

The Planning Inspectorate
Temple Quay House (2 The Square) Temple
Quay
Bristol
Avon
BS1 6PN

Our ref: SL/2016/115920/04-L01
Your ref: Silvertown Tunnel
Date: 20 March 2017

Dear Sir/Madam

**APPLICATION BY TRANSPORT FOR LONDON FOR AN ORDER GRANTING
DEVELOPMENT CONSENT FOR SILVERTOWN TUNNEL**

DEADLINE 5 SUBMISSION

Please find below our submission for deadline 5.

Protective Provisions

In the Position Statement agreed between the Environment Agency and TfL at Deadline 4 we undertook that we and the applicant would provide an update at Deadline 5 on the discussions between us regarding protective provisions to be included in the DCO. Although we have made considerable progress in these discussions we are still not in agreement with the applicant on the key issue of maintenance of the river walls during the construction works for the Silvertown Tunnel.

The Metropolitan Flood Acts (MFA) 1879 – 1962

The applicant seeks to disapply this legislation. The MFA apply to the River Thames between Teddington Lock and the River Darent (south bank) and Barking Creek (north bank). They also apply to the tributaries of the River Thames up to the highest point in the tributary where there is “flow and reflow of the tides”. The Acts entitle the Environment Agency to require riparian owners to pay for the construction and maintenance of flood works which we consider are necessary to prevent flooding. Riparian owners can be made liable for the whole cost of creating and maintaining flood defences to a certain level and standard. These powers are unique in the country.

Under the Acts, we have powers to inspect river banks and take action if we consider that repairs to existing flood defences, or indeed new flood defences are required. The riparian owner is liable for the cost of any such works, and for their ongoing maintenance. If the riparian owner does not carry out these works, the Act gives the Environment Agency power to carry out the works and then recover the full cost from the riparian owner.

If the MFA are disapplied by the Silvertown Tunnel DCO, we would no longer have powers to recover our costs from the riparian owner for any necessary flood defence works. Our

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preferred form of protective provisions require TfL to ensure a fit for purpose defence is in place during their occupation of the relevant land. We consider this offsets the risk associated with the removal of our powers through the DCO.

Importance of these flood defences

The river walls on both the north and south banks form part of the tidal Thames defences, which protect extensive residential and commercial areas from significant flooding. The river walls on the south bank are typically in good repair. The condition of the defences on the north bank is generally poorer, and therefore a greater cause for concern.

The north bank river walls are located within the TE2100 plan's Royal Docks policy unit. The flood defences within this policy unit protect large residential communities, as well as important infrastructure:

The unit includes City Airport and associated new developments as well as the north bank of the Thames Barrier. There are five underground stations, 36 schools, seven care homes and a hospital. Two power stations, over 200 electricity substations and the major Beckton sewage treatment works are also in the tidal flood risk area. The A13 arterial route cuts across this policy unit from west to east.

The London Borough of Newham Strategic Flood Risk Assessment (SFRA) forecasts flood depths of over 6 metres in some areas in the event of a breach of the flood defences in this policy unit during a 1 in 200 year event (including an allowance for climate change). TfL has also carried out breach modelling specific to the river walls within the application site, which are included within their flood risk assessment. London Borough of Newham's SFRA states:

As much of Newham is low lying land (below the 0.1% AEP tidal surge level) protected from flooding by the presence of defences, there is a significant residual risk of flooding from a breach occurring in the existing defences during a tidal surge.

It further states:

The actual risk of tidal flooding in Newham is much reduced (compared to the flood zones) by the presence of the Thames tidal defences.

It is therefore vital that these defences are maintained in a fit for purpose state so that the low lying areas behind them can continue to be protected from tidal flooding.

Current state of the river walls

As the applicant has described in its submissions, the river walls on the northern bank are ageing, and in many cases are in poor condition. We expect that many of these walls will last beyond the construction of the Silvertown tunnel, but some (zone 12) will be undergoing urgent remedial repairs later this year. On some other sections of wall (zones 2, 6, 7 and 8) TfL have not been able to demonstrate that these will be able to withstand the expected loadings associated with the Silvertown tunnel construction programme.

In summary, it is quite likely some strengthening/ improvements to the walls will be necessary during the construction phase to ensure an appropriate standard of defence from flooding is maintained to low lying areas behind the river wall.

Our work to date on securing improvements

Our Thames Tidal Walls and Embankments team has an overview of approximately 3,500 flood defence assets, spanning approximately 220km of linear flood defence. At any given time, we will be working with riparian owners to secure improvements on typically over 100 assets. Often these works are carried out in conjunction with re-development of riverside sites. Where riparian owners may have difficulty procuring and delivering works to the flood defences, we sometimes carry out these works on their behalf, and secure repayment by legal agreement.

Our preference is to work in partnership with riparian owners rather than taking a regulatory/enforcement stance. We typically pursue enforcement as a last resort where it is not possible to reach an agreement. We have been working with the riparian owner on the north bank at this site to secure improvements. Some improvements have been made, although there is much more to be done.

The option of choosing not to disapply this Act

TfL could decide in the light of our objections not to request that this legislation is disapplied. This however introduces the risk that during the tunnel construction phase, the riparian owner may need to carry out works to the river wall to comply with their duty to maintain a fit for purpose flood defence. Depending on the scale and timing of such works, this may interfere with and result in delays to TfL's construction programme.

Protective Provision wording on Thames Tideway Tunnel DCO

We have included the text from the clause of the Thames Tideway Tunnel DCO which covers river wall maintenance as an appendix. We include this for reference, given the similarities between these projects:

Conclusion

We appreciate that TfL are only taking temporary possession of the site to construct the tunnel. We also appreciate that by accepting our preferred version of the protective provisions, TfL will take on responsibility for flood walls which are in some cases in a poor condition. However, if the Act is disapplied, we will lose our ability to recover costs for any works which we may need to carry out to ensure communities and properties are protected from flooding. We consider that our preferred version of the protective provisions mitigates these risks.

