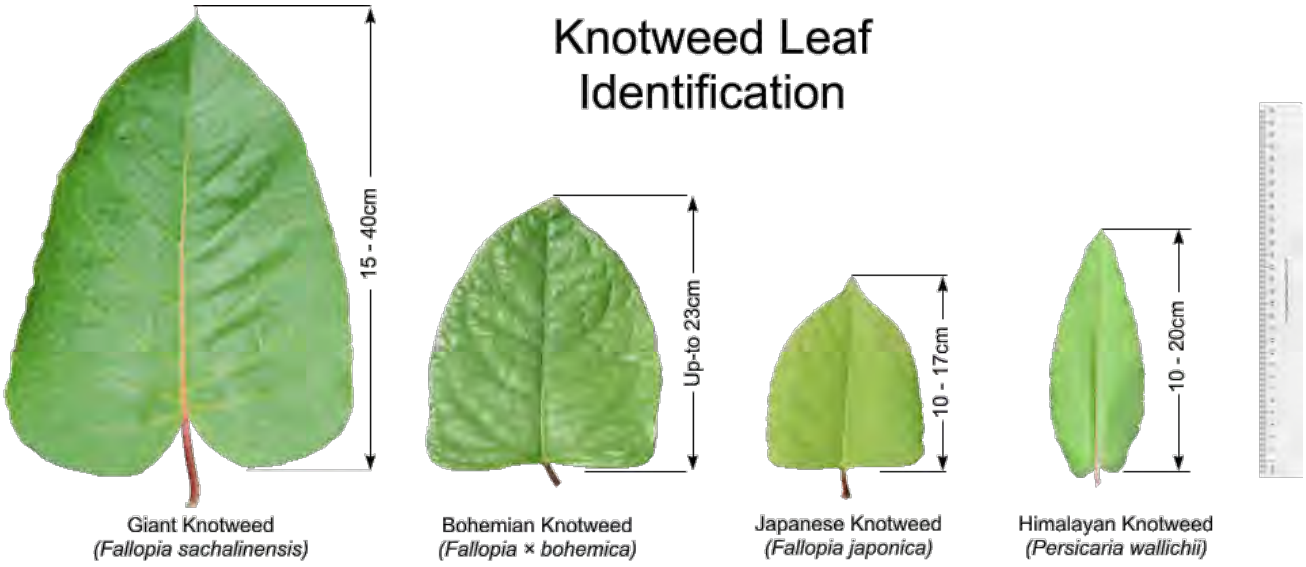
Japanese knotweed is relentless in growing through almost any barrier. It has no problem breaking through weak concrete, brick, paving slabs and tarmac and will push its way to the surface at an alarming rate.

Japanese knotweed has become a serious problem in Ireland and many other parts of Europe due to its aggressive spread and speed of growth causing extensive damage to building and structures.

Giant knotweed: Similar to Fallopia japonica but has larger leaves and is taller (up to 4.5 metres). Creamy white flowers appear in late summer/early autumn in dense panicles.

Giant knotweed has a wide-ranging root system, which can extend up to 3m in depth and 7m in all directions.

These can pose a serious threat to construction works and have devastating consequences to building structures, foundations and drains.



	Giant Knotweed	Bohemian Knotweed	Japanese Knotweed	Himalayan Knotweed
Plant Size	4m to >5m tall	2m to >4m tall	1.5m to >3m tall	2m to >3m tall
Leaf Size L/W	15cm to 40cm 2/3 as wide	12cm to 23cm 2/3 as wide	10cm to 17cm 2/3 as wide	10cm to 20cm 1/2 as wide
Sex	Perfect and fertile, usually produces seed	Female or Perfect, occasionally produces seed	Female or Perfect (rare), occasionally produces seed	Perfect and fertile, usually produces seed
Flower Colour & Arrangement	Green-white to cream-white with compact, drooping arrangement	Green-white to cream-white with erect or loose, drooping arrangement	Green-white to cream-white with a loose, drooping arrangement	Pinkish-white to pink with a loose, spreading arrangement

Bohemian knotweed: This is a hybrid between Japanese knotweed and Giant knotweed. A tall herbaceous, rhizomatous perennial, with stems up to 3.5m tall. Leaf blades of lower cauline leaves up to 25 x 17 cm.

