Almondbank Flood Protection Scheme

Outline Construction Method Statement

Produced for

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1 Introduction

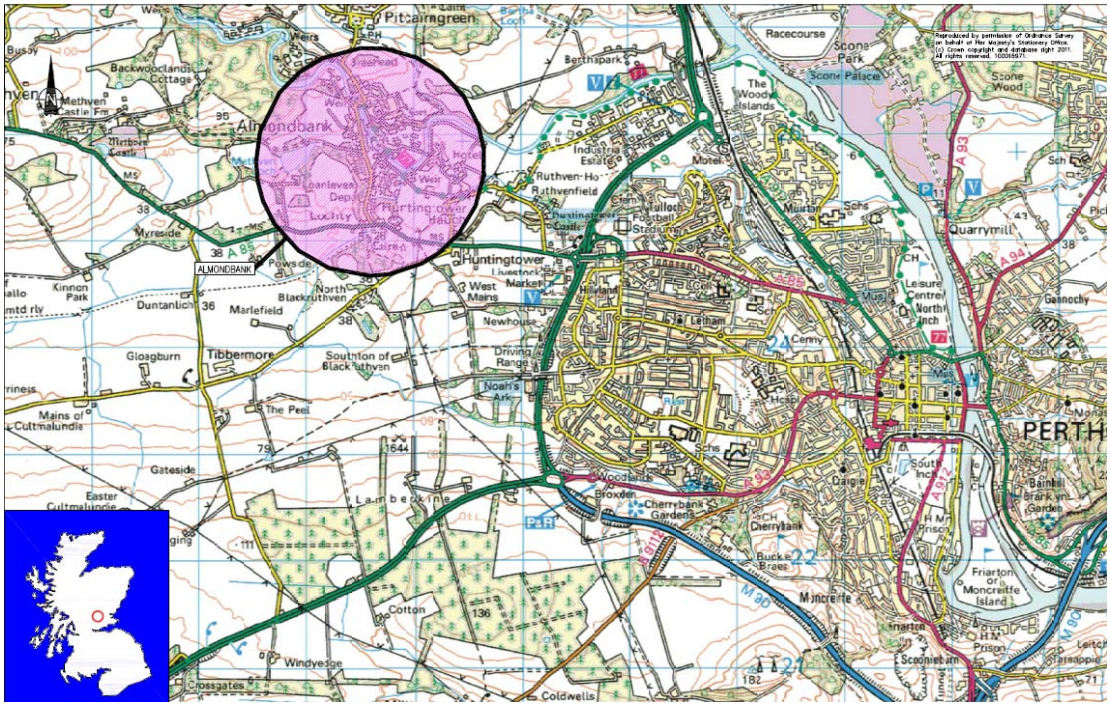
1.1 Construction Method Statement

1.1.1 This outline Construction Method Statement (CMS) has been prepared by Mouchel to support the Flood Order Submission for the Almondbank Flood Protection Scheme under the Flood Risk Management (Scotland) Act 2009. It outlines the proposed measures to minimise and mitigate the construction impacts of the development in accordance with the Environmental Statement (ES), which has also been prepared to support the Flood Order Submission. It also considers the proposed phasing of the works in respect of the environmental management within the site.

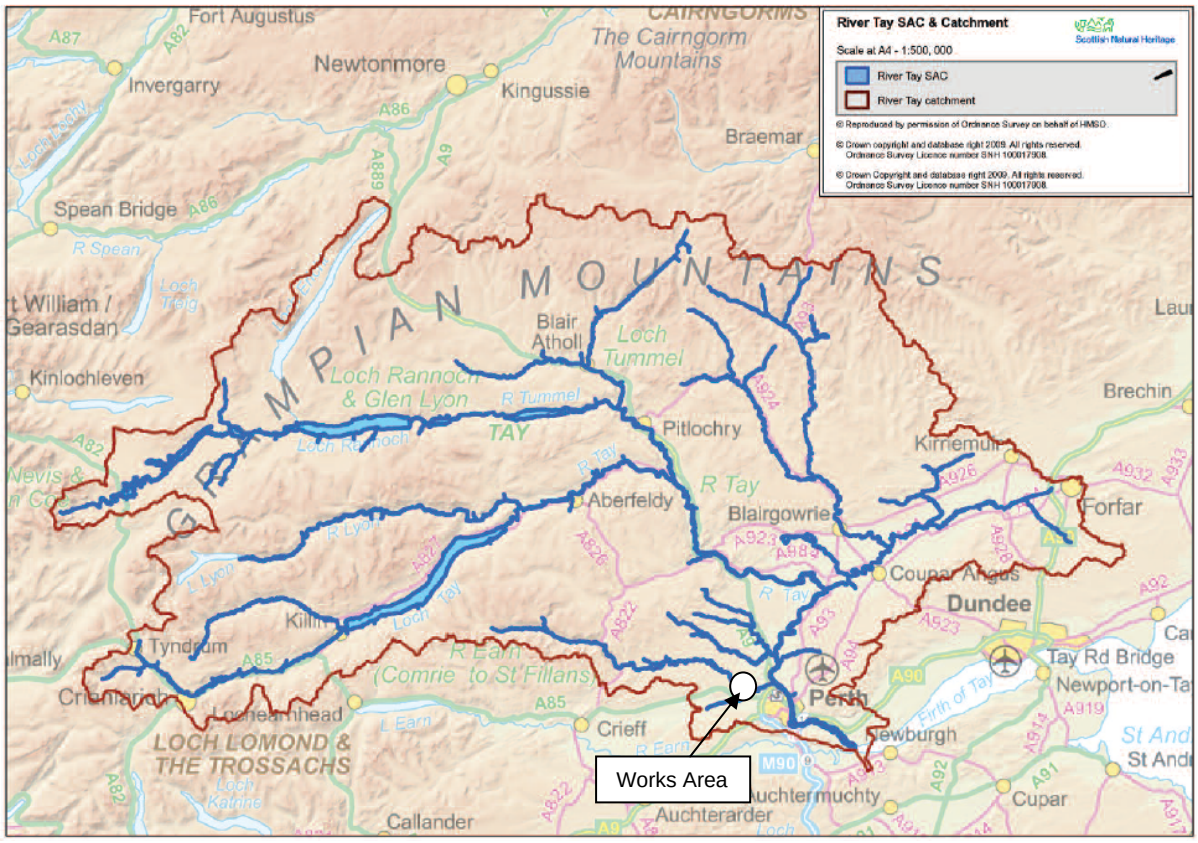
1.1.2 The processes and methods included in this CMS adopt construction best practice and take account of relevant environmental legislation and guidance. This document should be read in conjunction with the ES and the supporting documents associated with the Flood Order Submission.

1.2 Background and Scheme Overview

1.2.1 The town of Almondbank is located approximately 5 miles northwest of Perth and is situated either side of the River Almond.



1.2.2 Being a tributary of the River Tay, the River Almond and its tributary the East Pow Burn (confluence at Almondbank) are part of the extensive River Tay Special Area of Conservation (SAC). The watercourses included in the SAC designated are shown in blue below.



1.2.3 As a result of flooding within the Almondbank area from the River Almond and the East Pow Burn, Perth & Kinross Council is promoting a flood protection scheme to alleviate the problem.

1.2.4 The proposed scheme comprises a combination of flood defence walls (reinforced concrete with cladding, sheet pile & sheet pile with cladding) together with earth embankments in locations where space is available. Erosion protection (such as geotextile matting, willow spilling, block revetment and rip rap) is proposed in some locations. A flood storage area would be utilised on the playing fields in the centre of the town. The River Almond Footbridge would be relocated and existing road bridges at the confluence of the River Almond and the East Pow Burn and at Lochty Park would be removed and replaced. Improvements to existing drainage infrastructure would also be made at Bridgeton, Main Street and the Vector Aerospace site.

1.3 Approach to the Construction Method Statement

1.3.1 The objective of the CMS is to provide details of how those construction works within proximity of the River Almond and East Pow Burn (referred to as the Principal Watercourses) could be implemented and controlled in order to avoid any deterioration in the River Tay SAC features of interest.

1.3.2 The CMS is structured in three sections as follows:

Section 1: Introduction
Provides background to the scheme, a brief scheme description and the approach to the CMS.

Section 2: Construction Methods
Outlines the principal construction works to be undertaken in proximity of the Principal Watercourses and provides details on the estimated phasing of those works.

Section 3: Environmental Provisions
Identifies environmental measures required to protect both ecological features and surface water quality associated with the River Tay SAC.

1.3.3 The proposed working practices which would be adopted during the construction process, as described in this document, have been informed by the findings of the assessment of environmental impacts and developed from the outline mitigation measures identified within the ES.

1.3.4 The standards and procedures set out in this CMS are sufficient for the outline design. It is intended that the CMS would be further developed during the detailed design and also by the site contractor commissioned to construct the scheme.

1.3.5 The site contractor would be required to prepare a Construction Environmental Management Plan (CEMP). This would include more detailed construction method statements for different aspects of the scheme, although the contractor would be required to work within the framework set out in this document. Relevant bodies including Scottish Natural Heritage (SNH) and the Scottish Environment Protection Agency (SEPA) would be consulted on these documents and this would be ensured through inclusion of this document within the tendering and contract documentation.

1.3.6 Appropriate licensing would be obtained from SEPA as required under the Water Environment and Water Services (Scotland) Act 2003 and the Water Environment (Controlled Activities) (Scotland) Regulations 2011. All specific construction method statements subsequently produced by the contractor(s) as part of the contract would incorporate and ensure compliance with any conditions of these licences. In addition, SEPA's special requirements for civil engineering projects (SEPA, 2006) would form part of the contractual documentation and would be adhered to.

2 Construction Methods

2.1 Scope of Construction Works

2.1.1 It is currently anticipated that construction of the preferred scheme would commence during 2015 and that construction would be phased over a period of approximately 36 months, with substantial completion expected during 2017.

2.1.2 A detailed works programme has not been developed at this stage; the phasing of construction activities on site for the scheme are anticipated to be as follows:

Preliminary Works

The following preliminary works would be undertaken, where required:

- Site compound establishment including provision for material and plant storage.
- Installation of temporary haul roads and accesses.
- Erection of temporary fencing.
- Site clearance works, including necessary removal of any vegetation and topsoil.
- Installation of temporary pollution control measures.
- Installation of temporary drainage measures.
- Installation of temporary flood mitigation measures.
- Traffic management.