Other matters:

Land contamination

We are pleased to note that the applicant has expanded the text within the Code of Construction Practice to better describe the works that would need to be carried out relating to land contamination. However, the proposed wording does not give us sufficient confidence that this important issue will be suitably secured, in the same way that a DCO requirement would.

Ecological impacts of proposed works to the river bed at the NAABSA berth

We requested information to clarify TfL's statement that material would be removed from the

river bed to allow the laying of crushed stones at the NAABSA berth. TfL has since provided an ecological report considering the impacts of these works. In addition, they explained that the river bed here already has a base of crushed stones that has been laid to create a level berth. The proposed works would only be carried out to maintain the berth, which would be necessary as the hard base becomes silted over time. On this basis, we have no objection to the principle of these works. We also note the conclusions of the ecological report submitted. We have informed TfL that at the time when these works are carried out, we will likely request a Water Framework Directive Assessment via the Deemed Marine Licence.

Please do not hesitate to contact me if you require any further information.

Yours sincerely

Niall Connolly
Planning Specialist

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Appendix: Extract from Thames Tideway Tunnel protective provisions

Maintenance of flood defences

9.—(1) Any work constructed under this Order for the purpose of providing a flood defence or replacing an existing flood defence shall be maintained to the reasonable satisfaction of the Agency by the person who has control of the work.

(2) If any such work is not maintained to the reasonable satisfaction of the Agency, the Agency may by notice in writing require the person to repair and restore the work, or any part of it, or (if the person having control of the work so elects and the Agency in writing consents, such consent not to be unreasonably withheld), to remove the work and restore the site to its former condition, to such extent and within such limits as the Agency reasonably requires.

(3) If, within a reasonable period being not less than 20 business days beginning with the date on which a notice in respect of any work is served under paragraph 9(2) on the person who has control of that work, that person has failed to begin taking steps to comply with the reasonable requirements of the notice and has not thereafter made reasonably expeditious progress towards their implementation, the Agency may do what is necessary for such compliance and may recover any expenditure reasonably incurred by it in doing so from that person.

(4) In the event of any dispute as to the reasonableness of any requirement of a notice served under paragraph 9(2), the Agency shall not, except in a case of immediate foreseeable need, exercise the powers of paragraph 9(3) until the dispute has been finally determined.

PROTECTIVE PROVISIONS FOR THE BENEFIT OF THE ENVIRONMENT AGENCY

1. The following provisions apply for the protection of the Environment Agency unless otherwise agreed in writing between TfL and the Agency.

Definitions

2. In this Schedule—

“the Agency” means the Environment Agency;

“asset control limits” means the predefined values, based on assessment, relating to safety and serviceability considerations that instigate a review of risk to the flood defences with respect of movement impacts;

“authorised work” means any work forming part of the authorised development;

“baseline monitoring” means any surveys carried out to determine and establish movements of the flood defences due to factors external to the authorised work including (but not limited to) seasonal variations or diurnal impacts due to tide or temperature;

“construction” includes execution, placing, altering, replacing, relaying, removal and excavation and “construct” and “constructed” is to be construed accordingly;

“damage” includes (but is not limited to) scouring, erosion, loss of structural integrity and environmental damage to any drainage work or any flora or fauna dependent on the aquatic environment, and “damaged” is to be construed accordingly;

“detailed designs” means any information submitted under paragraph 4(1);

“drainage work” means any main river and any bank, wall, embankment or other structure, or any appliance, constructed or used for land drainage, flood defence or tidal monitoring or flood storage capacity;

“Ecological Enhancements” means the inclusion of any features integral to or adjacent to the foreshore structures and any new, modified, or replaced flood defences that can support wildlife. This includes, but is not limited to, where practicable, the set back of flood defences to provide inter tidal habitat and the creation of shelters for juvenile fish;

“environmental duties” means the Agency’s duties in the Environment Act 1995, the Natural Environment and Rural Communities Act 2006 and the Water Environment (Water Framework Directive)(England and Wales) Regulations 2003 (SI 2003 no 3242);

“fishery” means any waters containing fish and fish in, or migrating to or from such waters and the spawn, spawning grounds or food for such fish;

“the flood defences” means any bank, wall, embankment, bridge abutments, lock gates or other structure or any appliance (including any supporting anchorage system) that fulfils a function of preventing, or reducing the risk of, flooding to land or property

“flood storage capacity” means any land, which, taking account of the flood defences, is expected to provide flood storage capacity for any main river;

“main river” “means all watercourses shown as such on the statutory main river maps held by the Agency and the Department of Environment, Food and Rural Affairs, including any structure or appliance for controlling or regulating the flow of water into, in or out of the channel;

“maintenance” has the same meaning as in article 2(1), save for the exclusion of the works of inspection;

“specified day” means the business day on which detailed designs of that work are received by the Agency under paragraph 4(1) and for the avoidance of doubt if any further information is requested by the Agency under paragraph 4(1)(g), the specified day is the business day on which the Agency receives this information from TfL;

“specified work” means so much of any permanent or temporary work or operation forming part of the authorised work (other than works required in an emergency) as is in, on, under

or over a main river or drainage works or within 16 metres of a drainage work or is otherwise likely to—

- (a) affect any drainage works or the volumetric rate of flow of water in or flowing to or from any drainage works; or
- (b) affect the flow, purity or quality of water in any main river or other surface waters or ground water; or
- (c) cause obstruction to the free passage of fish or damage to any fishery; or
- (d) affect the conservation, distribution or use of water resources; or
- (e) affect the conservation value of the main river and habitats in its immediate vicinity;

“statutory defence level” means 5.18m AOD in relation to the flood defences coloured in red and 5.23 AOD in relation to the flood defences coloured blue on the Statutory Defence Levels Plan;

“the Statutory Defence Levels Plan” means the plan {.....}

“the structural integrity plans” means the plans and documents to be provided to the Agency under paragraph 3; and

“TE2100” means the standards associated with the strategy for managing flood risk across the Thames estuary, including recommendations for action in short, medium and long term time periods to take account of sea level rise and climate change, as adopted and updated from time to time by the Environment Agency.