Distinctive intermediate trichomes on the lower leaf epidermis are the best character for distinguishing it.

The leaves are larger than Japanese knotweed and heart shaped. Leaves are pointed with veins reddish purple when immature.

It has the same general growth form as Japanese knotweed, but the leaves are much larger and do not have the truncate bases typical of Japanese knotweed.

Unlike Japanese knotweed, both sexes are found, in Ireland the hermaphrodites seem to outnumber the male-sterile plants. Clones extend by rhizome growth and may occupy considerable areas with some long-established colonies in the West of Ireland and in Dublin.

Himalayan knotweed: less common in the Ireland. They have slender, elongated leaves and tapered to a point.

It can grow to a height of up to 1.8m and the stems are usually green with a zig zag shape from node to node. Himalayan knotweed have hairy stems and brown sheaths that persist at the basis of the leaf stalks.

5.6.2

Japanese Knotweed
(*Fallopia japonica*)

Habitat: Terrestrial

Family name: Polygonaceae

Description: Native to Japan and parts of South East Asia, herbaceous perennial plant growing to 1.5–2.5 m tall, with strong, extensively spreading rhizomes forming large clonal colonies. .

In it's native environment it can be found growing on the side of volcanic mountains and has a very hardy perennial growth cycle.

Japanese knotweed and it's hybrids are now widely distributed across Ireland and is a major management concern for public authorities and private property owners.

Reproduction: Spreads variously through fragments of rhizome or stem.

Japanese knotweed - (*Fallopia japonica*) is closely related to Giant knotweed - (*Fallopia japonica*) which are both gynodioecious, with male and female (*male sterile*) flowers on separate plants.

Web: www.japaneseknotweedkillers.com Email: mail@ecoweedcontroltd.com

Flowers are small, produced in late summer or early autumn on short, dense panicles up to 10 cm long.

In late autumn, brown, brittle dead stems mark where knotweed locations exist

Roots and Rhizome: Roots can grow up to 3 m deep and up to 7 m from the surface crown.

Japanese knotweed Roots are orange in colour.

Plants can regenerate from fragments of rhizomes as small as a fingernail.

Knotweed Leaf Identification

Giant Knotweed (*Fallopia sachalinensis*) Leaf

Bohemian Knotweed (*Fallopia × bohemica*) Leaf

Japanese Knotweed (*Fallopia japonica*) Leaf

Leaves grow in an alternate zig-zag pattern on the stem.

Spade Shaped with flat stem base.

Stem: Hollow, mostly green with red mottling and banding.

5.7 **APPENDIX 7 – PCA (*Guidelines*)**
https://www.property-care.org/wp-content/uploads/2015/04/Code-of-Practice-for-the-Management-of-Japanese-knotweed_v2.7.pdf

Code of Practice

for the Management of Japanese knotweed

Version 2.7: Last modified on 10/11/2014

5.8 APPENDIX 8 – EUROPEAN COMMUNITIES REGULATIONS

Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011.

STATUTORY INSTRUMENTS.