Main Works

It is envisaged that the proposed works would be completed in phases, of which the following elements are identified:

- Surface water drainage solutions.
- Relocation of the River Almond Footbridge.
- Replacement of 2 road bridges on the East Pow Burn.
- Works at College Mill Trout Farm.
- Construction of the flood storage area and works at the Bowling Green.
- Flood defence structures (walls and earth embankments).
- Erosion protection works.

Finishing Works

It is envisaged that the finishing works would be completed in conjunction with the Main Works phases listed above:

- Landscaping works.
- Removal of site facilities and temporary access routes and reinstatement of these areas.

2.1.3 The principal construction works, that are the subject of this CMS relate to works within and adjacent to the Principal Watercourses, include the following:

- Sheet piled flood walls.
- Reinforced concrete flood walls.
- Earth embankments.
- Erosion protection.
- Reinforcement of river banks at suitable locations to allow emergency and routine maintenance access to the Principal Watercourses.

2.1.4 Flood embankments and walls would, where possible, be set back from watercourses. This would help to reduce the impact to the river banks and watercourse channel from construction works, thereby reducing the impact upon the physical habitat. On completion of the works, the area between the flood walls and the watercourse would provide dry passage for mammal movements along the riparian zone during all but exceptional floods. Embankments would not restrict mammal movement as animals with be able to access the watercourse over these structures.

2.1.5 For the works to the bridges that cross the watercourses, the replacement bridge abutments would be within the footprint of the existing and not encroach further into the watercourse, helping to mitigate the impact on the bed of the watercourse both during and on completion of the works. The area between the abutments and the watercourse may also provide dry passage for mammals outwith exceptional flood events.

2.2 Site Establishment

2.2.1 Any temporary site compounds would be established at locations to be confirmed by the contractor and would be located at least 10m from the Principal Watercourses.

2.2.2 The site compounds would be used for the site offices, storage of equipment, materials, fuel and parking. Site messing and welfare facilities would only be located at the site compound during construction works. All offices, canteens and cabins would be serviced by lighting and electricity provided by a suitable supply. Any generators would be silenced, housed within a waterproof enclosure and incorporate a fuel bund. Generators must comply with SEPA's Pollution Prevention Guidelines (PPGs).

2.2.3 The site compound would be sited on a hardstanding which would be maintained for the duration of the construction period. If necessary a temporary vehicle wheel wash facility would be installed at site entrances for the duration of the construction works. Provision must be made by the contractor to ensure that no polluting discharge from the site compound, wheel wash, haul roads and disturbed areas enter any watercourse.

2.3 Flood Warning

2.3.1 A suitable flood warning system would be implemented by the contractor in consultation with SEPA and Mouchel. Sufficient time would be determined to allow plant or any temporary works to be removed from the river channel where appropriate. The contractor would provide adequate emergency procedures for the works in the event of a large flood event. The contractor would provide temporary protection for the site compound and protection for plant and materials. The contractor would not increase flood risk to nearby residents unless unavoidable to undertake the works. In these circumstances the contractor would provide additional protection to those residents to mitigate any additional flood risk.

2.4 Foot Bridge Relocation

2.4.1 Drawing 716516/AFO/207 shows the position of the relocated footbridge on the River Almond. The existing footbridge would be lifted from its current position to approximately 12m upstream and placed on newly constructed abutments. The new bridge abutments would be constructed on the river bank and would not encroach into the river channel.

2.4.2 Measures would be taken during the construction of the new abutments to minimise the impact on the watercourse and may include construction of a temporary dam on each side of the watercourse, to provide a dry working area in which to work behind, along with methods to maximise working from the top of the river banks.

2.5 Road Bridge Construction

2.5.1 Drawings 716516/AFO/212, 213 & 215 show the location of the replacement road bridges structures on the East Pow Burn. It is envisaged that the replacement bridges would be constructed as single span structures using, where possible, pre-cast materials brought to site. If the existing abutment structures are assessed to be unsuitable for re-use they would be removed. Any replacement bridge abutments would be constructed in the footprint of the existing, with no permanent impact on the river bed.

2.5.2 If required, material arising from the excavation of the existing bridge abutments may be stored within the site compound area for restoration of the existing river bed on completion of the works. Any existing bridge abutment material that is to be disposed of off-site would be done in accordance with waste legislation.

2.5.3 Measures would be taken during the construction of new abutments, to minimise the impact on the watercourse and may include construction of a temporary dam on the watercourse to provide a dry working area in which to work behind, along with methods to maximise working from the top of the river banks.

2.5.4 Any restriction to the existing cross section of the watercourse would be assessed and if the works are deemed to compromise this, then consideration would be given to phasing of these works.

2.5.5 Consideration would be given to the impact of the proposed works on the watercourses and where possible, would be phased accordingly to take account of the salmonoid and lamprey spawning/juvenile emergence periods. Mitigation measures would be discussed with the Tay District Salmon Fisheries Board and implemented accordingly if works are necessary in the watercourse during this period.

2.6 Flood Defence Structures

2.6.1 Installation of reinforced concrete walls, sheet piling and erosion protection would, in some locations, require construction activity within the watercourse channel close to the banks. In some cases, vegetation (including trees), would need to be removed along the banks of the Principal Watercourses to allow for these installations. Measures would be considered as part of the detailed design, to allow for new vegetation to establish in order to maintain and protect existing habitat. Tree/shrub planting is proposed as compensation and would aim to create an ecologically diverse riparian zone. A landscaping strategy and planting plan would be developed as part of the detailed design and would be implemented and monitored by the contractor.

2.6.2 Construction of the flood defence structures and bank erosion protection measures would be critical programming activities involving in-river engineering techniques along with temporary restriction to river channel width and flow patterns in some locations.

2.6.3 Phasing of and durations for the construction of the linear flood defence structures are not known at this stage as this would be dependant upon the contractors method of working and the phasing of construction activities. Phasing and duration of construction activities would take into consideration:

- The location and availability of suitable access routes for plant and material.
- The assessment of flood risk during construction and any requirements for temporary flood defences.
- The impact of the works on the local community.
- Any other works proposed by the Local Authority (i.e. Highway Works).
- Distribution of scheme funding.
- Environmental restrictions (i.e. salmonoid and lamprey spawning/juvenile emergence periods).

2.6.4 The proposed flood defence structures have been assessed to be the most appropriate for their immediate environment and further to a more detailed analysis

during detailed design, final designs for the specific type of each of these structures would be confirmed.

2.6.5 Drawings 716516/AFO/ 201, 202, 212, 213, 214, 215 & 216 show the locations of the proposed sheet piling along sections of the principal watercourses. Cladding would be added to sheet pile walls in areas that are visible to the public.

2.6.6 Sheet pile walls offer a robust flood defence solution that can provide erosion protection and flood defence within a limited amount of space, this is of benefit where flood defences are required in close proximity to buildings and property boundaries. Dependant upon the location and surroundings, the sheet pile walls would be left as installed, painted or finished with a cladding, sympathetic to the local environment.

2.6.7 Sheet piling offers a good range of solutions for flood retaining structures, with a wide range of installation techniques:

- The traditional method of 'conventional piling' consists of temporary gates and spud piles to form guides for the sheet piles to be installed. Telescopic leader rigs are the most commonly used with a vibratory hammer and auger drive unit. Constrictions of the site within the study area may prevent use of these methods.
- Side grip technology uses a 'Movax' to pitch, handle and drive the piles and allows the installation to be undertaken from a lower working level to the finished top of pile level. This method would be able to be adopted if it was necessary to work from the river bank.
- Silent and vibration-less techniques of installation can be used in sensitive or built up environments where vibration could disturb the adjacent environment or cause damage to existing residential or commercial structures.

2.6.8 Drawings 716516/AFO/202, 203, 204, 205, 206, 207, 208, 209, 212, 213, 215 & 216 show the locations of the proposed reinforced concrete walls along sections of the principal watercourses.

2.6.9 Reinforced concrete walls also offer a robust flood defence solution and are more suitable where sufficient space exists for excavation of footings and the operation of construction plant.

2.6.10 This type of construction lends itself to the provision of a more aesthetic finish with an increased flexibility in the choice of finish and is therefore ideally suited to the sections proposed along the banks of the River Almond where the flood defences must blend in with the river corridor.

2.6.11 In locations where sufficient land is available, the outline design proposes earth embankments; constructed with imported materials (or material excavated for other works on site) with an impermeable core. The footprint of these structures requires more land take and is only suitable where the surroundings allow.

2.6.12 Consideration would be given to the impact of the proposed works on the watercourses and they would be phased accordingly to take account of the salmonoid and lamprey spawning/juvenile emergence periods. Mitigation measures would be discussed with the Tay District Salmon Fisheries Board and implemented accordingly if works are necessary in the watercourse during this period.

2.7 Erosion Protection Measures

2.7.1 The scheme drawings show areas of proposed erosion protection along the banks of the Principal Watercourses. Details of the types of erosion protection would be developed during detailed design. It is anticipated that a combination of synthetic geotextile matting, willow spilling, filled rock rolls, block revetment and rip rap would be installed.

2.7.2 Any excavated material, including existing river bed material, would be stored within the site compound area for backfilling and for restoration of the existing river bed if required. Storage of this material would be in line with that of any material removed for the replacement of the road bridge structures.

2.7.3 Some dry working areas (temporary dam structures) would need to be utilised, behind which some of the works affecting the river banks can be undertaken. The River Almond is a wide watercourse, being part of the main river system, and it is considered that temporary narrowing of the river would not impact detrimentally on flow or passage of aquatic fauna. Temporary narrowing of the East Pow Burn would be more restrictive as this is a narrower watercourse, however, water flows would be maintained at all times as the construction work proceeds.

2.7.4 Dry areas would be kept free of water using a pumped system both during their installation and throughout the duration of the works. Measures to prevent pollution of the Principal Watercourses from discharges of these areas would be undertaken.

2.7.5 Any fish trapped in the dry areas as they are formed would be rescued by experienced fisheries biologists and in consultation with the Tay District Salmon Fisheries Board.

2.8 Widening of the East Pow Burn

2.8.1 Drawing 716516/AFO/214 shows a length of the right bank of the East Pow Burn that would be permanently re-profiled to maintain the existing channel width in conjunction with the installation of the sheet pile wall on the left bank.

2.8.2 Prior to installation of the sheet piles on the left bank of the watercourse, the right bank would be re-profiled over a length of approximately 50m. This would be undertaken using an excavator with material removed used elsewhere on site, for example within earth embankments, where practicable.