Structural integrity of flood defences

3.—(1) Prior to commencing the first authorised work likely to impact a flood defence and at least at the same time as submitting any submissions for approval in respect of the first specified work under paragraph 4, TfL must prepare at its own expense and provide to the Agency (for its approval where stated below), the following documents in the corresponding order (but nothing precludes TfL from submitting more than one document to the Agency at a time)—

- (a) a schedule of defects existing in the flood defences including, where reasonably practicable, a description of the magnitude of any defect;
- (b) a survey plan, for approval by the Agency, to include details of any further surveys [and intrusive investigations] of the flood defences proposed to be undertaken by TfL to inform the detailed design process, construction methodology and mitigation proposals;
- (c) an assessment report, to—
 - (i) include details of the structural integrity of the flood defences in light of any proposed authorised works;
 - (ii) include asset control limits of any sections of the flood defences; and
 - (iii) identify any sections of the flood defences requiring protective works by reason of the authorised works,

such report to be based on the findings of the additional surveys carried out by TfL under the survey plan under sub-paragraph (b), the schedule of defects provided under sub-paragraph (a) and any available historical information;

- (d) a mitigation design report (or reports), for approval by the Agency, to include details of the protective works identified by the assessment report provided under sub-paragraph (c) that—
 - (i) are necessary before; or
 - (ii) may be required to be implemented as an action under the emergency preparedness plan provided under sub-paragraph (f) during or after, the construction of the authorised development and that such details will—
 - (iii) be sensitive to the foreshore and hydraulic regime; and
 - (iv) not prevent the relevant sections of the flood defences being raised to TE2100 levels in future and such standards being maintained;

- (e) an instrumentation and monitoring plan, for approval by the Agency, to include, in respect of the flood defences—
 - (i) details of monitoring locations (which must be established having regard to the asset control limits);
 - (ii) details of monitoring in respect of scour of any flood defence within the Order limits;
 - (iii) the frequency of monitoring (which must, as a minimum, be until (a) the rate of settlement experienced by the flood defences directly attributable to the authorised development ceases or is less than or equal to 2 millimetres per annum; or (b) the period of 2 years has expired following the completion of the authorised development, whichever is later); and
 - (iv) the minimum amount of baseline monitoring; and
 - (f) an emergency preparedness plan, for approval by the Agency, to include details as to what actions TfL will take, including the implementation of any mitigation identified in the mitigation design report (or reports) approved under sub-paragraph (d), in respect of the asset control limits identified in the assessment report provided under sub-paragraph (c), including timescales and the hierarchy of actions.
- (2) TfL must implement and act in accordance with the approved structural integrity plans.
- (3) Any protective work identified as being required by the structural integrity plans is to be treated as a specified work for the purposes of this Part of this Schedule.
- (4) Following completion of the authorised development, TfL must prepare at its own expense and provide to the Agency, a completion report, to include details of—
- (a) any modifications or mitigation measures to be implemented in respect of the flood defences;
 - (b) illustrations in respect of the interactions between ground movement relating to the flood defences and construction activities;
 - (c) actual ground movement in respect of the flood defences compared to predicted ground movement;
 - (d) the results of a post-construction defects survey but only in relation to any differences identified when compared to the schedule of defects provided to the Agency under sub-paragraph (1)(a);
 - (e) any remedial works undertaken by TfL to the flood defences; and
 - (f) final as-built drawings and plans of the parts of the authorised development situated within 16 metres of a flood defence.

Specified works

4.—(1) Before commencing construction of a specified work (excluding any piling works which are licensable marine activities under s66 Marine and Coastal Access Act 2009), TfL must submit to the Agency for its written approval—

- (a) plans, calculations, cross-sections, elevations, drawings, specifications and designs of the specified work together with the details of the positioning of any structure within the main river;
- (b) proposals for strengthening, modification, renewal or replacement of any drainage work required as a result of the anticipated impacts of the specified work;
- (c) any proposed mitigation measures to minimise the impact of the specified work on the foreshore, ecologically sensitive areas and the wider environment;
- (d) details of any Ecological Enhancements which are considered by TfL to be appropriate and reasonable to be incorporated into the specified work having regard to the nature of the specified work;

- (e) method statements in respect of the specified work to include both timing of and methods used, sequence of construction and the type, location and storage of all machinery, materials and fuel;
- (f) any proposals for reinstatement of the foreshore setting out timing of reinstatement works, measures to be used to minimise environmental impact of the works, materials to be used, methods of reinstatement and any proposed pollution protection measures;
- (g) information to demonstrate that the Agency will be afforded sufficient access to drainage works within the Order limits and the flood defences during the construction of the specified work to discharge its statutory functions; and
- (h) such further particulars as the Agency may within 20 business days of the receipt of the detailed designs reasonably require.

(2) Any such specified work must not be constructed except in accordance with all detailed designs as may be approved in writing by the Agency under paragraph 4(1) [(having regard to any structural integrity plans approved under paragraph 3)], or settled in accordance with paragraph 12 where applicable, and in accordance with any reasonable conditions or requirements specified under this paragraph.