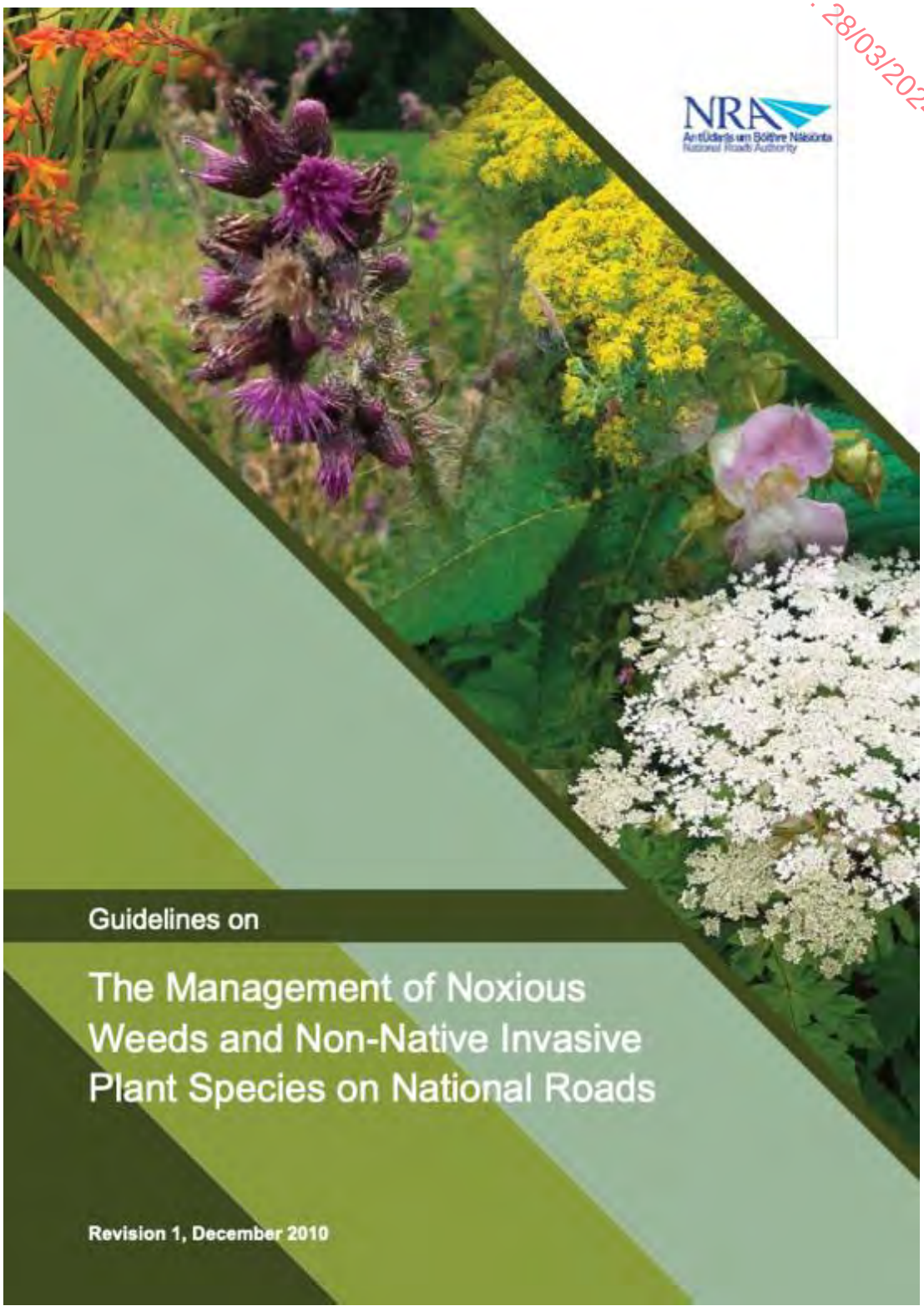
S.I. No. 477 of 2011

EUROPEAN COMMUNITIES (BIRDS AND NATURAL HABITATS) REGULATIONS 2011

(Prn. A11/1751)