2.8.3 Consideration would be given to the impact of the proposed works on the watercourse and, as for other works outlined above, a dry working area would be

created within which the bank re-profiling would be undertaken. Works would be undertaken where possible outwith sensitive periods for salmonoid and lamprey spawning/juvenile emergence periods.

2.9 Construction Stage Drainage Provision

2.9.1 Site surface water drainage would be controlled during the construction period with the use of temporary swales/settlement facilities or other measures of best practice, as appropriate. It is not possible to provide precise details for the construction pollution control measures at this time, but these measures would be discussed with SEPA in advance of works and the number/location/type/size of measures agreed and included within specific construction method statements provided by the contractor.

2.9.2 These requirements would also be inter-related with the CAR licences obtained for relevant works and any special licence conditions, which the contractor would be obliged to meet. These requirements would include drainage and pollution control measures for the site compound areas.

3 Environmental Provisions

3.1 Special Ecological Measures

Reasonable Avoidance Measures for the Protection of Otter

3.1.1 A suitably experienced ecologist (Ecological Clerk of Works) would be employed by the Main Contractor to advise on all ecological aspects of the project. It would be ensured, through contract documentation, that the Ecological Clerk of Works is present on site when necessary throughout the works.

3.1.2 The Main Contractor would ensure that all site staff are briefed prior to the commencement of all site-clearance activities (by the Ecological Clerk of Works) to ensure compliance with relevant environmental legislation including with the Wildlife and Countryside Act 1981, as amended, the Conservation (Natural Habitats &c.) Regulations 1994 as amended and the Nature Conservation (Scotland) Act 2004.

3.1.3 All personnel working within the site would be adequately briefed on wildlife and pollution issues as part of their site induction before they are allowed to work; this includes all sub-contractors working on the site. Lines of communication would be established within and between contractor teams and with the site project manager.

3.1.4 All site clearance and construction works would require a detailed method statement which would be reviewed and signed off by the site project manager as well as by the Ecological Clerk of Works and agreed with SEPA and SNH, prior to any site works commencing.

3.1.5 An otter resting site/potential holt has been identified on the East Pow Burn within 30m of the proposed sheet piling activities (see Drawing 716516/AFO/212). This may need to be removed to allow installation of sheet piles. If this is the case, and the loss of holt cannot be avoided, then a European protected species (EPS) licence would be required to remove the holt. The requirement for a replacement artificial holt at a suitable location (outwith the construction site) would be discussed and agreed with SNH.

3.1.6 Any artificial holt would be created in advance of the exclusion of the existing site/potential holt and both the existing and new holt would be subject to a period of monitoring prior to exclusion of the existing holt. This would aim to establish that the existing holt is not being used as a breeding site and that the new artificial holt has become active.

3.1.7 Pre-site clearance surveys would be carried out throughout the land made available for construction. Should the above surveys identify the presence of any additional otter holts or resting sites to those already reported, SNH would be informed immediately and mitigation measures (including inclusion on the EPS licence if necessary) put in place to protect the holt from site clearance activities or site investigation works.

3.1.8 The detailed design would be reviewed to ensure that any newly found holts/couches are retained, if practicable. The need for inclusion of any new holts or couches within the existing EPS licence would be discussed with the Ecological Clerk of Works and SNH in the event that an otter holt or couch is identified within 30m of any construction activity.

3.1.9 A protection zone of 30m where possible (or as large as can be provided if less that 30m from construction) would be defined using exclusion fencing to provide physical protection around any holts or couches identified during pre-site clearance/monitoring surveys. If this zone is less than 30m from construction activities, additional measures (e.g. Ecological Clerk of Works presence on site or further survey work) may be required and this would be discussed with SHN as early in the process as possible.

3.1.10 Any exclusion/buffer zone would utilise robust fencing, i.e. “Herras” type (“Netlon” or similar would not be permitted). No scrub or vegetation clearance or access by site vehicle/personnel would be permitted within this exclusion zone (with the exception of works for erosion protection). Exclusion/buffer zones would avoid the creation of barriers that may impede movement of otter. The need for and extent of any such exclusion zones would be determined on-site by the Ecological Clerk of Works.

3.1.11 Following the installation of any exclusion fencing a log of inspections would be maintained by the Ecological Clerk of Works of the maintenance of the fencing, with records kept of damage/repairs. Any incidents of damage to the fencing or working outwith the construction area would be reported in writing.

3.1.12 The contractor would ensure that multiple survey visits are undertaken (by the Ecological Clerk of Works) within the construction area in order to monitor otter activity in accordance with those methods recommended in DMRB (HA 81/99 - Volume 10 Section 1 Part 9).

3.1.13 Artificial lighting would be directed away from watercourses at all times. Works adjacent to the watercourse (within 30m and within 50m of any holt or couch) would be restricted to daylight working.

3.1.14 Increased noise emissions would be minimised as much as possible and the contractor would adhere to noise limits set by the regulatory authority. Piling works would be undertaken intermittently and a soft start would be implemented.

3.1.15 Chemicals (other than those directly used as a construction material and in their final format e.g. concrete or bitumen) would only be used in designated areas or with dry working areas and would be appropriately controlled.

3.1.16 Trenches would be covered over at the end of every working day and/or a ramp installed to allow egress by otter. Open pipe systems would be covered at the end of the working day to prevent ingress by otter.

3.1.17 The site compound(s) would be securely enclosed by suitable otter-proof fencing to prevent the entry of otter during construction works and that any potential entrance gaps/holes accessible to the species are covered/closed outside of working hours, e.g. during twilight and hours of darkness when they are most likely to be accessed by otters. Also, construction plant and materials would be carefully stored to prevent accidental trapping of wildlife.

Reasonable Avoidance Measures for the Protection of Salmonid and Lamprey Habitat

3.1.18 Prior to the completion of any in-river engineering work, a pre-construction aquatic survey of the watercourses would be completed by an aquatic ecologist. This would include at least 500m both upstream and downstream of all construction work. This would provide further information to the baseline habitat assessment previously gathered as part of the EIA process and would assist with re-establishment works post-construction.

3.1.19 The timing of in-river engineering work is crucial and would only be completed, where practicable, during the least sensitive periods with regard to salmonoid and lamprey spawning/juvenile emergence periods. This would ensure that eggs, alevins and fry are not disturbed or destroyed (by removal of alluvial gravels or through smothering from silt etc.). The contractor would be required to consult with the Tay District Salmon Fisheries Board and SNH with regard to the timing of works in the river channel and appropriate mitigation measures agreed if works require to be undertaken in the watercourse during sensitive periods.

3.1.20 Any narrowing of the channel of Principal Watercourses would be carried out in such a manner that the water flow, depth and velocity remains acceptable (i.e. within the 95 percentile of the annual flow with a depth of at least 10 cm (unless natural flows do not allow this). This would ensure that the watercourse remains passable to migrating fish (adult and juvenile salmonids and lamprey).

3.1.21 Straw bales, or other suitable sediment control feature, would be strategically placed downstream of the in-river engineering works on the East Pow Burn. A surface floating sediment/oil boom would also be placed across the watercourse downstream. Neither the straw bales nor the boom would be placed in positions that would impede fish passage; straw bales are located at the edges of the watercourses, positioned in a similar fashion to groynes and off-set from one another; oil booms are made from flexible, absorbent material that float on the water surface and allow fish to pass under or over, apart from during low flow conditions, where they allow fish to 'push' past due to their flexibility. Watercourse conditions are unlikely to allow natural fish passage during such low flow conditions.

3.1.22 It would not be possible to utilise straw bales and oil booms on the River Almond as the river is too fast flowing. Where possible, works would generally be carried out within dry working areas and the expanse of fast flowing water would dilute and dissipate any sediments that do enter the watercourse.

3.1.23 Removal of alluvial gravels would be carried out manually to minimise the amount of sediment released downstream and disturbance to surrounding area. Additional in-river pollution control measures would be used in consultation with SEPA.

3.1.24 Dry areas would be created for some of the in-river engineering works. If necessary, a fish rescue using electrofishing gear would be carried out within this area. This would ensure that no fish are present within the immediate area of the works, minimising disturbance and vibration effects as far as possible. The remaining width of the channel would remain unblocked and passable to fish at all times during these installation works. Channel morphology would be maintained. Once the works within the watercourse are complete, the river bed would be reinstated to existing levels (using the excavated alluvial gravels). This procedure would be applied to all works within water.

3.1.25 Works adjacent to watercourses, such as the new bridge abutments, would be separated from the watercourse by the erection of suitable screens around any excavations or other earthworks. This would minimise sediment inputs to the watercourse. Pumping of water from excavations would be discharged at least 10m from any watercourse or drainage, on to vegetated ground to allow adequate filtration (in accordance with SEPA's special requirements). If necessary, discharge may be directed onto material such as terram to maximise filtration or a settlement tank may be required prior to discharge. SEPA Pollution Prevention Guidelines (PPGs) would be referred to and applied for such measures (discussed below). Consultation would continue with SEPA throughout this construction stage along with consultation regarding fish/otter/SAC interests (with SNH/Tay District Salmon Fisheries Board).

3.1.26 Temporary structures forming dry areas, such as sandbags, would be removed during periods of high flow conditions to minimise any impact downstream from sediment deposition or increased water turbidity.

3.1.27 On completion of the in-river and bankside works, the river bed would be re-instated using the alluvial gravels removed at the start of the works and banks would be re-profiled/re-established in line with the surrounding and previously existing banks (using the same soil in order for acceptable vegetation establishment). The design of the works would be developed to include any nature conservation improvements, which would include the creation of banks suitable for promotion of water vole colonisation and the incorporation of features within the restored channel to provide suitable habitat for fish/lamprey spawning and for nursery areas. Advice would be sought from the Ecological Clerk of Works/aquatic ecologist in this respect.

3.1.28 Once all in-river works are complete, the habitat assessment would be repeated by an aquatic ecologist to ensure that the baseline conditions have not been impacted upon (e.g. no large deposits of silts, construction debris and rubbish, acceptable re-instatement of the river and banks etc.). Any issues would be raised and rectified by the contractor at this time.

3.1.29 A Contingency Plan would be produced, which would contain the contact details of the Ecological Clerk of Works, the Tay District Salmon Fisheries Board, SEPA and SNH to ensure that relevant bodies are informed of all incidents that may impact upon fish, particularly salmon or lamprey populations.