Approvals

5.—(1) Any approval of the Agency required under paragraph 3(1) or 4(1)—

- (a) must not be unreasonably withheld;
- (b) in the case of a refusal, must be accompanied by a statement of the grounds of refusal;
- (c) may be given subject to such reasonable requirements or conditions as the Agency may make for the protection of any drainage work, flood defence, fishery, main river or water resources, or for the prevention of flooding or pollution or in the discharge of its environmental duties; and
- (d) is deemed to have been refused if it is neither given nor refused within 35 business days of the specified day unless otherwise agreed.

(2) Without limitation on the scope of paragraph 5(1) the requirements or conditions which the Agency may make under paragraph 5(1) include conditions requiring TfL at its own expense to construct such protective works (including any new works as well as alterations to existing works) as are reasonably necessary—

- (a) to safeguard any drainage work or flood defence against damage;
- (b) to secure that its efficiency or effectiveness for flood defence purposes is not impaired; or
- (c) to ensure the risk of flooding is not otherwise increased by reason of any specified work, maintenance work or protective work,

during the construction of or by reason of the works.

(3) Any dispute in respect of any approval or refusal under this paragraph is subject to the dispute resolution procedure in paragraph 12.

Inspection and construction

6.—(1) All works must be constructed without unnecessary delay in accordance with the detailed designs or plans approved or settled under this part of this Schedule and to the reasonable satisfaction of the Agency.

(2) Save where TfL constructs a specified work in accordance with any detailed designs or plans approved by the Agency under paragraph 4, TfL must not damage or obstruct any drainage work during the construction of a specified work.

(3) An officer of the Agency is entitled to watch and inspect the construction of any works.

(4) TfL must give to the Agency not less than 10 business days' notice in writing of its intention to commence construction of specified works and notice in writing of its completion not later than five business days after the date on which it is completed.

(5) If the Agency reasonably requires, TfL must construct all or part of any protective works so that they are in place prior to the carrying out of any specified work to which they relate.

(6) If any part of a work is constructed otherwise than in accordance with the requirements of this Part of this Schedule, the Agency may by notice in writing require TfL at TfL's own expense to comply with the requirements of this part of this Schedule or if TfL so elects (and the Agency in writing consents, such consent not to be unreasonably withheld or delayed) to remove, alter or pull down the work and, where removal is required, to restore the site to its former condition to such extent and within such limits as the Agency reasonably requires.

(7) Subject to paragraph 6(7), if within a reasonable period, being not less than 28 days from the date when a notice under paragraph 6(5) is served upon TfL, it has failed to begin taking steps to comply with the requirements of the notice and subsequently to make reasonably expeditious progress towards their implementation, the Agency may execute the works specified in the notice and any expenditure incurred by it in so doing is recoverable from TfL.

(8) In the event of any dispute as to whether paragraph 6(5) is properly applicable to any work in respect of which notice has been served under that paragraph, or as to the reasonableness of any requirement of such a notice, the Agency must not except in an emergency exercise the powers conferred by paragraph 6(6) until the dispute has been finally determined.

Maintenance of the flood defences

7.—(1) Subject to the provisions of this Schedule and except to the extent that the Agency or any other person is liable to maintain any drainage work and is not precluded by the exercise of the powers of this Order from doing so, TfL must from the commencement of the construction of the specified works until their completion maintain any drainage work which is situated within the limits of deviation or on land held by TfL for the purposes of or in connection with the specified works fit for purpose and where applicable to the statutory defence level (or such lower level as shall be agreed with the Agency) and free from obstruction, whether or not the drainage work is to be constructed under the powers of this Order or is already in existence.

(2) If any such work that TfL is liable to maintain under sub-paragraph (1) is not maintained to the reasonable satisfaction of the Agency, the Agency may by notice in writing require TfL to repair and restore the work, or any part of it, or (if TfL so elects and the Agency in writing consents, such consent not to be unreasonably withheld), to remove the work and restore the site to its former condition, to such extent and within such limits as the Agency reasonably requires.

(3) If, within a reasonable period being not less than 20 business days beginning with the date on which a notice in respect of any work is served under paragraph 7(2) on TfL, that person has failed to begin taking steps to comply with the reasonable requirements of the notice and has not thereafter made reasonably expeditious progress towards their implementation, the Agency may do what is necessary for such compliance and may recover any expenditure reasonably incurred by it in doing so from that person.

(4) In the event of any dispute as to the reasonableness of any requirement of a notice served under paragraph 7(2), the Agency must not, except in a case of immediate foreseeable need, exercise the powers of paragraph 7(3) until the dispute has been finally determined.

Emergency powers

8.—(1) Subject to sub-paragraph (4), if by reason of the construction of any specified work or any other development authorised by this Order or the failure of any such work the efficiency or effectiveness of any drainage work or the conservation value of the aquatic habitat is impaired, or that drainage work is otherwise damaged, so as to require remedial action, such impairment or damage must be made good by TfL to the reasonable satisfaction of the Agency.

(2) If such impaired or damaged drainage work is not made good to the reasonable satisfaction of the Agency, the Agency may by notice in writing require TfL to restore it to its former standard of efficiency or where necessary to construct some other work in substitution for it.

(3) If, within a reasonable period being not less than 28 days beginning with the date on which a notice in respect of impaired or damaged drainage work is served under paragraph 8(2) on TfL TfL has failed to begin taking steps to comply with the requirements of the notice and has not thereafter made reasonably expeditious progress towards its implementation, the Agency may do what is necessary for such compliance and may recover any expenditure reasonably incurred by it in so doing from TfL.

(4) In the event of any dispute as to the reasonableness of any requirement of a notice served under paragraph 8(2), the Agency must not except in a case of immediate foreseeable need exercise the powers conferred by paragraph 8(3) until the dispute has been finally determined in accordance with paragraph 12.

