SOUTH KINROSS FLOOD PROTECTION SCHEME

Non-Technical Summary

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1 INTRODUCTION

This Environmental Impact Assessment Report (EIAR) has been prepared by RPS on behalf of Perth & Kinross Council (PKC) for the South Kinross Flood Protection Scheme (FPS) for which development consent is sought.

The Proposed Development falls under paragraph 10(h) of Schedule 2 of The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and as such an Environmental Impact Assessment must be carried out in support of the Licence Application.

The EIAR is a report of the effects, if any, which the Proposed Development, if carried out, would have on the environment, and includes the information specified in Annex IV of the Environmental Impact Assessment Directive and in Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations.

The South Kinross FPS builds on the options developed in a Flood Study conducted by Mouchel in 2010 and considers flooding from the South Queich, the Clash Burn and the Gelly Burn. It was requested that the scheme was based on Option A (flood walls and embankments) established in Mouchel's 2010 draft study report.

The main aim of this EIAR is to provide information on the Proposed Development to the public, prescribed bodies and the competent authorities. Article 5(1) sets out what must be included as a minimum in the EIAR. Annex IV to the Directive, expands on these requirements. In short, this includes the following:

- A description of the Proposed Development;
- Baseline scenario;
- Environmental factors affected;
- Effects on the environment;
- Assessment of alternatives;
- Mitigation measures;
- Monitoring;
- Non-Technical Summary; and
- Quality of the EIAR.

2 NEED FOR PROJECT

There has been a history of flooding in the South Kinross area from the South Queich, the Clash Burn and the Gelly Burn waterbodies. There are two distinct areas affected by flooding in south Kinross. The northern area suffers from flooding from the Clash Burn, while the southern area is affected around the confluence of the South Queich and the Gelly Burn.

The proposed solution to the issue of flooding in South Kinross is the construction of flood walls and embankments along the South Queich and the Gelly Burn, upgrades and diversions to culverts along the Clash Burn, a storage pond at The Myre and a storage embankment near Kinross Services.

The objectives of the South Kinross FPS are:

- To reduce the economic damages to residential and non-residential properties in the south Kinross area from the South Queich, the Gelly Burn and the Clash Burn; and
- Where possible to improve the Water Framework Directive (WFD) status of the bodies of water in the area.

The South Kinross FPS aims to help achieve the objectives and follow the guidance laid out in various national, regional and local spatial planning policy documents including:

- National Planning Framework 4 (NPF4);
- TayPlan; and
- Perth & Kinross Local Development Plan (LDP).

3 PROJECT DESCRIPTION

There have been seven elements proposed for the FPS at Kinross. These have been identified and briefly summarised below (the finer details are subject to change (outline/detailed design)):

A 0.5% Annual Exceedance Probability (AEP) Standard of Protection (SoP) will be afforded to the majority of properties at risk within the study area (c. 232ha). Through a combination of hard defences (walls and embankments) proposed along the South Queich and the Gelly Burn, and a combination of culvert upgrades, culvert diversions and construction of a bund for the Clash Burn. Four non-residential properties situated near the Loch Leven pier at Kinross are to be afforded property-level-protection to reduce the impact of flooding from the Loch, whilst maintaining access to the pier.

- Element 1: Direct Defences – construction of a variety of direct defences including embankments, and sheet pile walls. Walls will be situated predominantly along the banks of the South Queich from the Old Railway Bridge to the Loch Leven Heritage Trail footbridge. Embankments will be placed between the M90 and Queich Place. A small stretch of embankment will also be placed near the woollen mill's wastewater treatment plant at the right bank of the South Queich close to Loch Leven.
- Element 2: Hopefield Place Culvert Upgrades – culverts will be upgraded at Hopefield Place.
- Element 3: Clash Burn Diversion Culvert – a diversion culvert at Bowton Road will divert flows from the Clash Burn behind the properties on Montgomery Way before discharging back into the Clash Burn at The Myre playing fields. Two manholes will also be sealed at Montgomery Street.
- Element 4: Clash Burn Bund – a small bund on The Myre playing fields.
- Element 5: Clash Burn Diversion Culvert – a second diversion culvert at the junction of Smith Street and High Street will take flow along Sandport Road, along Nan Walker Wynd and between two properties and back into the Clash Burn at Sandport Close.
- Element 6: Upstream Storage – an embankment close to the M90 services will intercept an overland flow path.
- Element 7: Property Flood Resilience (PFR) – PFR will be afforded to four properties affected by high water levels in Loch Leven.

These elements will be constructed in sequence starting with preliminary works followed by the main works and finally the finishing work. Staring in May 2025, construction of the Proposed Development will be phased as follows:

- Culvert upgrades and diversions – 40 weeks;
- Upstream storage – 8 weeks;
- Flood defences – 53 weeks.

A 5-day work week is anticipated with the works being undertaken only during weekdays from 07:00 to 19:00.

In addition, eight site compounds are proposed, with the main compound being located at the vacant yard at the former BCA site east of High Street, with the other seven being satellite compounds. It is important to note that the satellite compound locations are not confirmed at this stage and may change depending on the needs of the contractor.