3.2 Surface Water Protection Controls

3.2.1 Works in the vicinity of watercourses, or works that otherwise could have impacts on the aquatic environment, are strictly controlled under the provisions of the Water Environment (Controlled Activities) (Scotland) Regulations 2005, known as the "CAR Regulations". The contractor would comply with the methods of minimising impacts upon the water environment during the construction phase of the project in accordance with the CAR Regulations. Precise requirements of CAR have been discussed and agreed with SEPA and applications would be submitted well in advance of any site clearance/construction activities.

3.2.2 The CEMP would be prepared and developed by the contractor to ensure that any risk to the water environment as a result of the construction activities are minimised as far as possible. The CEMP would include the Contingency Plan / Pollution Incident Response Plan to ensure that the risk of accidental spillages is minimised and that procedures for containment are in place prior to the commencement of site operations. This would be passed to SNH and SEPA for comment and approval prior to any works.

3.2.3 A water quality control monitoring procedure would be established and this would include monitoring at a number of locations along the Principal Watercourses prior to, during and post construction.

3.2.4 Standard good practice measures to protect watercourses, aquatic species and bankside habitats would be followed, using the appropriate Good Practice Guides and PPGs, including:

- PPG01 General guide to the prevention of water pollution;
- PPG05 Works and maintenance in or near water;
- PPG06 Working at construction and demolition sites;
- PPG21 Pollution Incident Response Planning; and
- PPG22 Incident Response – Dealing with Spills.

3.2.5 Any additional specific measures required would be agreed with SEPA and would be set in place prior to construction works being undertaken to ensure that the water quality and ecological condition of the watercourses is not adversely affected.

4 References

CIRIA (2006). Control of Water Pollution from Linear Construction Projects. CIRIA Reports C648 (Technical Guidance) and C649 (Site Guide), 2006.

Mouchel (2012). Almondbank Flood Protection Scheme Environmental Statement.

Mouchel (2012). Almondbank Flood Mitigation Scheme Technical Report.

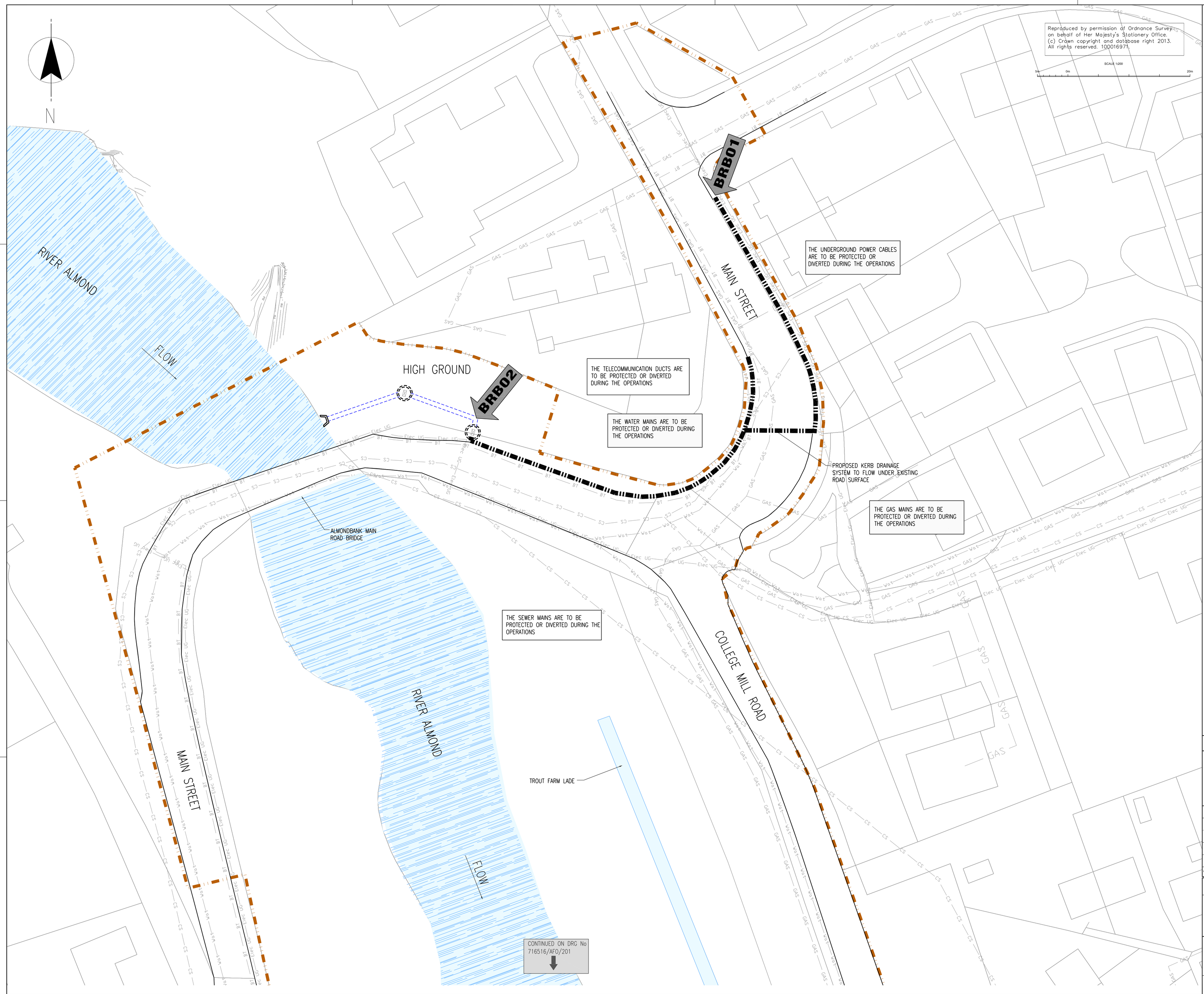
SEPA (2006). Prevention of Pollution from Civil Engineering Contracts. Special Requirements. Version 2, June 2006.

SEPA (2007). Good Practice Guide. Construction Methods, WAT-SG-29 (currently under production).

SEPA (2008). Engineering in the Water Environment. Good Practice Guide. Bank Protection. Rivers and Lochs. First Edition. April 2008.

SEPA (2008). Engineering in the Water Environment. Good Practice Guide. Construction of River Crossings. First Edition. April 2008.

5 Drawings



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- REINFORCED CONCRETE FLOOD WALL CAST WITH A SUITABLE AESTHETIC FINISH
- RETAINING WALL
- SHEET PILE WALL
- SHEET PILE WALL WITH CLADDING
- KERB DRAINAGE SYSTEM
- PROPOSED SECURITY FENCING
- LIMITS OF LAND AFFECTED BY THE OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSE OF CARRYING OUT THE OPERATIONS AND EXECUTING TEMPORARY WORKS.
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- CONCRETE
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- GRAVEL
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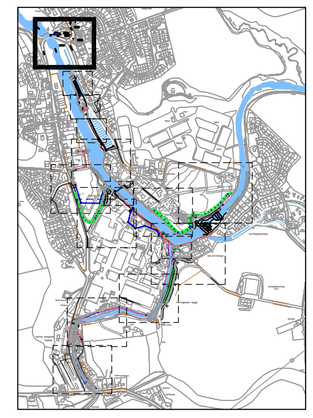

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PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
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A	FOR INFORMATION	S.MCCULLOCH 30.04.12	M.CHAMBERS 08.05.12	N.COOKE 08.05.12

Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 1 OF 15 COMBINED KERB & DRAINAGE SYSTEM

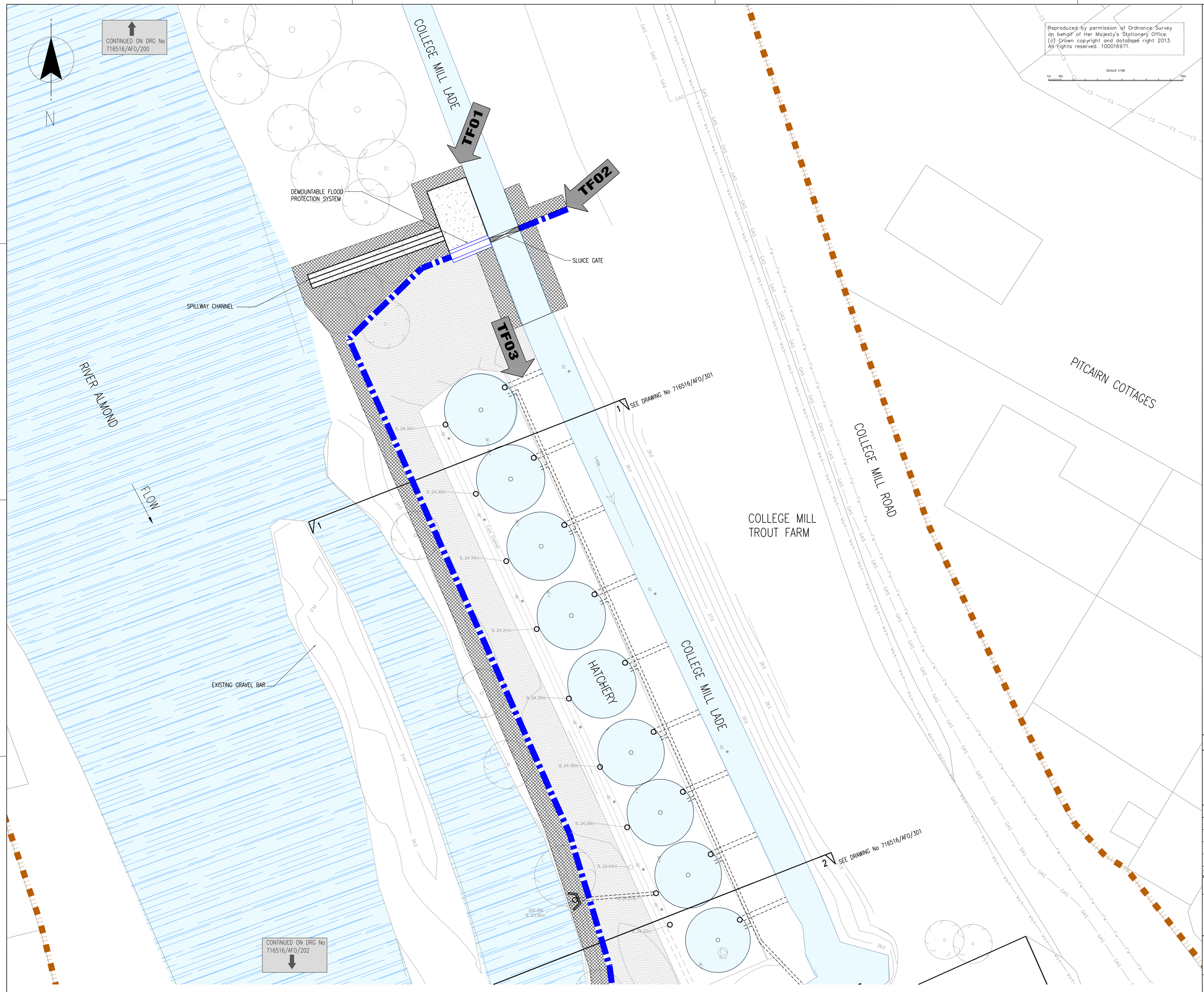
Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Office	Tel No	Drawing No	Version
LIVERPOOL	0151 237-4200	716516/AFO/200	E