(5) In any case where immediate action by the Agency is reasonably required in order to secure that the imminent flood risk or damage to the environment is avoided or reduced, the Agency may take such steps as are reasonable for the purpose and may recover from TfL the reasonable cost of so doing provided that the notice specifying those steps is served on TfL as soon as it is reasonably practicable after the Agency has taken or commence to take the steps specified in the notice.

Protection for fish and fisheries

9.—(1) TfL must take all such measures as may be reasonably practicable to prevent any interruption of the free passage of fish in any fishery during the construction of any specified work.

(2) If by reason of—

- (a) the construction of any specified work; or
- (b) the failure of any such specified work,

damage to a fishery is caused, or the Agency has reason to expect that such damage may be caused, the Agency may serve notice on TfL requiring it to take such steps as may be reasonably practicable to make good the damage or, as the case may be, to protect the fishery against such damage.

(3) If, within such time as may be reasonably practicable for that purpose after the receipt of written notice from the Agency of any damage or expected damage to a fishery, TfL fails to take such steps as are described in paragraph 9(1), the Agency may take such steps as are reasonable for the purpose and may recover from TfL the reasonable cost of so doing provided that the notice specifying those steps is served on TfL as soon as is reasonably practicable after the Agency has taken, or commenced to take the steps specified in the notice.

Indemnities and costs

10.—(1) TfL is responsible for and must indemnify the Agency against all financial liabilities, claims, demands proceedings, costs, expenses, damages and losses (including but not limited to any direct, indirect or consequential losses, loss of reputation and all interest, penalties and legal costs calculated on a full indemnity basis) and all other professional costs and expenses not otherwise provided for in this Part of this Schedule which may be reasonably incurred or suffered by the Agency by reason of—

- (a) the construction or operation or maintenance of any specified works comprised within the authorised development or the failure of any such works comprised within them; or
- (b) any act or omission of TfL, its employees, contractors or agents or others whilst engaged upon the construction or operation or maintenance of the authorised works or dealing with any failure of the authorised works,

and TfL must indemnify and keep indemnified the Agency from and against all claims and demands arising out of or in connection with the authorised works or any such failure, act or omission.

(2) The fact that any act or thing may have been done—

(a) by the Agency on behalf of TfL; or

(b) by TfL, its employees, contractors or agents in accordance with plans or particulars submitted to or modifications or conditions specified by the Agency, or in a manner approved by the Agency, or under its supervision or the supervision of its duly authorised representative;

does not (if it was done or required without negligence on the part of the Agency or its duly authorised representative, employee, contractor or agent) excuse TfL from liability under the provisions of this paragraph.

(3) The Agency must give TfL reasonable notice of any such claim or demand as is referred to in paragraph 10(1), and no settlement or compromise of any such claim or demand can be made without the prior consent of TfL.

Notices

11. All notices under this Part of the Schedule are to be sent to the Agency by email at PSO-Thames@environment-agency.gov.uk and PSO.SELondon&NKent@environment-agency.gov.uk unless otherwise agreed in writing.

Dispute resolution

12. Any difference or dispute arising between TfL and the Agency under this Part of this Schedule is to be determined by arbitration in accordance with article 67(arbitration) unless otherwise agreed in writing between TfL and the Agency.

PROTECTIVE PROVISIONS FOR THE BENEFIT OF THE ENVIRONMENT AGENCY

1. The following provisions apply for the protection of the Environment Agency unless otherwise agreed in writing between TfL and the Agency.

Definitions

2. In this Schedule—

“the Agency” means the Environment Agency;

“asset control limits” means the predefined values, based on assessment, relating to safety and serviceability considerations that instigate a review of risk to the flood defences with respect of movement impacts;

“authorised work” means any work forming part of the authorised development;

“baseline monitoring” means any surveys carried out to determine and establish movements of the flood defences due to factors external to the authorised work including (but not limited to) seasonal variations or diurnal impacts due to tide or temperature;

“construction” includes execution, placing, altering, replacing, relaying, removal and excavation and “construct” and “constructed” is to be construed accordingly;

“damage” includes (but is not limited to) scouring, erosion, loss of structural integrity and environmental damage to any drainage work or any flora or fauna dependent on the aquatic environment, and “damaged” is to be construed accordingly;

“detailed designs” means any information submitted under paragraph 4(1);

“drainage work” means any main river and any bank, wall, embankment or other structure, or any appliance, constructed or used for land drainage, flood defence or tidal monitoring or flood storage capacity;

“Ecological Enhancements” means the inclusion of any features integral to or adjacent to the foreshore structures and any new, modified, or replaced flood defences that can support wildlife. This includes, but is not limited to, where practicable, the set back of flood defences to provide inter tidal habitat and the creation of shelters for juvenile fish;

“environmental duties” means the Agency’s duties in the Environment Act 1995, the Natural Environment and Rural Communities Act 2006 and the Water Environment (Water Framework Directive)(England and Wales) Regulations 2003 (SI 2003 no 3242);

“fishery” means any waters containing fish and fish in, or migrating to or from such waters and the spawn, spawning grounds or food for such fish;

“the flood defences” means any bank, wall, embankment, bridge abutments, lock gates or other structure or any appliance (including any supporting anchorage system) that fulfils a function of preventing, or reducing the risk of, flooding to land or property ~~which is —~~

~~(a) within the Order limits; or~~

~~(b) within the 1mm settlement contour for the final tunnel alignment;~~

“flood storage capacity” means any land, which, taking account of the flood defences, is expected to provide flood storage capacity for any main river;

“main river” means all watercourses shown as such on the statutory main river maps held by the Agency and the Department of Environment, Food and Rural Affairs, including any structure or appliance for controlling or regulating the flow of water into, in or out of the channel;

“maintenance” has the same meaning as in article 2(1), save for the exclusion of the works of inspection;