Construction vehicles will need access to several roads across Kinross and a number of new permanent access tracks will also be required for access for construction and maintenance of the Proposed Development. Specific traffic management measures will be required during construction. Every effort will be made to carry out works as quickly as possible to minimise traffic-related impacts. A full Traffic Management Plan/ Transport Statement will be completed as part of preparations for commencement of works.

A detailed works programme has not been developed at this stage and will be dependent on the successful contractor. Estimation on phasing and timeframes have been carried out using experience from other similar flood protection schemes in Scotland.

A Construction Environmental Management Plan (CEMP) will be prepared and will include relevant mitigation measures required as well as plans and programmes for managing environmental impacts and site safety procedures.

4 ASSESSMENT OF ALTERNATIVES

Assessment of reasonable alternatives is mandatory under the EIA Directive. The process allows for adjustment to minimise environmental impact thus minimising significant effects on the environment.

Alternatives are different ways of carrying out the Proposed Development in order to meet its agreed objective and there are a range of types of alternatives in relation to a Proposed Development:

- Design;
- Technology;
- Location;
- Size; and
- Scale.

Alternatives were examined at the strategic level. Some of the key objectives listed under the policy themes relating to the South Kinross FPS laid out in the Perth & Kinross LDP are as follows:

- *"Creation and continuation of high-quality places that meet the needs of the existing and future communities";*
- *"Improve long term resilience and robustness of the natural and built environment to climate change";* and
- *"Ensure that development and land use make a positive contribution to helping minimise the causes of climate change and adapting to its impacts."*

Overall, the Perth & Kinross LDP provides an important foundation for which projects should build upon with regard to flood protection and alleviation. Therefore, the South Kinross FPS is an important development in helping Perth & Kinross Council achieve its development goals by 2029.

Under Policy 2 of TayPlan, titled '*Shaping Better Quality Places'*, a key objective is to ensure developments are resilient and future-ready, and that climate change adaptability and resilience are built into the natural and built environments. Specifically, regarding flood risk, the policy states that this can be achieved through:

- *"A presumption against development in areas vulnerable to coastal erosion, flood risk and rising sea levels;*
- *Assessing the probability of risk from all sources of flooding;*
- *The implementation of mitigation and management measures, where appropriate, to reduce flood risk; such as those envisaged by Scottish Planning Policy, Flood Risk Management Strategies and Local Flood Risk Management Plans when published;*
- *Managing and enhancing the water systems within a development site to reduce surface water runoff including through use of sustainable drainage systems and storage."*

The South Kinross FPS therefore will help achieve the aims of the TayPlan, especially with regard to Policy 2C.

Alternatives were also examined at the project level. At the request of Perth & Kinross Council, Mouchel undertook a Flood Study in South Kinross in 2010 to understand flooding issues better and explore practical options to reduce flood risk in the area. The identified options were subject to a Cost / Benefit Analysis (CBA) and an environmental feasibility and constraints assessment.

The various options identified as part of the Mouchel Flood Study were included:

- Flow controls;
- Flood walls / channel widening;
- Flow diversions;
- Flood storage;
- Catchment land management; and
- Clash Burn Options.

RPS carried out an Option Review process in December 2022 for the South Kinross FPS. The Option Review Report aimed to build upon the findings of the Mouchel Flood Study through a detailed option review process. This included shortlisting a number of options, ascertaining the protection they provided then carrying out a benefit / cost analysis to identify the preferred option. This preferred option was updated following engagements with local residents and businesses and further updated to include protection for increases in flood risk due to climate change. A Multi-Criteria Analysis (MCA) was also carried out in order to aid in understanding the various social, economic and environmental impacts as well as the technical feasibility of the proposed options.

The report shortlisted a number of options for each flood cell within South Kinross (Flood Cells 1, 2 and 3) for further assessment including:

- Improvement of conveyance;
- Diversion;
- Direct defences;
- Storage;
- Property Level Protection (PLP)/Property Flood Resilience (PFR); and
- Relocation.

5 PROJECT SCOPING AND CONSULTATION

PKC and RPS aimed to consult at every stage of the South Kinross FPS with relevant statutory and non-statutory bodies. Consultation to date has included Scoping consultation with various organisations, as well as engagement with SEPA during modelling, and PKC during the development of the outline design of the FPS.

Public consultation for the Proposed Development has taken the form of quarterly newsletters updating the community of Kinross on the FPS. Two public consultation events were held in September 2023 to update the community on the progress of the scheme and gain feedback on the proposed outline design. Feedback from the consultation events was generally positive, with the vast majority of the community being supportive of the Proposed Development. PKC will continue to consult with the local community and particularly with landowners who may be directly affected by the Proposed Development.

Through the scoping process, the issues which were likely to be important during the environmental impact assessment were identified. The scoping process identified the sources or causes of potential environmental effects, the pathways by which the effects can happen, and the sensitive receptors, which are likely to be affected, and defined the appropriate level of detail for the information to be provided in the EIAR.

The following environmental topics have been scoped out as a result of the scoping process:

- Population & Human Health;
- Traffic & Transport; and
- Risk of Major Accidents & Disasters.