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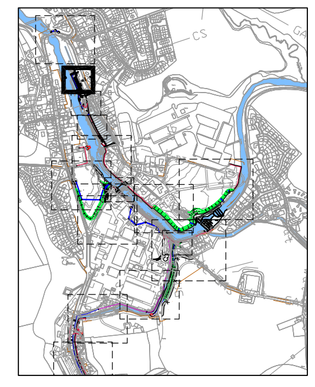

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PROPER OFFICER

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FOR PERTH AND KINROSS COUNCIL

(date)

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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 2 OF 15 COLLEGE MILL TROUT FARM

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel

Scales (at A0 size): 1:100

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Office	Tel No	Drawing No	Version
LIVERPOOL	0151 237-4200	716516/AFO/201	E

CONTINUED ON DRG No 716516/AFO/201

SEE DRAWING No 716516/AFO/301

TF04

TF05

COLLEGE MILL BARN

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS

HOLDING PEN FOR FISH SELECTION

RIVER ALMOND

FLOW

TF07

EXISTING SLUICE TO HOLDING PEN

APPROXIMATE EXTENT OF ACCESS RAMP

1:12

1:12

TF06

PROPOSED PIPEWORK ARRANGEMENT THROUGH FLOODWALL TO ALLOW CONTINUED MOVEMENT OF FISH STOCKS.

APPROXIMATE EXTENT OF ACCESS RAMP

SEE DRAWING No 716516/AFO/301

FLOW

POND

PROPOSED RELOCATION OF EXISTING ELECTRICITY BOX FOR EXISTING SLUICE

TF08

TF09

CONTINUED ON DRG No 716516/AFO/203

SCALE 1:100

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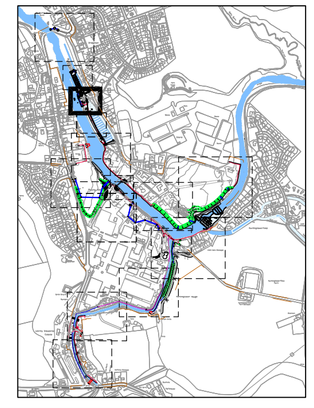

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PROPER OFFICER

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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 3 OF 15 COLLEGE MILL TROUT FARM

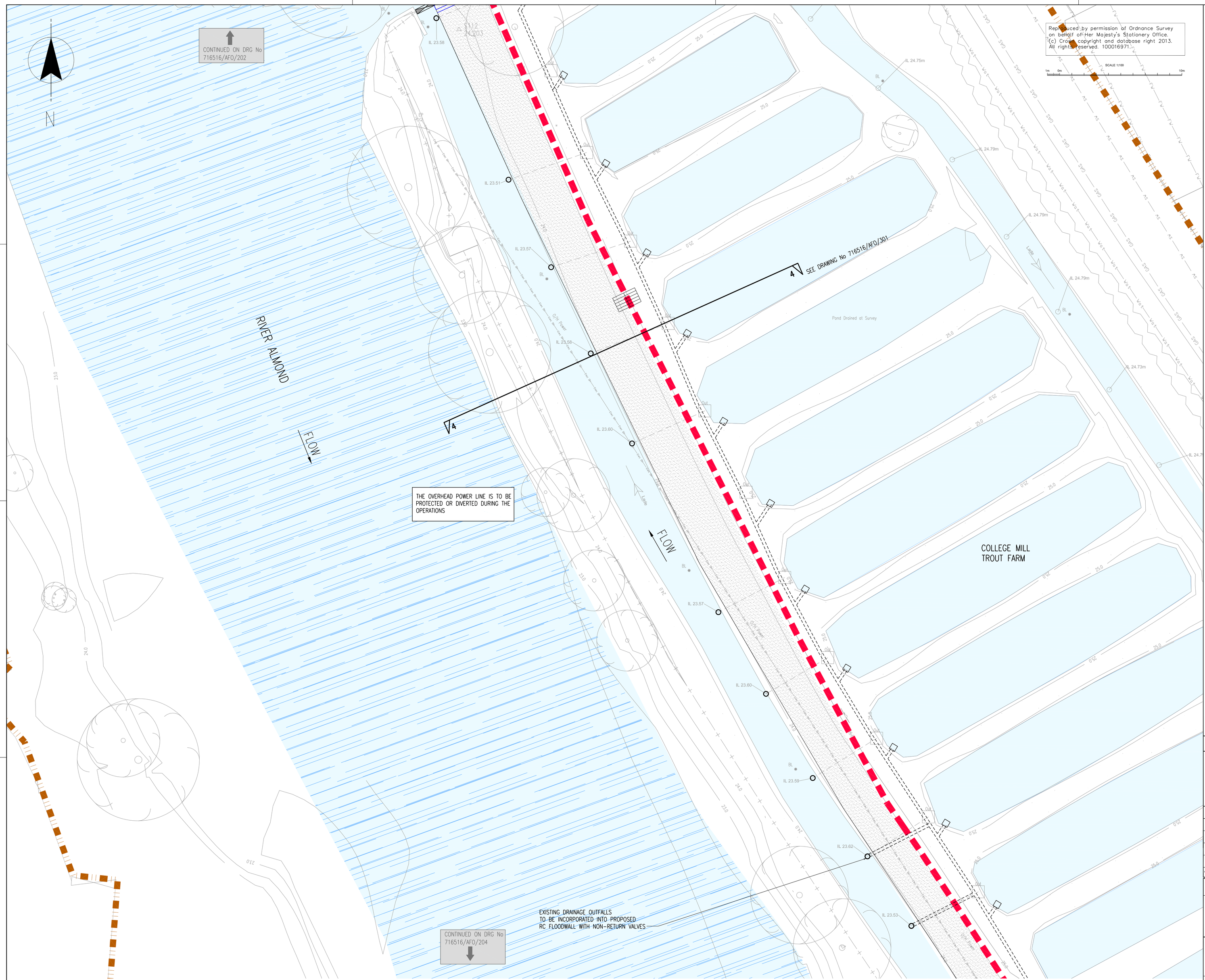
Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Scales (at A0 size): 1:100

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Office: LIVERPOOL | Tel No: 0151 237-4200 | Drawing No: 716516/AFO/202 | Version: E



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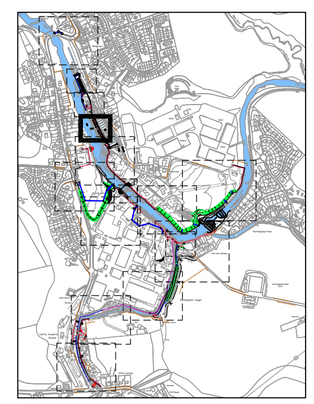

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PROPER OFFICER

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(Signature)

FOR PERTH AND KINROSS COUNCIL

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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 4 OF 15 COLLEGE MILL TROUT FARM

Client: PERTH & KINROSS COUNCIL — The Environment Service

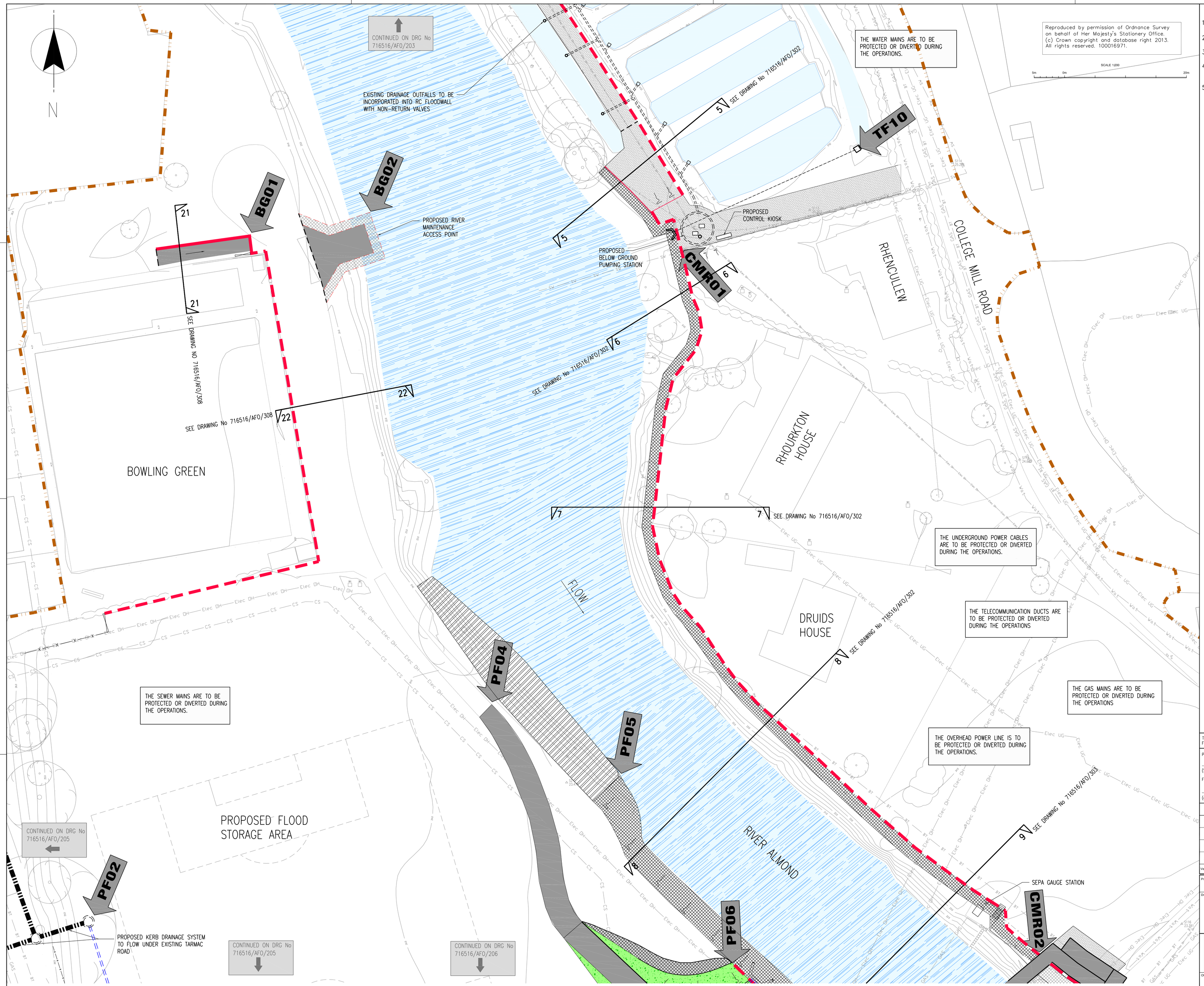
mouchel — building great relationships

Office: LIVERPOOL | Tel No: 0151 237 4200

Scales (at A0 size): 1:100

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/203 | Version: E



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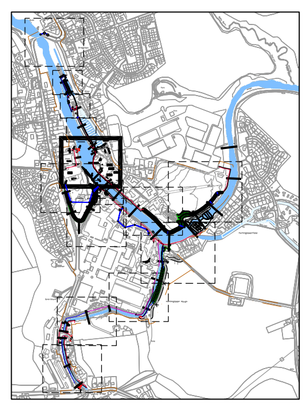