“specified day” means the business day on which detailed designs of that work are received by the Agency under paragraph 4(1) and for the avoidance of doubt if any further information is requested by the Agency under paragraph 4(1)(g), the specified day is the business day on which the Agency receives this information from TfL;

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Comment [BC1]: EA does not agree definition needs to be limited in this way

“specified work” means so much of any permanent or temporary work or operation forming part of the authorised work (other than works required in an emergency) as is in, on, under or over a main river or drainage works or within 16 metres of a drainage work or is otherwise likely to—

- (a) affect any drainage works or the volumetric rate of flow of water in or flowing to or from any drainage works; or
- (b) affect the flow, purity or quality of water in any main river or other surface waters or ground water; or
- (c) cause obstruction to the free passage of fish or damage to any fishery; or
- (d) affect the conservation, distribution or use of water resources; or
- (e) affect the conservation value of the main river and habitats in its immediate vicinity;

“statutory defence level” means ~~±5.18m~~ AOD in relation to the flood defences coloured in red and 5.23 AOD in relation to the flood defences coloured blue on the Statutory Defence Levels Plan;

Comment [BC2]: EA requires maintenance of flood defences to these levels

“the Statutory Defence Levels Plan” means the plan [.....]

“the structural integrity plans” means the plans and documents to be provided to the Agency under paragraph 3; and

“TE2100” means the standards associated with the strategy for managing flood risk across the Thames estuary, including recommendations for action in short, medium and long term time periods to take account of sea level rise and climate change, as adopted and updated from time to time by the Environment Agency.

Structural integrity of flood defences

3.—(1) Prior to commencing the first authorised work likely to impact a flood defence and at least at the same time as submitting any submissions for approval in respect of the first specified work under paragraph 4, TfL must prepare at its own expense and provide to the Agency (for its approval where stated below), the following documents in the corresponding order (but nothing precludes TfL from submitting more than one document to the Agency at a time)—

- (a) a schedule of defects existing in the flood defences including, where reasonably practicable, a description of the magnitude of any defect;
- (b) a survey plan, for approval by the Agency, to include details of any further surveys [and intrusive investigations] of the flood defences proposed to be undertaken by TfL to inform the detailed design process, construction methodology and mitigation proposals;
- (c) an assessment report, to—
 - (i) include details of the structural integrity of the flood defences in light of any proposed authorised works;
 - (ii) include asset control limits of any sections of the flood defences; and
 - (iii) identify any sections of the flood defences requiring protective works by reason of the authorised works,

such report to be based on the findings of the additional surveys carried out by TfL under the survey plan under sub-paragraph (b), the schedule of defects provided under sub-paragraph (a) and any available historical information;

- (d) a mitigation design report (or reports), for approval by the Agency, to include details of the protective works identified by the assessment report provided under sub-paragraph (c) that—
 - (i) are necessary before; or
 - (ii) may be required to be implemented as an action under the emergency preparedness plan provided under sub-paragraph (f) during or after,the construction of the authorised development and that such details will—
 - (iii) be sensitive to the foreshore and hydraulic regime; and

- (iv) not prevent the relevant sections of the flood defences being raised to TE2100 levels in future and such standards being maintained;
 - (e) an instrumentation and monitoring plan, for approval by the Agency, to include, in respect of the flood defences—
 - (i) details of monitoring locations (which must be established having regard to the asset control limits);
 - (ii) details of monitoring in respect of scour of any flood defence within the Order limits;
 - (iii) the frequency of monitoring (which must, as a minimum, be until (a) the rate of settlement experienced by the flood defences directly attributable to the authorised development ceases or is less than or equal to 2 millimetres per annum; or (b) the period of 2 years has expired following the completion of the authorised development, whichever is later); and
 - (iv) the minimum amount of baseline monitoring; and
 - (f) an emergency preparedness plan, for approval by the Agency, to include details as to what actions TfL will take, including the implementation of any mitigation identified in the mitigation design report (or reports) approved under sub-paragraph (d), in respect of the asset control limits identified in the assessment report provided under sub-paragraph (c), including timescales and the hierarchy of actions.
- (2) TfL must, ~~where relevant~~, implement and act in accordance with the approved structural integrity plans.
- (3) Any protective work identified as being required by the structural integrity plans is to be treated as a specified work for the purposes of this Part of this Schedule.
- (4) Following completion of the authorised development, TfL must prepare at its own expense and provide to the Agency, a completion report, to include details of—
- (a) any modifications or mitigation measures to be implemented in respect of the flood defences;
 - (b) illustrations in respect of the interactions between ground movement relating to the flood defences and construction activities;
 - (c) actual ground movement in respect of the flood defences compared to predicted ground movement;
 - (d) the results of a post-construction defects survey but only in relation to any differences identified when compared to the schedule of defects provided to the Agency under sub-paragraph (1)(a);
 - (e) any remedial works undertaken by TfL to the flood defences; and
 - (f) final as-built drawings and plans of the parts of the authorised development situated within 16 metres of a flood defence.

Specified works

4.—(1) Before commencing construction of a specified work (excluding any piling works which are licensable marine activities under s66 Marine and Coastal Access Act 2009), TfL must submit to the Agency for its written approval—

- (a) plans, calculations, cross-sections, elevations, drawings, specifications and designs of the specified work together with the details of the positioning of any structure within the main river;
- (b) proposals for strengthening, modification, renewal or replacement of any drainage work required as a result of the anticipated impacts of the specified work;
- (c) any proposed mitigation measures to minimise the impact of the specified work on the foreshore, ecologically sensitive areas and the wider environment;

Comment [BC3]: The EA wishes to be able to consent piling work which will not be controlled under the DML

- (d) details of any Ecological Enhancements which are considered by TfL to be appropriate and reasonable to be incorporated into the specified work having regard to the nature of the specified work;
- (e) method statements in respect of the specified work to include both timing of and methods used, sequence of construction and the type, location and storage of all machinery, materials and fuel;
- (f) any proposals for reinstatement of the foreshore setting out timing of reinstatement works, measures to be used to minimise environmental impact of the works, materials to be used, methods of reinstatement and any proposed pollution protection measures;
- (g) information to demonstrate that the Agency will be afforded sufficient access to drainage works within the Order limits and the flood defences during the construction of the specified work to discharge its statutory functions; and
- (h) such further particulars as the Agency may within 20 business days of the receipt of the detailed designs reasonably require.