The EIA Scoping Report, it was provided to PKC who distributed it internally to the relevant departments within the council, as well to a variety of statutory consultees for a Scoping Opinion. RPS also distributed the report on behalf of PKC to several statutory bodies including:

- Forth District Salmon Fishery Board;
- Forth Rivers Trust;
- Historic Environment Scotland (HES);
- NatureScot;
- Scottish Water; and
- Scottish Environmental Protection Agency (SEPA).

Once RPS had received all the Scoping Opinions, the feedback was shared with each of the chapter lead authors to ensure all feedback was incorporated into the EIAR and all relevant guidance and legislation was adhered to.

6 AIR QUALITY & CLIMATE

This chapter considers the impacts on air quality and the climate from the Proposed Development. In undertaking this assessment, RPS experts have exercised professional skills and judgement to the best of their abilities and have given professional opinions that are objective, reliable and backed with scientific rigour.

Limits of various atmospheric pollutants are limited by both European and Scottish Legislation such as the Clean Air for Europe (CAFE) Directive and the Air Quality Standards (Scotland) Regulations. The baseline assessment for air quality found that no exceedances of NO_2 or PM_{10} were observed during 2018, 2019 or 2020 at any monitoring sites within the vicinity of the Proposed Development. However, several sources of pollution were identified including road traffic, industrial and commercial and domestic sources.

In terms of the climate baseline, there are published targets for climate and emissions in Scotland in order to counteract the impacts of climate change. The Scottish Government aim to achieve a 75% reduction in greenhouse gas emissions by 2030 and net zero emissions by 2045. There are also various visions laid out by other organisations in Scotland, such as Adaptation Scotland and Climate Ready Scotland, as well as local plans such as the PKC Interim Climate Emergency Report and Action Plan. In Kinross, there is a general slight increasing trend in annual temperature from 2016 to 2020.

In relation to air quality, for the construction phase, an important consideration is dust. In the absence of mitigation there is the potential for significant, negative, short-term impacts to nearby sensitive receptors as a result of dust emissions from the Proposed Development. The mitigation measures provided within this assessment will ensure that the risk of adverse dust effects is reduced to a level categorised as **Negligible**. Another potential important issue during the construction phase is construction traffic, however due to the nature and scale of the Proposed Development the construction traffic volumes will not be significant and the resultant air quality impact from construction traffic is **Negligible**.

The recommended mitigation for dust emissions included measures ranging from training staff in dust control and environmental control measures, recording of incidents relating to dust or emissions to avoiding site runoff and using relevant clean-up equipment for spillages and dusty materials.

In terms of climate, the effects of greenhouse gases and climate change resilience were considered. There is likely to be a direct, temporary, short-term, adverse effects on nearby receptors with regards to greenhouse gases as a result of the Proposed Development, however these are considered to be negligible. Effects are considered to be **Negligible** and not significant in terms of climate change resilience.

In relation to both air quality and climate change for the operational phase, operational traffic movements were not anticipated to change traffic flows on the road network. Therefore, operational effects on air quality and climate are considered to be **Negligible.**

7 BIODIVERSITY – ORNITHOLOGY

Breeding, wintering and migratory birds use the habitats located within the Proposed Development site and 500m buffer zone. This includes agricultural land, urban areas, parkland, amenity land (golf course) and the shores of Loch Leven on the western boundary of the site. These habitats are used by a range of bird species to varying degrees throughout the year. In addition, the agricultural lands provide habitat for a range of functions (foraging and non-foraging activities) for wintering and migratory birds, as well as breeding species. Information on birds within the Proposed Development site and buffer was collected through detailed desktop review of existing datasets as well as site-specific surveys (e.g. breeding bird surveys, winter walkover surveys, and vantage point surveys).

Breeding bird surveys were conducted in 2021 and resulted in 17 species of bird being identified as breeding within the survey area, chiefly within areas of hedgerow, woodland, and on arable land. The most common species identified were willow warbler (minimum 19 territories), house sparrow (minimum 17 territories), and dunnock (minimum 13 territories). The habitats within the survey area were assessed as having a high potential for breeding birds.

Winter walkover surveys were carried out between October 2021 and April 2022 and focused on identifying areas of land used by wintering goose species. Geese were noted as foraging in 7 of the 42 fields surrounding the site. Two goose species were recorded- pink-footed geese and greylag geese. Pink-footed geese were the most abundant.

Vantage point surveys were carried out between October 2021 and April 2022 and were designed to assess the level of movement of birds between roosting areas on Loch Leven and the survey area. These surveys confirmed that pink-footed geese were roosting on Loch Leven during the night and then used farmland to the west and northwest to feed during the day.

A number of potential impacts on bird species from the construction, operation, and maintenance of the Proposed Development have been identified. These include temporary and permanent habitat loss, habitat disturbance, pollution from accidental spills and the spread of Invasive and Non-Native Species (INNS). With the measures proposed as mitigation for these issues, the majority of these impacts result in effects of either **Negligible** or **Minor** adverse significance.

Temporary habitat loss was deemed to be of **Minor** adverse significance to breeding and wintering bird species due to the short-term nature of the impact during the construction phase. Crucially, no significant effects of permanent habitat loss were predicted on breeding birds due to the absence of an overlap in breeding territories and areas of work.