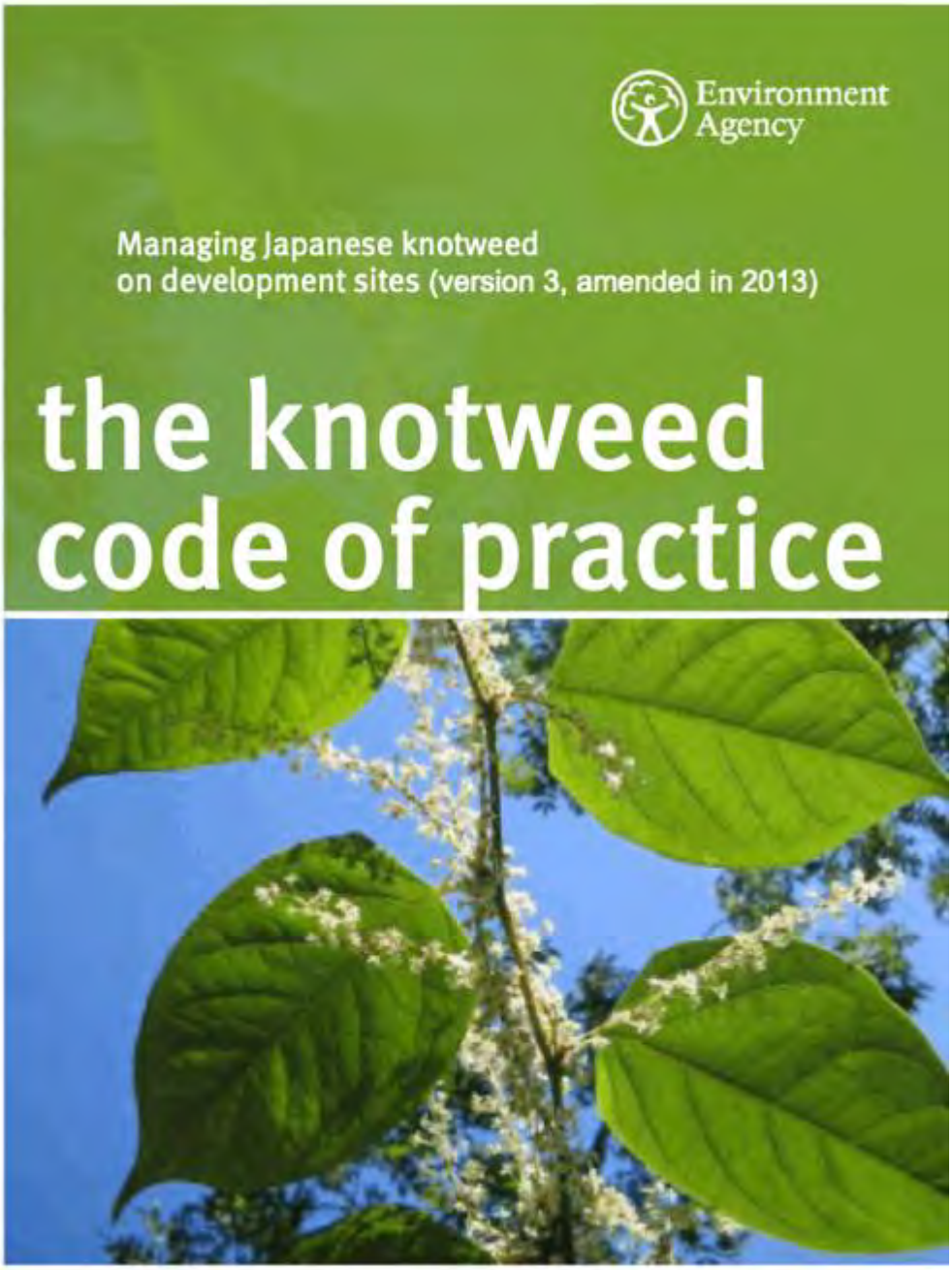
5.9 APPENDIX 9 – NRA GUIDELINES

NRA – The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads - Revision 1 (December 2010)



5.10 APPENDIX 10 – ENVIRONMENT AGENCY KNOTWEED CODE OF PRACTICE 2013

The Knotweed Code of Practice (Environment Agency 2013) [withdrawn 11/07/2016]



5.11 APPENDIX 11 – JKC STANDARD OPERATING PROCEDURES (SOP's)

Herbicides Usage & Management SOP

Company:	Japanese Knotweed Control Ltd - (672886)
Registered Offices	Inniscarra, Main Street, Rathcoole, Co. Dublin. D24 E029
Telephone	086 250 8805
Email	info@japaneseknotweedcontrolltd.com
Date Prepared:	16/11/2020
Document & Revision	JKC Herbicide Usage & Management SOP Rev. 1.1

5.12 APPENDIX 12 – COVID19 RETURN TO WORK PROCEDURES

Japanese Knotweed Control

COVID-19 RETURN TO WORK PROGRAM (Rev. 01)

Company:	Japanese Knotweed Control Ltd (JKC)
Created By:	Patrick Larkin
Safety Advisor:	Declan O'Rourke
Date Prepared:	29/05/2020
Revision Date:	18/12/2020

Site Name:	
Tender/Project No:	
Client Name:	