(2) Any such specified work must not be constructed except in accordance with all detailed designs as may be approved in writing by the Agency under paragraph 4(1) [(having regard to any structural integrity plans approved under paragraph 3)], or settled in accordance with paragraph 12 where applicable, and in accordance with any reasonable conditions or requirements specified under this paragraph.

Approvals

5.—(1) Any approval of the Agency required under paragraph 3(1) or 4(1)—

- (a) must not be unreasonably withheld;
- (b) in the case of a refusal, must be accompanied by a statement of the grounds of refusal;
- (c) may be given subject to such reasonable requirements or conditions as the Agency may make for the protection of any drainage work, flood defence, fishery, main river or water resources, or for the prevention of flooding or pollution or in the discharge of its environmental duties; and
- (d) is deemed to have been refused if it is neither given nor refused within 35 business days of the specified day unless otherwise agreed.

(2) Without limitation on the scope of paragraph 5(1) the requirements or conditions which the Agency may make under paragraph 5(1) include conditions requiring TfL at its own expense to construct such protective works (including any new works as well as alterations to existing works) as are reasonably necessary—

- (a) to safeguard any drainage work or flood defence against damage;
- (b) to secure that its efficiency or effectiveness for flood defence purposes is not impaired; or
- (c) to ensure the risk of flooding is not otherwise increased by reason of any specified work, maintenance work or protective work,

during the construction of or by reason of the works.

(3) Any dispute in respect of any approval or refusal under this paragraph is subject to the dispute resolution procedure in paragraph 12.

Inspection and construction

6.—(1) All works must be constructed without unnecessary delay in accordance with the detailed designs or plans approved or settled under this part of this Schedule and to the reasonable satisfaction of the Agency.

(2) Save where TfL constructs a specified work in accordance with any detailed designs or plans approved by the Agency under paragraph 4, ~~or as is otherwise authorised by this Order~~, TfL must not damage or obstruct any drainage work during the construction of a specified work.

(3) An officer of the Agency is entitled to watch and inspect the construction of any works.

Comment [BC4]: All damage or obstruction to any drainage work should be subject to EA approval

(4) TfL must give to the Agency not less than 10 business days' notice in writing of its intention to commence construction of specified works and notice in writing of its completion not later than five business days after the date on which it is completed.

(5) If the Agency reasonably requires, TfL must construct all or part of any protective works so that they are in place prior to the carrying out of any specified work to which they relate.

(6) If any part of a work is constructed otherwise than in accordance with the requirements of this Part of this Schedule, the Agency may by notice in writing require TfL at TfL's own expense to comply with the requirements of this part of this Schedule or if TfL so elects (and the Agency in writing consents, such consent not to be unreasonably withheld or delayed) to remove, alter or pull down the work and, where removal is required, to restore the site to its former condition to such extent and within such limits as the Agency reasonably requires.

(7) Subject to paragraph 6(7), if within a reasonable period, being not less than 28 days from the date when a notice under paragraph 6(5) is served upon TfL, it has failed to begin taking steps to comply with the requirements of the notice and subsequently to make reasonably expeditious progress towards their implementation, the Agency may execute the works specified in the notice and any expenditure incurred by it in so doing is recoverable from TfL.

(8) In the event of any dispute as to whether paragraph 6(5) is properly applicable to any work in respect of which notice has been served under that paragraph, or as to the reasonableness of any requirement of such a notice, the Agency must not except in an emergency exercise the powers conferred by paragraph 6(6) until the dispute has been finally determined.

Maintenance of the flood defences

~~7. (1) Subject to the provisions of this Schedule and except to the extent that the Agency or any other person is liable to maintain any drainage work and is not precluded by the exercise of the powers of this Order from doing so, TfL must from the commencement of the construction of the specified works until their completion maintain in good repair and condition and free from obstruction any drainage work which is situated within the limits of deviation or on land held by TfL for the purposes of or in connection with the specified works fit for purpose and where applicable to the statutory defence level (or such lower level as shall be agreed with the Agency) and free from obstruction, whether or not the drainage work is to be constructed under the powers of this Order or is already in existence.~~

~~(2) In so far as any drainage work mentioned in sub-paragraph (1) comprises any part of the flood defences, then it must be maintained under sub-paragraph (1) to the same standard of repair and condition as the schedule of defects and assessment report prepared under paragraph 3(1) showed it to be in before commencement of the specified works.~~

~~(2) If any such work that TfL is liable to maintain under sub-paragraph (1) is not maintained to the reasonable satisfaction of the Agency, the Agency may by notice in writing require TfL to repair and restore the work, or any part of it, or (if TfL so elects and the Agency in writing consents, such consent not to be unreasonably withheld), to remove the work and restore the site to its former condition, to such extent and within such limits as the Agency reasonably requires.~~

~~(3) If, within a reasonable period being not less than 20 business days beginning with the date on which a notice in respect of any work is served under paragraph 6(2) on TfL, that person has failed to begin taking steps to comply with the reasonable requirements of the notice and has not thereafter made reasonably expeditious progress towards their implementation, the Agency may do what is necessary for such compliance and may recover any expenditure reasonably incurred by it in doing so from that person.~~