Habitat disturbance was deemed to be of a medium magnitude to wintering geese to the north of the site. However, due to the migratory nature of the species concerned it will be possible to avoid disturbance completely by avoiding the time of year that geese are present on site. Once construction is complete any ongoing disturbance is deemed to be of a **Minor** adverse effect for all bird species.

During construction phase fuel and/or oil leaks from plant and machinery could cause a potential pollution incident however this was also deemed to be of a **Minor** adverse significance due to the short-term nature of

the impact and the ability to mitigate for this possibility through following good practice procedures. Similarly, the spread of INNS was deemed to be of a **Minor** adverse significance.

Cumulative effects from other developments within 1km of the site were assessed and predicted to result in a **Negligible** significance for bird species.

8 BIODIVERSITY – TERRESTRIAL & AQUATIC

A suite of desk and field-based assessments have been completed to provide a robust baseline against which potential construction, operational and cumulative effects of the Proposed Development can be assessed. Surveys included liaison with the Fife Nature Records Centre and field surveys for protected species including otters, badgers, red squirrel, bats and fish. Detailed surveys of the habitats and vegetation present within and surrounding the Proposed Development have been completed including mapping the extent of invasive non-native plant species presence within the site.

Desk based assessments identified one designated site in proximity to the application boundary; Loch Leven NNR, Ramsar Site, SPA and SSSI supports a variety of insect, fish and bird species with an abundance of aquatic plants.

Surveys found the habitats and vegetation present to predominately be of low sensitivity, with the main likely habitat loss due to the Proposed Development, to be a limited area of arable field habitat . Surveys for protected species identified the presence of badgers on site and in the surrounding area. The site was assessed as offering potential to support roosting, foraging and commuting bats with at least four species of bat recorded during static detection surveys on the South Quiech River. Common and soprano pipistrelle bats exhibited the highest activity levels during the two detector deployment periods.

Although no evidence of otters was recorded in the survey area, the southern section is considered to have high potential to support the species for resting, foraging and commuting. Similarly, no signs of water vole were identified during the field surveys, but the site is not considered to be optimal for the species and as such, is considered unlikely to support them.

The woodland across the survey area has the potential for squirrels to inhabit and forage, and a red squirrel was observed during the field surveys, confirming their presence on site. Although no targeted reptile surveys were completed, potential reptile habitat was identified within the site in the form of scrub, grassland and woodland edges.

The fish habitat suitability assessment confirmed that both the Ury and Clash Burns are not suitable for fish, however there is a limited area within the South Queich which is suitable for spawning brown trout. The electrofishing survey found large numbers of brown trout in the South Quiech between Kinross High Street and Loch Leven. The site and surrounding area are considered unsuitable for great crested newt due to the lack of waterbodies to support them, therefore their presence in proximity to the Proposed Development is considered to be unlikely.

The potential effects on Important Ecological Features (IEFs) from the Proposed Development have been assessed, taking into account consultation feedback from stakeholders.

Effects to Loch Leven NNR, Ramsar Site, SPA and SSSI from the construction of the Proposed Development have been assessed and all are found to be **Not Significant**, with the implementation of the proposed mitigation measures as outlined.

Effects to habitats from the construction and operation of the Proposed Development have been assessed and are found to be **Not Significant**.

Effects to protected species from the construction and operation of the Proposed Development have been assessed and all are found to be **Not Significant**, with the implementation of the proposed mitigation measures as outlined.

Overall, the effects of the Proposed Development are predicted to have no significant effects on designated sites, species or habitats. Following the implementation of good practice, detailed mitigation and enhancement for habitats, and design of flood defence structures to maintain trout spawning sites, no significant environmental effects are predicted as a result of the Proposed Development alone or in combination with other nearby developments.

9 CULTURAL HERITAGE

This chapter has considered the potential effects of the Proposed Development upon cultural heritage assets during its construction and operational phases, using a variety of guidance documents, Scottish cultural heritage/ archaeological datasets as well as professional judgement in order to understand the potential effects of the Proposed Development upon the historic environment. The historic environment is defined as World Heritage Sites, Scheduled Monuments, Listed Buildings, Conservation Areas, Inventory Gardens and Designed Landscapes, Inventory Battlefields and non-designated archaeological sites and historic assets.

The baseline assessment found that elements of the Proposed Development lie within the Kinross Conservation area. Aside from this, no designated heritage assets are present within or adjacent to the construction footprint of the Proposed Development. A number of listed buildings were identified in the study area. It was further found that the construction footprints of the various areas of the Proposed Development had no or low archaeological potential.

There have been no predicted negative effects during the construction phase on designated and non-designated heritage assets. However, it was found that there may be potential effects on archaeological potential in the event that any unrecorded archaeology is present within the construction footprint. It is considered that any such archaeology will have very limited archaeological interest and is unlikely to be of greater than local importance. If present it would be of **Low** sensitivity. Removal or disturbance would result in the loss of its archaeological interest and hence cultural significance. This would constitute an impact of **Major** magnitude. It is considered that this would represent a permanent adverse effect of **Moderate** significance. This is not considered significant in the terms of the EIA Regulations. The likelihood of such effects occurring is considered very low.