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Client: PERTH & KINROSS COUNCIL — The Environment Service

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 5 OF 15 TROUT FARM, BOWLING GREEN AND PLAYING FIELD FLOOD STORAGE AREA

mouchel — building great relationships

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

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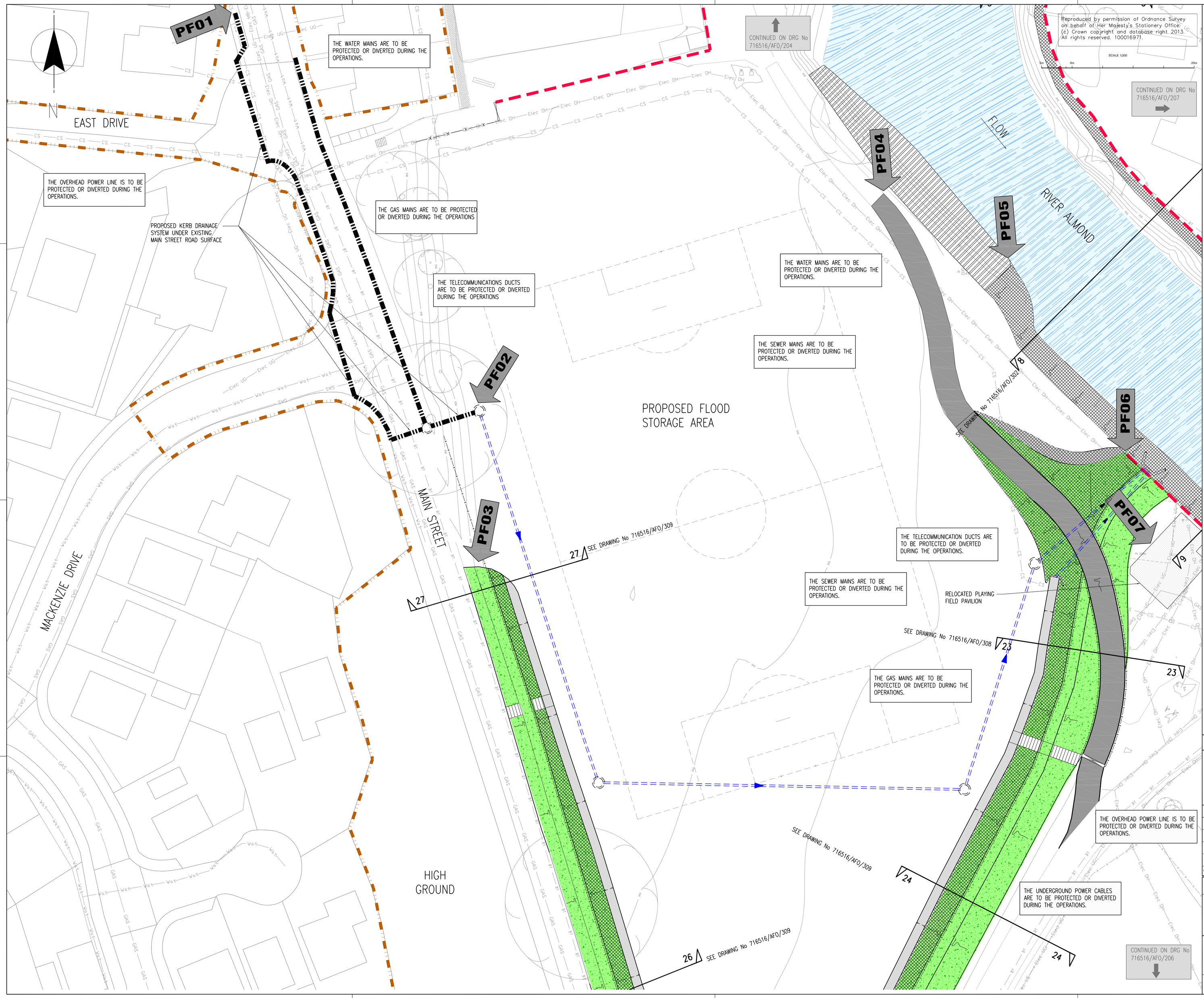

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- LIMITS OF LAND AFFECTED BY THE OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSE OF CARRYING OUT THE OPERATIONS AND EXECUTING TEMPORARY WORKS.
- PROPOSED EROSION PROTECTION (EXACT EXTENTS TO BE DETERMINED AT DETAIL DESIGN)
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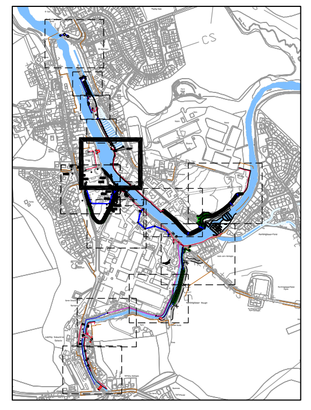
- CONCRETE
- EMBANKMENT (WITH IMPERMEABLE CORE WHERE REQUIRED)
- GRAVEL
- 1 1 SECTION MARKERS
- EXISTING OUTFALL TO BE FITTED WITH NON-RETURN VALVES
- TF02 START LOCATION OF REFERENCED OPERATION
- ACCESS STEPS
- LOCKABLE BARRIER TO PREVENT VEHICLE ACCESS DURING FLOOD EVENT
- SLUICE
- GATE ACCESS

SERVICES

- BT — TELECOMS
- Elec OH — OVERHEAD ELECTRICITY
- Elec UG — UNDERGROUND ELECTRICITY
- GAS — GAS
- FW — FOUL WATER
- SW — SURFACE WATER
- Wat — WATER MAIN
- CS — COMBINED SEWER



THIS IS THE PLAN MARKED **716516/AFO/205** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
E	CLIENT AMENDMENTS	M.CHAMBERS 28.06.13	P.LAMBERT 28.06.13	N.COOKE 28.06.13
D	CLIENT AMENDMENTS	S.MCCULLOCH 30.05.13	P.LAMBERT 30.05.13	N.COOKE 30.05.13
C	CLIENT AMENDMENTS	S.MCCULLOCH 07.05.13	P.LAMBERT 07.05.13	N.COOKE 07.05.13
B	FOR INFORMATION	M.CHAMBERS 15.02.13	P.LAMBERT 15.02.13	N.COOKE 15.02.13
A	FOR INFORMATION	S.MCCULLOCH 30.04.12	M.CHAMBERS 08.05.12	N.COOKE 08.05.12

Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 6 OF 15 PLAYING FIELD FLOOD STORAGE AREA

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Office: LIVERPOOL | Tel No: 0151 242-4200

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/205 | Version: E

CONTINUED ON DRG No 716516/AFO/204

CONTINUED ON DRG No 716516/AFO/207

CONTINUED ON DRG No 716516/AFO/205

N

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE SEWER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

RELOCATED PLAYING FIELD PAVILION

1PF07

SEE DRAWING No 716516/AFO/303 9

SEE DRAWING No 716516/AFO/308 23

23

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

PLAYING FIELD PAVILLION CARPARK

THE OVERHEAD POWER LINE IS TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

VAN01

1:12

1:12

10

10

FLOW

RIVER ALMOND

SEE DRAWING No 716516/AFO/303

EXISTING ROAD ACCESS

SEE DRAWING No 716516/AFO/309 24

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE SEWER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

VAN02

PROPOSED CONTROL KIOSK

APPROXIMATE LOCATION FOR THE PROPOSED PUMPING STATION FROM VECTOR AEROSPACE SITE WITH OUTFALL TO RIVER ALMOND

24

26 SEE DRAWING No 716516/AFO/309

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

VECTOR AEROSPACE

EXISTING TENNIS COURTS

THE WATER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

SEE DRAWING No 716516/AFO/309

25

PROPOSED SECONDARY FENCING

LANDSCAPED AREA

HIGH GROUND

CONTINUED ON DRG No 716516/AFO/208

SCALE 1:200

5m 0m 20m

NOTES

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LEGEND

- REINFORCED CONCRETE FLOOD WALL CAST WITH A SUITABLE AESTHETIC FINISH.
- RETAINING WALL
- SHEET PILE WALL
- SHEET PILE WALL WITH CLADDING
- KERB DRAINAGE SYSTEM
- PROPOSED SECURITY FENCING
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- SLUICE

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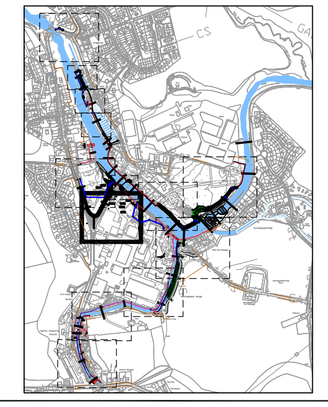

THIS IS THE PLAN MARKED **716516/AFO/206** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
E	CLIENT AMENDMENTS	M.CHAMBERS 28.06.13	P.LAMBERT 28.06.13	N.COOKE 28.06.13
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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 7 OF 15 VECTOR AEROSPACE AND PLAYING FIELD FLOOD STORAGE AREA

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Office	Tel No	Drawing No	Version
LIVERPOOL	0151 237-4200	716516/AFO/206	E