~~(4) In the event of any dispute as to the reasonableness of any requirement of a notice served under paragraph 6(2), the Agency must not, except in a case of immediate foreseeable need, exercise the powers of paragraph 6(4) until the dispute has been finally determined.~~

~~(5) If any maintenance of a drainage work carried out by TfL under sub-paragraph (1) is not required as a result of, or is not attributable to the construction of the specified works, then TfL~~

Comment [BC5]: EA reasons for seeking this paragraph set out in covering letter

Comment [BC6]: EA reasons for not accepting this paragraph set out in covering letter

Comment [BC7]: These protective provisions are between the EA and TfL – these provisions are not appropriate for inclusion for that reason and in any event EA does not believe such provisions would necessarily be legally enforceable against third parties who have not agreed to them – TfL would need to agree separately with them

~~may recover the expenditure reasonably incurred by it in maintaining the drainage work from the person who is ordinarily liable to maintain that work.~~

~~(7) In the event that the Agency recovers from TfL any expenditure for work carried out by it under sub-paragraph (4) in respect of maintenance that is not required as a result of, or is not attributable to the construction of the specified works, then TfL may in turn recover from the person who is ordinarily liable to maintain the drainage work so much of that expenditure as that person would ordinarily have incurred in maintaining the work.~~

Emergency powers

8.—(1) Subject to sub-paragraph (4), if by reason of the construction of any specified work or any other development authorised by this Order or the failure of any such work the efficiency or effectiveness of any drainage work or the conservation value of the aquatic habitat is impaired, or that drainage work is otherwise damaged, so as to require remedial action, such impairment or damage must be made good by TfL to the reasonable satisfaction of the Agency.

(2) If such impaired or damaged drainage work is not made good to the reasonable satisfaction of the Agency, the Agency may by notice in writing require TfL to restore it to its former standard of efficiency or where necessary to construct some other work in substitution for it.

(3) If, within a reasonable period being not less than 28 days beginning with the date on which a notice in respect of impaired or damaged drainage work is served under paragraph 8(2) on TfL TfL has failed to begin taking steps to comply with the requirements of the notice and has not thereafter made reasonably expeditious progress towards its implementation, the Agency may do what is necessary for such compliance and may recover any expenditure reasonably incurred by it in so doing from TfL.

(4) In the event of any dispute as to the reasonableness of any requirement of a notice served under paragraph 8(2), the Agency must not except in a case of immediate foreseeable need exercise the powers conferred by paragraph 8(3) until the dispute has been finally determined in accordance with paragraph 12.

(5) In any case where immediate action by the Agency is reasonably required in order to secure that the imminent flood risk or damage to the environment is avoided or reduced, the Agency may take such steps as are reasonable for the purpose and may recover from TfL the reasonable cost of so doing provided that the notice specifying those steps is served on TfL as soon as it is reasonably practicable after the Agency has taken or commence to take the steps specified in the notice.

Protection for fish and fisheries

9.—(1) TfL must take all such measures as may be reasonably practicable to prevent any interruption of the free passage of fish in any fishery during the construction of any specified work.

(2) If by reason of—

- (a) the construction of any specified work; or
- (b) the failure of any such specified work,

damage to a fishery is caused, or the Agency has reason to expect that such damage may be caused, the Agency may serve notice on TfL requiring it to take such steps as may be reasonably practicable to make good the damage or, as the case may be, to protect the fishery against such damage.

(3) If, within such time as may be reasonably practicable for that purpose after the receipt of written notice from the Agency of any damage or expected damage to a fishery, TfL fails to take such steps as are described in paragraph 9(1), the Agency may take such steps as are reasonable for the purpose and may recover from TfL the reasonable cost of so doing provided that the notice specifying those steps is served on TfL as soon as is reasonably practicable after the Agency has taken, or commenced to take the steps specified in the notice.

Indemnities and costs

10.—(1) TfL is responsible for and must indemnify the Agency against all financial liabilities, claims, demands proceedings, costs, expenses, damages and losses (including but not limited to any direct, indirect or consequential losses, loss of reputation and all interest, penalties and legal costs calculated on a full indemnity basis) and all other professional costs and expenses not otherwise provided for in this Part of this Schedule which may be reasonably incurred or suffered by the Agency by reason of—

- (a) the construction or operation or maintenance of any specified works comprised within the authorised development or the failure of any such works comprised within them; or
- (b) any act or omission of TfL, its employees, contractors or agents or others whilst engaged upon the construction or operation or maintenance of the authorised works or dealing with any failure of the authorised works,

and TfL must indemnify and keep indemnified the Agency from and against all claims and demands arising out of or in connection with the authorised works or any such failure, act or omission.

(2) The fact that any act or thing may have been done—

- (a) by the Agency on behalf of TfL; or
- (b) by TfL, its employees, contractors or agents in accordance with plans or particulars submitted to or modifications or conditions specified by the Agency, or in a manner approved by the Agency, or under its supervision or the supervision of its duly authorised representative;

does not (if it was done or required without negligence on the part of the Agency or its duly authorised representative, employee, contractor or agent) excuse TfL from liability under the provisions of this paragraph.

(3) The Agency must give TfL reasonable notice of any such claim or demand as is referred to in paragraph 10(1), and no settlement or compromise of any such claim or demand can be made without the prior consent of TfL.

Notices

11. All notices under this Part of the Schedule are to be sent to ~~the Agency~~ by email at PSO-Thames@environment-agency.gov.uk and PSO.SELondon&NKent@environment-agency.gov.uk unless otherwise agreed in writing.

Dispute resolution

12. Any difference or dispute arising between TfL and the Agency under this Part of this Schedule is to be determined by arbitration in accordance with article 67(arbitration) unless otherwise agreed in writing between TfL and the Agency.