During the operational phase, there are unlikely to be any significant effects on designated heritage assets as the Proposed Development will not affect the character and appearance of the Kinross Conservation Area as all elements of the Proposed Development within the Conservation Area will be buried. The Proposed Development will not affect the setting of any designated heritage assets, owing to there being no intervisibility. There will therefore be no change in any designated heritage asset's cultural significance.

Due to the lack of impacts on heritage assets and archaeological potential in the area, no mitigation measures have been recommended for either the construction or operational phase. Whilst the construction of the Proposed Development could, in theory, affect hitherto unrecorded archaeology, potentially resulting in a significant effect, the likelihood of this occurring is considered very low, such that this possibility cannot be considered a 'likely' significant effect. Any mitigation measures that might be put in place to address this potential would be disproportionate to the likelihood of the impact occurring.

In terms of residual and cumulative impacts, it is concluded that the Proposed Development will have no residual or cumulative effects.

10 LANDSCAPE & VISUAL

The purpose of this Landscape and Visual Impact Assessment (LVIA) is to identify and determine the effects on landscape character, landscape features, visual receptors, and visual amenity as a result of the works associated with the construction and operation of the Proposed Development.

The assessment has been completed using methodologies derived from the following documents:

- Guidelines for Landscape & Visual Impact Assessment 3rd Edition 2013;
- Technical Guidance Note 06/19 Visual Representation of Development Proposals.

A review of the Perth and Kinross Local Development Plan has identified the designations that may have relevance in terms of townscape, landscape and visual impact. This review has confirmed that the most relevant matters relating to designations and zonings include:

- Local Landscape Areas;
- Conservation Area; and
- Historic Parks and Gardens.

The Conservation Area associated with Kinross is focused on the town centre and historical core of the town. A small portion of the overall Proposed Development (relating to buried culverts) traverses through the southern section of the Conservation Area, and the predicted significance of effect is judged to be locally **Moderate** to **Major** during the construction phase, reducing to **Minor**, and not significant during the operational phase of the Proposed Development.

The nearest Historic Garden and Designed Landscape (Kinross House) is predicted to experience no indirect or direct effect as a consequence of the proposed development.

Analysis of the townscape character within the immediate environs of the proposed development displays a variety of urban character, ranging from medium to large scale commercial / industrial development to the south of Kinross, with variety of residential and commercial plot scales throughout the remainder of the townscape. Existing features within the boundary of construction works areas will be retained, refurbished or replaced as part of the works. The wider townscape resource has the ability to absorb a development of this scale and it is predicted that there will be **Minor**, direct effects upon the Townscape Character during the operational phase at the immediate boundaries. Remaining portions of the Townscape are predicted to experience no significant effects during the operational phase.

Of the five viewpoints assessed for visual impacts during the operational phase, two were found to have **Moderate** significant visual effects during the construction phase in the short-term. Only one viewpoint was found to have **Moderate** significant visual effects during the construction phase. It is expected that soft landscaping and planting of trees, shrubs and other plants will mitigate this impact during operation.

Overall, the wider townscape and visual resources of the development's surroundings have the capacity to accommodate a development of this type and scale. And the mitigation measures outlined will reduce any significant effects where possible.

11 MATERIAL ASSETS & LAND USE

This chapter describes the assessment undertaken of the potential impacts from the Proposed Development on material assets. Material assets are defined as built assets, such as transport energy and services infrastructure etc., and natural assets, such as forestry, minerals and watercourses etc. The chapter consults various guidance documents and uses professional judgment in its assessments.

The baseline assessment identified a range of receptors within the study area including population and residential statistics as well as various land uses (i.e., residential, commercial, industrial, services, community facilities and waste facilities), transportation and utilities (i.e., gas, water and electricity networks).

Based on the findings of this chapter, it is not expected that any major impacts on material assets will be experienced as a result of the Proposed Development. In fact, for the construction phase, impacts are likely to be of **Minor** or **Negligible** significance for most types of material assets assessed. However, there may be a **Minor** or **Moderate** impact on utilities infrastructure (gas, electricity, telecommunications and water supply networks) across the study area. While significant re-routing (temporary and permanent) may be required, it is expected that, during the operational phase, there will be no impacts as the site will be returned to its baseline state albeit with some changes to the routes of key utilities in some areas.

There are a range of mitigation measures that have been recommended including avoidance and re-routing of utilities and service cables, pipes and mains, the phasing of works to avoid widespread impacts on material assets and timing of works to minimise disruption, especially on traffic and transportation. Further construction phase mitigation measures such as exposing, identifying and marking of services, safety measures during excavation and backfilling and updating of asset plans are also recommended.

This chapter has also found that there are unlikely to be any residual impacts after all mitigation measures are fully implemented.

Cumulative effects are unlikely due to the small scale of other developments and the distance between the Proposed Development and other developments in the area. However, indirect cumulative effects during the construction phase cannot be discounted completely depending on the dates and timings of works.

12 NOISE & VIBRATION

This chapter of the EIAR provides an assessment of the likely significant noise and vibration impacts associated with the Proposed Development.