SCALE 1:100

CONTINUED ON DRG No 716516/AFO/204

CONTINUED ON DRG No 716516/AFO/205

CONTINUED ON DRG No 716516/AFO/208

CONTINUED ON DRG No 716516/AFO/206

PF06

PF07

CMR02

DP01

VAN01

FLOW

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

EXISTING SEPA GAUGE STATION. POWER SUPPLY TO BE MAINTAINED DURING WORKS

THE OVERHEAD POWER LINE IS TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

PROPOSED ACCESS TRACK TO BE TYPE 1 DUST CONSTRUCTION

THE SEWER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

PROPOSED BRIDGE DECK TO BE RAISED TO 24.860

PROPOSED FOOTBRIDGE AND ACCESS RAMPS TO BE RELOCATED UPSTREAM FROM EXISTING LOCATION

THE WATER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

No 1 DEER PARK

RELOCATED PLAYING FIELD PAVILLION

SEE DRAWING No 716516/AFO/305

DECK LEVEL OF BRIDGE 23.785

EXISTING LOCATION OF RIVER ALMOND FOOTBRIDGE TO BE RE-LOCATED APPROXIMATELY 12m UPSTREAM

PLAYING FIELD PAVILLION CARPARK

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

SEE DRAWNIG No 716516/AFO/308

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE SEWER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS

INSTALL LOCKABLE BARRIER TO PREVENT VEHICLE ACCESS DURING FLOOD EVENT

EXISTING ROAD ACCESS

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

SEE DRAWNIG No 716516/AFO/303

THE OVERHEAD POWER LINE IS TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

RIVER ALMOND

1:12

NOTES

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LEGEND

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- RETAINING WALL
- SHEET PILE WALL
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- ACCESS STEPS
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- SLUICE

SERVICES

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- GAS — GAS
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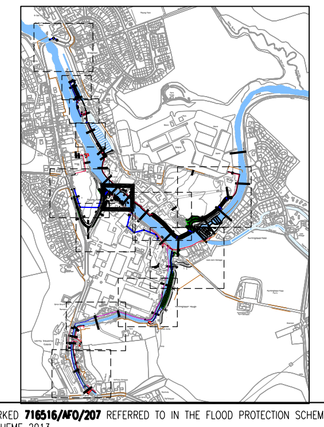

THIS IS THE PLAN MARKED **716516/AFO/207** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
F	CLIENT AMENDMENTS	M.CHAMBERS 28.06.13	P.LAMBERT 28.06.13	N.COOKE 28.06.13
E	CLIENT AMENDMENTS	S.MCCULLOCH 17.06.13	A.WILLIAMSON 17.06.13	N.COOKE 17.06.13
D	CLIENT AMENDMENTS	S.MCCULLOCH 30.05.13	P.LAMBERT 30.05.13	N.COOKE 30.05.13
C	CLIENT AMENDMENTS	S.MCCULLOCH 07.05.13	P.LAMBERT 07.05.13	N.COOKE 07.05.13
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A	FOR INFORMATION	S.MCCULLOCH 30.04.12	M.CHAMBERS 08.05.12	N.COOKE 08.05.12

Project: ALMONDBANK FLOOD PROTECTION SCHEME

Client: PERTH & KINROSS COUNCIL The Environment Service

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 8 OF 15 RIVER ALMOND FOOTBRIDGE

mouchel building great relationships

Scales (at A0 size): 1:100

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Office: LIVERPOOL | Tel No: 0151 242-4200

Drawing No: 716516/AFO/207 | Version: F

SCALE 1:200

5m 0m 20m

N

No 2 DEER PARK

DEER PARK

No 5 DEER PARK

No 3 DEER PARK

No 4 DEER PARK

CONTINUED ON DRG No 716516/AFO/206

CONTINUED ON DRG No 716516/AFO/207

CONTINUED ON DRG No 716516/AFO/209

DP02

AC02

AC01

VAN02

FLOW

RIVER ALMOND

VECTOR AEROSPACE SITE

SEE DRAWING No 716516/AFO/303

SEE DRAWING No 716516/AFO/305

SEE DRAWING No 716516/AFO/304

SEE DRAWING No 716516/AFO/304

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE OVERHEAD POWER LINE IS TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE SEWER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

PROPOSED NON-RETURN VALVE ON PROPOSED OUTFALL

CONTINUED ON DRG No 716516/AFO/213

CONTINUED ON DRG No 716516/AFO/212

NOTES

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LEGEND

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- ACCESS STEPS
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SERVICES

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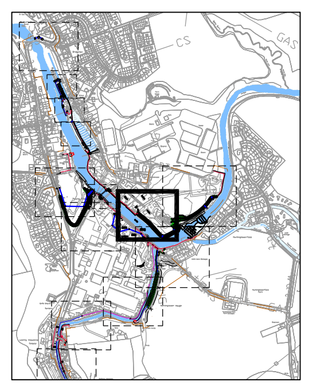

THIS IS THE PLAN MARKED **716516/AFO/208** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
E	CLIENT AMENDMENTS	M.CHAMBERS 28.06.13	P.LAMBERT 28.06.13	N.COOKE 28.06.13
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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 9 OF 15 DEER PARK & VECTOR AEROSPACE

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Office: LIVERPOOL | Tel No: 0151 237-4200

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/208 | Version: E

INDUSTRIAL SITE

CRAIGNEUK EAST & WEST

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE SEWAGE MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

EXISTING EROSION PROTECTION

SEE DRAWING No 716516/AFO/306

17

17

EXISTING BRIDGE PIER

AC03

AC02

SEE DRAWING No 716516/AFO/306

16

SEE DRAWING No 716516/AFO/305

15

FLOW

16

RIVER ALMOND

LOCATION OF ALMOND GROVE TEMPORARY EMERGENCY WORKS, IMPLEMENTED MARCH 2011 AS A RESULT OF SEVERE RIVERBANK EROSION IN JANUARY 2011

FISH PASS

SEE DRAWING NO 716516/AFO/305

14

CONTINUED ON DRG No 716516/AFO/208

CONTINUED ON DRG No 716516/AFO/212

CONTINUED ON DRG No 716516/AFO/213

SCALE 1:250

5m 0m 20m

NOTES

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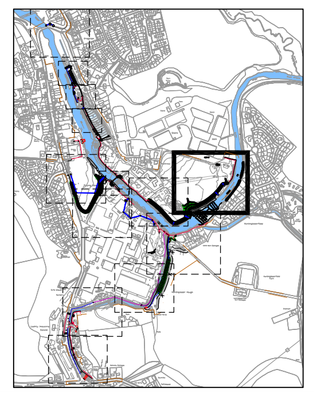

THIS IS THE PLAN MARKED **716516/AFO/209** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Client: PERTH & KINROSS COUNCIL — The Environment Service

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 10 OF 15 CRAIGNEUK EAST & WEST

mouchel — building great relationships

Office: LIVERPOOL | Tel No: 0151 237-4200

Scales (at A0 size): 1:250

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/209

Version: E

CONTINUED ON DRG No 716516/AFO/208

SEE DRAWING No 716516/AFO/304

SEE DRAWING No 716516/AFO/304

CONTINUED ON DRG No 716516/AFO/209

LOWS WORKS WEIR

RIVER ALMOND

No 27 ALMOND GROVE

SEE DRAWING NO 716516/AFO/305

EXISTING TOWN LADE SLUICE GATE

FLOW

TOWN'S LADE

SEE DRAWING NO 716516/AFO/305

PROPOSED FLOOD WALL TO ENCOMPASS EXISTING FLOOD WALL

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE OVERHEAD POWER LINE IS TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

EPC01

LWC01

THE SEWAGE MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

SEE DRG No 716516/AFO/213

LOW'S WORK COTTAGES

TREATMENT PLANT

TREATMENT PLANT

BROCKHILL

LOH07

REMOVE AND REPLACE EXISTING GARAGE TO ALLOW ACCESS AND PARKING FROM PROPOSED ACCESS TRACK

PROPOSED ACCESS GATE

PROPOSED ALTERNATIVE ACCESS ROAD TO SEWAGE WORKS

WWTW WORKS

APPROXIMATE LOCATION OF EXISTING SEPTIC TANK AND SOAKAWAY

SEE DRAWING No 716516/AFO/310

VAE03

CHEMICAL STORE

HHO6

EAST POW BURN

FLOW

SEE DRAWING No 716516/AFO/310

CONTINUED ON DRG No 716516/AFO/214

SCALE 1:250

5m 0m 20m

NOTES

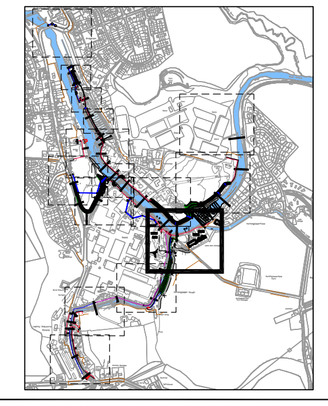
1. THESE PLANS ARE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 60 AND SCHEDULE 2 OF THE FLOOD RISK MANAGEMENT (SCOTLAND) ACT 2009.
2. THESE PLANS ARE TO BE READ IN CONJUNCTION WITH THE ALMONDBANK FLOOD PROTECTION SCHEME 2013.
3. OPERATIONS ALONG THE LENGTH OF THE RIVER ALMOND AND THE EAST POW BURN WILL BE FINISHED WITH A SCHEME OF PLANTING AND LANDSCAPING.
4. ALL OUTFALLS WHICH DISCHARGE TO THE RIVER ALMOND AND THE EAST POW BURN IDENTIFIED WITHIN THE OPERATIONS, WILL INCORPORATE APPROPRIATE BACK FLOW PREVENTION MEASURES.
5. INFORMATION RECEIVED FROM STATUTORY UNDERTAKERS HAS BEEN USED TO IDENTIFY LOCATIONS OF SERVICES, EXACT LOCATIONS OF THESE SERVICES WILL BE DETERMINED DURING DETAILED DESIGN.