Operational phase noise was scoped out of this assessment as it is not anticipated that there will be any significant operational phase noise sources. Any traffic movements associated with operational phase maintenance activities will be of such a low level that there will be no potential for any significant traffic noise impacts. On this basis, there was no requirement for a noise monitoring survey to assess operational phase noise.

Background vibration monitoring was not undertaken as there are currently no vibration sources on site.

During the construction phase, it was found that there is a possibility of noise limits to be exceeded due to construction works at the following locations:

- Queich Place/ Old Cleish Road;
- Hopefield Place/ Levenbridge Place/ Montgomery Way;
- Levenbridge Place/ Montgomery Way;
- Myre Terrace/ Smith Street/ Montgomery Street;
- Smith Street/ High Street/ Sandport/ Nan Walker Wynd/ Sandport Close;
- Small number of residential properties off the A977 (including the Turfhills House B&B); and
- Properties to be afforded PLP/PFR.

In terms of traffic noise, construction phase traffic movements are not anticipated to be of the scale to generate traffic flow increases that would result in significant increases in noise levels. Furthermore, it is expected that the majority of traffic flow increases will result in a less than 1dB(A) change in the traffic noise levels at properties adjacent construction traffic routes and will thus not generate a significant noise impact.

A range of mitigation measures have been recommended for construction noise and vibration including:

- Construction best practice measures;
- Development of a programme of noise management measures;
- Construction phase vibration monitoring;
- Selection of quiet plant machinery;
- Exhaust silencers;
- Using existing physical barriers to shield vulnerable receptors from noise.

In addition to the above, it is proposed that standard construction working hours will apply as follows:

- Monday to Friday: 08:00 to 19:00; and
- No activities will take place on site on Weekends and Bank Holidays.

Deviation from these times will only be allowed in exceptional circumstances where prior written approval has been received from PKC.

There are not expected to be any residual impacts where appropriate mitigation measures are in place during the construction phase. Furthermore, there will be no operational phase noise and vibration impacts.

There are only expected to be temporary **Minor** cumulative effects between the Proposed Development and other permitted developments in the area. This is due to the distance between these developments.

13 SOILS, GEOLOGY, HYDROGEOLOGY & CONTAMINATION

The chapter provides an assessment of the effects of the existing ground conditions on the proposed FPS for South Kinross and addresses the potential effects of the Proposed Development on the soils, geology and hydrogeology of the site and surrounding areas.

The assessment was based on a desk study of publicly available information such as geological maps, historical borehole logs and maps, a site walkover survey and an intrusive ground investigation. The investigation identified that the site is underlain by made ground, sands and gravels.

A Preliminary Risk Assessment (PRA) and a Generic Quantitative Risk Assessment (GQRA) have been produced by RPS and an intrusive ground investigation was undertaken Environmental from 25th November and 5th December 2019 by Dunelm Geotechnical & Environmental Ltd. These were used to inform the assessment in this chapter. The PRA and GQRA have been undertaken with reference to a number of guidance documents, which deal with the investigation and management of risk associated with contaminated land.

The baseline assessment found that the site is underlain by sandstone, with basalt rock to the west, north and south of the site. Superficial geology is made up of a mixture of artificial ground, alluvium (associated with the South Queich and the Gelly Burn), lacustrine deposits, glaciofluvial sheet deposits. In terms of groundwater vulnerability, the site is classified as ‘highly permeable’, meaning that contaminants are more likely to reach the water table after introduction at the ground surface. Furthermore, the BGS susceptibility to groundwater flooding data classifies the site as having the potential for groundwater flooding to occur at the surface.

Construction phase impacts were determined to be **Neutral** as there will be no measurable impact on geological features, no measurable impact on soils and no discernible change with regards to contaminated land.

Operational phase impacts to soils and geology are **Neutral**. As there will be no measurable impact upon surface waters or groundwater, no measurable impact on geological features and no measurable impact on soils/sediments.

Beyond the initial environmental soil sampling and screening for asbestos, there are no mitigation measures being recommended for soils, geology, hydrogeology and contamination.

No residual effects relating to soils, geology, hydrogeology and contamination were identified.

No cumulative effects were identified between the proposed development and other projects in the area due to their minor nature and the fact that they will have little to no impact on the soils, geology, hydrogeology and contamination of the site and surrounding area.

However, it was found that the Proposed Development may interact with other environmental considerations such as the creation of dust, construction noise, waste and impacts on ecology.

14 WASTE

This chapter assesses the waste management aspect of the Proposed Development. Effects from the forecasted waste generation from the construction and operational phases of the Proposed Development have been assessed in the context of the effects on regional waste management treatment and landfill infrastructure capacity, legislation, policy and strategy targets. Mitigation measures are proposed to reduce the impact of waste generated by the Proposed Development.

An assessment has been made of the potential environmental effects that are associated with the production, movement, transport, processing, and disposal of waste arisings from site during the construction phase of the Proposed Development.

The baseline overview of the Proposed Development along the South Queich encompass a mixture of apparent waste ground, residential, industrial, commercial and essential infrastructure (wastewater treatment works) as well as Loch Leven National Nature Reserve. Current wastes arisings are a typical mix of recyclable and residual material generated from the residential and commercial properties and urban spaces. Local authority bins are provided, resulting in municipal wastes, accompanied by mixed litter. There are two vegetated stockpiles in the southwestern corner of a former car park located between the Gelly Burn tributary and Old Cleish Road which appear to comprise construction and demolition material. There are a number of landfill and waste management sites in the vicinity of the Proposed Development registered on SEPA's 'Scottish waste sites and capacity tool'.

The following impacts are expected to arise from the construction of the Proposed Development:

- Waste material generation from the proposed demolition of unused buildings at BCA and parts of the Todd & Duncan site;
- Potential for hazardous substances such as Asbestos Containing Materials (ACMs) from demolition of BCA and Todd & Duncan site;
- Waste arisings from site clearance including the removal of tarmac surfaces, boundary fences and vegetation clearance to establish a working strip;
- Spread of invasive non-native plant species due to clearance of areas of land;
- Generation of construction waste materials generated as a result of excavations;
- Waste from removal of two vegetated stockpiles (comprising construction and demolition waste) in the southwestern corner of a former car park located between Gelly Burn tributary and Old Cleish Road.

There were deemed to be no significant impacts on waste during the operational phase of the Proposed Development beyond minor repair and maintenance works, which will likely only produce low quantities of waste.

The following mitigation measures were identified for the construction phase:

- Designing out waste (embedded in design and construction methodology of the Proposed Development);
- Duty of Care;

- Site Waste Management Plan (SWMP);
- Construction Environmental Management Plan (CEMP); and
- Construction Phase Monitoring.

No preliminary waste management mitigation measures are currently recommended for the operational phase of the Proposed Development. Any waste should be managed in accordance with the aims of the Perth and Kinross Waste Management Plan to reduce waste, recycle and recover more materials.

No residual or cumulative impacts are expected in terms of waste.

15 FLOOD RISK, HYDROLOGY & DRAINAGE

This chapter considers the potential impact of the Proposed Development on flood risk and uses a range of relevant guidance and legislation to guide the assessment.

The baseline assessment found that Kinross has a history of flooding, especially fluvial flooding from the South Queich and the Gelly Burn. Along the Clash Burn both fluvial and surface water flooding present potential risks. Reviews of historical flood records in the vicinity of Kinross along with numerical modelling of flood extents confirmed that there was a significant risk across the town.

For planning purposes, the NPF4 defines at risk of flooding or in a flood risk area as lands with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for climate change. The site can therefore be considered to be in a flood area. As described in SEPA 'Flood Risk & Land Use Vulnerability Guidance', the Proposed Development can be classified as 'Water Compatible Uses'. Under Policy 22 of NPF4, 'water compatible uses' is one of the proposals that will be supported in a flood risk area. There are no elements of the proposal that would be considered as unsuitable in terms of flood risk.

The Proposed Development has been designed to provide a 1 in 200 year return period Standard of Protection (SoP), which is also described as an 0.5% Annual Exceedance Probability (AEP). An allowance has also been included for climate change. This is the standard for flood relief schemes in Scotland. A freeboard allowance of 300 mm has been included in the design of the proposed embankments, and an allowance of 600 mm has been included in the design of the proposed floodwalls. These allowances are what is generally accepted for flood relief schemes.

During construction, there is a risk of flooding to the works from extreme river events that will need to be managed. Floodline operated by SEPA and the Scottish Flood Forecasting Service (SFFS), which is a partnership between SEPA and the Met Office, can be used by the Contractor to ensure that the risk of flooding to the construction works is minimised.

One of the objectives of the Proposed Development is to reduce the flood risk in the area from fluvial flooding. Flood protection can therefore be considered as 'Primary mitigation' which is modifications to the location or design of the Proposed Development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken. Mitigation measures have been proposed to deal with increases in flood risk as a result of the Proposed Development and also to deal with any potential surface water flooding behind the proposed defences.

This assessment has demonstrated that:

a) All sources of flood risk to and from the Proposed Development have been identified; and
b) There are adequate measures to manage and mitigate any increase in flood risk arising from the development.

16 WATER QUALITY

This chapter of the EIAR assesses the potential impact of the Proposed Development on water quality within the receiving environment. The potential impacts related to the construction and operational phases of the Proposed Development have been assessed and mitigation measures proposed to reduce significant environmental impacts on the receiving water environment. All relevant national legislation and guidance was followed during the preparation of this chapter.

The assessment follows the Water Framework Directive (WFD) which requires that all European Union Member States prevent deterioration and protect, enhance, and restore all bodies of water. Whilst the WFD originates from the EU it has been retained in UK law following the UK's exit from Europe. The Environment (EU Exit) (Scotland) (Amendment etc.) Regulations 2019 is the implementing legislation which ensures principals of the Directive are largely retained with Scottish legislation.

The impact of the Proposed Development has been assessed based on the existing baseline derived from the WFD Monitoring programme, Scotland River basin Management Plan 2021 – 2027, SEPA's morphological pressure database (MPD) and morphological pressure surveys (MPS) undertaken to inform the Environmental Standards Test.

The baseline for the South Queich River is already significantly impacted and at a reach level is indicative of 'bad' supporting morphological conditions. The Proposed Development will not significantly impact the morphological conditions given the existing realigned channel, grey bank reinforcement and embankments along the South Queich River. When assessed at the water body scale the Proposed Development will use some additional morphological capacity, but this is not significant as it will not result in a deterioration in the morphological condition, which is currently assessed to be moderate based on the MPS undertaken.