LEGEND

- REINFORCED CONCRETE FLOOD WALL CAST WITH A SUITABLE AESTHETIC FINISH
- RETAINING WALL
- SHEET PILE WALL
- SHEET PILE WALL WITH CLADDING
- KERB DRAINAGE SYSTEM
- PROPOSED SECURITY FENCING
- LIMITS OF LAND AFFECTED BY THE OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSE OF CARRYING OUT THE OPERATIONS AND EXECUTING TEMPORARY WORKS.
- PROPOSED EROSION PROTECTION (EXACT EXTENTS TO BE DETERMINED AT DETAIL DESIGN)
- EXISTING EROSION PROTECTION
- OUTFALL
- RAISED ROAD/ ACCESS TRACK
- SURFACE WATER DRAINAGE SYSTEM
- SURFACE WATER DRAINAGE CHANNEL
- SECONDARY SPILL OFF SYSYEM
- CONCRETE
- EMBANKMENT (WITH IMPERMEABLE CORE WHERE REQUIRED)
- GRAVEL
- 1 1 SECTION MARKERS
- EXISTING OUTFALL TO BE FITTED WITH NON-RETURN VALVES
- TF02 START LOCATION OF REFERENCED OPERATION
- ACCESS STEPS
- GATE ACCESS
- SLUICE

SERVICES

- BT — BT — TELECOMS
- Elec OH — OVERHEAD ELECTRICITY
- Elec UG — UNDERGROUND ELECTRICITY
- GAS — GAS
- FW — FW — FOUL WATER
- SW — SW — SURFACE WATER
- Wat — WATER MAIN
- CS — COMBINED SEWER



THIS IS THE PLAN MARKED **716516/AFO/212** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
F	CLIENT AMENDMENTS	W.CHAMBERS 28.06.13	P.LAMBERT 28.06.13	N.COOKE 28.06.13
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A	FOR INFORMATION	S.MCCULLOCH 02.05.12	M.CHAMBERS 08.05.12	N.COOKE 08.05.12

Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 11 OF 15 CONFLUENCE OF RIVER ALMOND & EAST POW BURN

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Office: LIVERPOOL | Tel No: 0151 237-4200

Scales (at A0 size): 1:250

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/212 | Version: F

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE WATER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

CONTINUED ON DRG No 716516/AFO/208

CONTINUED ON DRG No 716516/AFO/209

RIVER ALMOND

FLOW

1:12 RAMP

EPC01

LWC01

1:20 RAMP

1:20 RAMP

1:12 RAMP

THE SEWER MAINS ARE BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

EAST POW BURN

FLOW

13

SEE DRAWING No 716516/AFO/304

BROCKHILL

HH07

REMOVE AND REPLACE EXISTING GARAGE TO ALLOW ACCESS AND PARKING FROM PROPOSED ACCESS TRACK

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS..

APPROXIMATE LOCATION OF SEPTIC TANK AND SOAKAWAY

CONTINUED ON DRG No 716516/AFO/212

CONTINUED ON DRG No 716516/AFO/214

SCALE 1:100

NOTES

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LEGEND

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- RETAINING WALL
- SHEET PILE WALL
- SHEET PILE WALL WITH CLADDING
- KERB DRAINAGE SYSTEM
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- EMBANKMENT (WITH IMPERMEABLE CORE WHERE REQUIRED)
- GRAVEL
- 1 1 SECTION MARKERS
- EXISTING OUTFALL TO BE FITTED WITH NON-RETURN VALVES
- TF02 START LOCATION OF REFERENCED OPERATION
- ACCESS STEPS
- GATE ACCESS
- SLUICE

SERVICES

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- Elec OH — OVERHEAD ELECTRICITY
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- GAS — GAS
- FW — FOUL WATER
- SW — SURFACE WATER
- Wat — WATER MAIN
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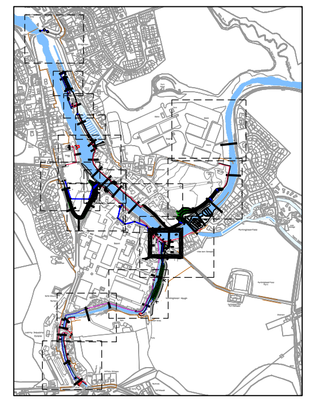

THIS IS THE PLAN MARKED **716516/AFO/213** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

Version	Amendment	Drawn Date	Checked Date	Approved Date
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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 12 OF 15 CONFLUENCE OF RIVER ALMOND & EAST POW BURN

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Office: LIVERPOOL Tel No: 0151 237-4200

Scales (at A0 size): 1:100

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/213

Version: F

NOTES

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LEGEND

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- RETAINING WALL
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- GRAVEL
- 1 1 SECTION MARKERS
- EXISTING OUTFALL TO BE FITTED WITH NON-RETURN VALVES
- TF02 START LOCATION OF REFERENCED OPERATION
- ACCESS STEPS
- GATE ACCESS
- SLUICE

SERVICES

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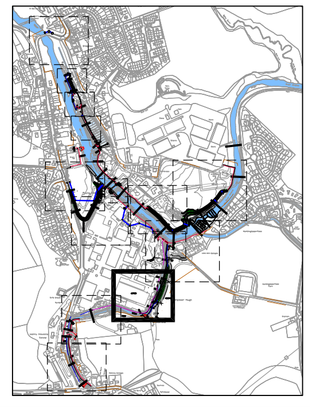
- Elec UG — UNDERGROUND ELECTRICITY
- GAS — GAS
- FW — FW — FOUL WATER
- SW — SW — SURFACE WATER
- Wat — WATER MAIN
- CS — COMBINED SEWER



THIS IS THE PLAN MARKED **716516/AFO/214** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

.....

(Signature)

FOR PERTH AND KINROSS COUNCIL

.....

(date)

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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 13 OF 15 VECTOR AEROSPACE

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Office	Tel No	Drawing No	Version
LIVERPOOL	0151 237-4200	716516/AFO/214	E

N

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE SEWER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

SEE DRAWING No 716516/AFO/311

SEE DRAWING No 716516/AFO/311

SEE DRAWING No 716516/AFO/311

VAS01

LY06

LY05

LY04

31

32

33

34

35

36

EAST POW BURN

FLOW

HIGH GROUND

HIGH GROUND

REINFORCED CONCRETE FLOOD WALL TIED INTO HIGHER GROUND.

APPROXIMATE LOCATION OF SEPTIC TANK, TANK AND ACCESS COVER TO REMAIN ON DRY SIDE OF DEFENCES. FLOOD WALL TO BE ALIGNED SO AS NOT TO EFFECT ACCESS OR OPERATION

REPLACEMENT LANDSCAPING SCHEME ALONG EAST POW BURN

SEE DRAWING No 716516/AFO/312

SEE DRAWING No 716516/AFO/312

THE TELECOMMUNICATION DUCTS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE OVERHEAD POWER LINES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE WATER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

CONTINUED ON DRG No 716516/AFO/216

CONTINUED ON DRG No 716516/AFO/214

SCALE 1:200

5m 0m 20m

NOTES

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LEGEND

- REINFORCED CONCRETE FLOOD WALL CAST WITH A SUITABLE AESTHETIC FINISH
- RETAINING WALL
- SHEET PILE WALL
- SHEET PILE WALL WITH CLADDING
- KERB DRAINAGE SYSTEM
- PROPOSED SECURITY FENCING
- LIMITS OF LAND AFFECTED BY THE OPERATIONS AND OF LAND UPON WHICH ENTRY IS REQUIRED FOR THE PURPOSE OF CARRYING OUT THE OPERATIONS AND EXECUTING TEMPORARY WORKS.
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- CONCRETE
- EMBANKMENT (WITH IMPERMEABLE CORE WHERE REQUIRED)
- GRAVEL
- 1 1 SECTION MARKERS
- EXISTING OUTFALL TO BE FITTED WITH NON-RETURN VALVES
- TF02 START LOCATION OF REFERENCED OPERATION
- ACCESS STEPS
- GATE ACCESS
- SLUICE

SERVICES

- BT — BT — TELECOMS
- Elec OH — OVERHEAD ELECTRICITY
- Elec UG — UNDERGROUND ELECTRICITY
- GAS — GAS
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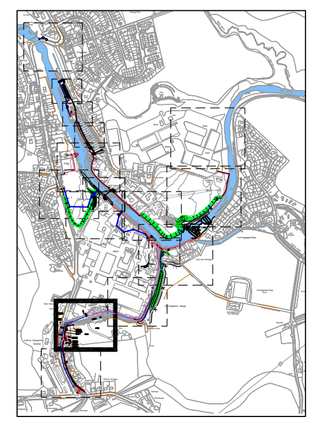

THIS IS THE PLAN MARKED **716516/AFO/215** REFERRED TO IN THE FLOOD PROTECTION SCHEME FOR ALMONDBANK FLOOD PROTECTION SCHEME 2013

PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 14 OF 15 LOCHTY PARK AND VECTOR AEROSPACE

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Office: LIVERPOOL | Tel No: 0151 237-4200

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/215 | Version: E

THE SEWER MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

LOCHTY PARK

APPROXIMATE LOCATION OF SEPTIC TANK. TANK AND ACCESS COVER TO REMAIN ON DRY SIDE OF DEFENCES. FLOOD WALL TO BE ALIGNED SO AS NOT TO EFFECT ACCESS OR OPERATION

SEE DRAWING No 716516/AFO/312

EAST POW BURN

FLOW

36

36

THE UNDERGROUND POWER CABLES ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

LOCHTY INDUSTRIAL ESTATE

MAIN STREET

THE GAS MAINS ARE TO BE PROTECTED OR DIVERTED DURING THE OPERATIONS.

SEE DRAWING No 716516/AFO/312

37

37

LY03

LY02

LY01

LOCHTY COTTAGE

A85

CONTINUED ON DRG No 716516/AFO/215

SCALE 1:200

5m 0m 20m

NOTES

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- GAS — GAS
- FW — FW — FOUL WATER
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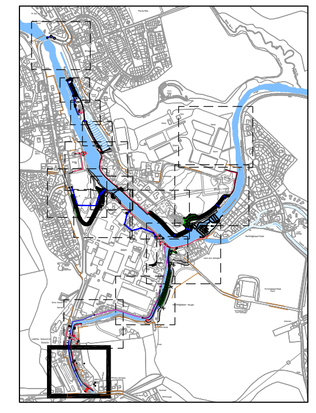

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PROPER OFFICER

(Signature)

FOR PERTH AND KINROSS COUNCIL

(date)

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Project: ALMONDBANK FLOOD PROTECTION SCHEME

Drawing Title: FLOOD PROTECTION OPERATIONS SHEET 15 OF 15 LOCHTY PARK

Client: PERTH & KINROSS COUNCIL The Environment Service

mouchel building great relationships

Office: LIVERPOOL | Tel No: 0151 237-4200

Scales (at A0 size): 1:200

Purpose of Issue: FLOOD PROTECTION OPERATIONS

Drawing No: 716516/AFO/216 | Version: E