Construction phase impacts have been assessed, the significance of the impact during construction is considered to be potentially **Major** in the absence of mitigation. Impacts primarily come from the potential for the construction of the Proposed Development to increase suspended sediments (from instream works, earthworks and construction of flood defence structures) as well as introducing other pollutants such as concrete, fuel, oils and other chemicals.

Operational phase effects are considered to be **Major** beneficial in the context of the avoidance of flooding of potentially significant pollution sources. **Minor** negative effects are also expected due to changes in the morphological condition of waterbodies in the area. Only a **Minor** negative effect is expected to channel morphology due to the already heavily modified nature of the rivers considered for assessment. Moderate beneficial effects are expected with regard to sediment loading at Loch Leven. The Proposed Development will provide additional storage volume due to embankment construction upstream of Kinross Services and the South Queich Embankment

Mitigation has been recommended for both the construction and operational stages which will ensure that the residual impact is **Negligible** to **Minor** which is not significant in EIA terms.

17 CUMULATIVE EFFECTS & ENVIRONMENTAL INTERACTIONS

Cumulative effects address long-term changes that may result from the construction and operation of the Proposed Development in combination with other developments in the area. Cumulative assessment is undertaken to ensure that the combined effects of the Proposed Development and other influences are assessed together, and not as individual aspects of the environmental assessment.

Cumulative effects are defined as changes to the environment that are caused by an action in combination with other actions, arising from the interaction between existing an/or approved Projects in the same area and the interaction between the various impacts within a single Project.

Using the Perth & Kinross Planning Portal, 13 proposed Projects were identified in close proximity which may interact with the South Kinross FPS. These are:

- Erection of office/ workshop building, formation of parking area, hardstanding associated – Land north of Macduff Place, Kinross;
- Erection of a garden studio – 3 Hopefield Place, Kinross;
- Alterations and extension to dwellinghouse – Green Gates 12, Station Road, Kinross;
- Alterations to dwellinghouse – 11 Talla Park, Kinross;
- Extension to dwellinghouse – 10, Levenbridge Place, Kinross;
- Extension to dwellinghouse – 16 Levenbridge Place, Kinross;
- Installation of flue – Cobwebs 6, Montgomery Street, Kinross;
- Erection of 3 light industrial units (classes 4, 5 and 6), and a members' only retail club unit – Anchorpoint House, Clashburn Close, Bridgend Industrial Estate, Kinross;
- Screening Opinion for EIA (Demolition of former Auction House) – British Car Auctions (BCA), Kinross;
- Siting of combined heat and power unit (CHP) and erection of steam boiler enclosure, transformer and compound radiator, low temperature hot water boiler enclosure and fencing – Todd & Duncan Ltd, Lochleven Mills, High Street, Kinross;
- Installation of solar panels – 8-10 Piper Row, Kinross;
- Installation of replacement windows – 1st Floor, 111 High Street, Kinross;
- Change of use of and alterations to workshop / restaurant / offices to form restaurant with function room / ancillary hot food takeaway / offices, erection of workshop/ store, installation of replacement decking, fence and canopies over outdoor seating area – Loch Leven Fisheries, Pier Road, Kinross.

The majority of the above listed developments are relatively small scale and are unlikely to directly impact upon the Proposed Development. However, depending on timing of works, there could be indirect impacts during the construction phase.

Larger-scale developments such as the demolition of the BCA building, the erection of an office / workshop building at Macduff Place may have some construction phase impacts if works are carried out at the same time as the Proposed Development.

Environmental interactions within the proposed development have also been assessed. A number of interactions between various chapters were found, however none of the effects were deemed to be significant.

18 SUMMARY OF MITIGATION MEASURES & CONCLUSIONS

The assessment presented within the EIAR has identified and documented impacts arising from the Proposed Development. These impacts have been assessed as to whether or not they are likely to result in significant effects. Where significant effects have been predicted, measures to avoid or mitigate these effects have been included so that, where possible, they are no longer significant.

The overall objectives of the Proposed Development are to reduce the economic damages to residential and non-residential properties in the South Kinross area from the South Queich, the Gelly Burn and the Clash Burn, as well as improving the WFD status of the bodies of water in the area where possible. Historically, South Kinross has suffered from a number of flood events, and there are two distinct areas affected by flooding. The northern area suffers from flooding from the Clash Burn, while the southern area is affected around the confluence of the South Queich and the Gelly Burn. A third flood risk area is affected by the South Queich, located north of Kinross, affecting Kinross Services and the M90.

Overall, the EIAR has determined that the development of the Proposed Development has the potential to have significant effects on environmental receptors in the absence of any mitigation measures. Where significant effects have been identified, mitigation measures have been recommended in order to reduce any impacts on sensitive receptors from significant to not significant. Adherence to a CEMP is also important in reducing any potentially significant effects. It is expected that the Proposed Development will lead to beneficial effects to the town and people of Kinross through the protection of people and property from flooding and the potential avoidance of flooding of pollution sources.