From: [redacted]
To: Southampton to London Pipeline Project
Subject: Increase of carbon emissions
Date: 05 March 2020 12:12:03

Sirs

Following the Court of Appeal ruling on Thursday, 27 February 2020, concerning the legality of the government's approval of Heathrow expansion, how much impact will the proposed new Esso pipeline have on carbon dioxide emissions?

The pipeline will have two impacts on carbon dioxide (CO2) emissions: during construction and in operation.

(A) Construction

(i) Destruction of trees and vegetation. The amount of CO2 produced by the felling of trees and grubbing up of hedgerows and shrubs will depend upon how this vegetation is destroyed. Burning will release all the carbon stored in the trees and vegetation. This could be reduced if burning of vegetation is prohibited.

However, for the worst case, we shall assume that felled trees and removed vegetation will be burnt. Thus carbon sequestered in the vegetation will be released as CO2. Since the Applicant had not calculated the total number of trees to be felled, we will have to estimate. It would be very reasonable to assume a loss of 5 tonnes of vegetation per kilometre. Thus we shall assume a total loss of 450 tonnes for the length of the pipeline. Burning would generate 1,651.5 tonnes of CO2.

(ii) Loss of trees and vegetation for carbon sequestration. Once removed the trees and vegetation lost under (i) will not be available to absorb carbon dioxide from the atmosphere. This will lead to a nett increase in carbon emissions in that existing annual emissions will no longer be absorbed and will remain in the atmosphere. Ignoring hedgerow, shrubs and grass, we shall assume that 500 trees will be felled. These will differ in age, size and weight, but it is a reasonable rule of thumb that an average size tree can absorb some 100 kgs of CO2 annually. Our 500 trees had been absorbing 50 tonnes of CO2 each year. This is now lost. Therefore, there will be a nett increase annually of 50 tonnes of CO2. And if construction takes 3 years, that would equate to an increase of 150 tonnes of CO2 in the atmosphere.

(iii) Construction traffic. Just normal construction traffic will produce additional carbon emissions - haulage vehicles, digging equipment, support vehicles. Without these construction works, these vehicles would not be in use on the project. We would expect Jacobs, on behalf of the Applicant, to produce a list of vehicles, the quantity required and for how long. From these data the quantity of carbon emitted by vehicles can be estimated.

In the absence of these data, we need to make further assumptions. A modern diesel truck loaded will emit over 80 kgs of CO2 for every 100 kms travelled. How many trucks will be used and how far will they travel? For this analysis, I shall assume two trucks travel the length of the pipeline and return, delivering lengths of pipe and sundry equipment. Thus, construction traffic could easily emit around 290 kgs of CO2.

(iv) Construction equipment. With the remote locations for construction work, we would expect significant use of diesel generators at construction sites, to power road traffic lighting and welding sets. Again the quantity and duration of hire will be estimated to fix the project budget. The carbon emissions can also be estimated from quantity, duration and frequency of use, which would be available from the project schedule.

(B) Operations

(i) The application is to replace the existing 10" pipeline with a 12" pipeline. We can make a rough calculation of the increased amount of aviation fuel that will become available at Heathrow. We know the internal diameter of the pipe and we can assume a flow rate of 3 metres per second. We can further assume that flow will be continuous, all day every day all year. We anticipate that over 6.9 million litres of fuel will be transported through the pipeline each year. This quantity of aviation fuel will produce well over 17,500 tonnes of CO2. The existing 10" pipeline produces some 12,000 tonnes of CO2 each year, a nett increase of 5,500 tonnes of CO2.

The Applicant has planned the pipeline to have a 60 year life expectancy. That will equate to 330,000 tonnes of CO2. This is not an insignificant increase in carbon emissions.

No allowance has been made for the quantity of fuel needed to fill the 90km pipeline, as this inventory will eventually be burnt.

(ii) Loss of trees and vegetation for carbon sequestration. After the loss of trees and vegetation during construction, time will be needed for replacement trees and vegetation to establish itself and grow sufficiently to re-establish the level of carbon sequestration prior to construction. Restoration of the ability of local trees and vegetation around the new pipeline could take up to 20-30 years. However, as the trees grow they will be able to absorb more CO2. Assuming that carbon sequestration recovers at 2 tonnes per year over 25 years, the nett impact from the loss of trees will increase CO2 emissions in the atmosphere by 628 tonnes.

In summary

Burning of Construction vegetation:	1,651 tonnes
Tree loss during Construction:	150 tonnes
Increased pipeline size to 12":	330,000 tonnes
Recovering sequestration capacity:	628 tonnes

The Southampton to London Pipeline project will increase the UK's CO2 emissions by **over 332,429 tonnes**. This is a significant breach of the Government's commitment under the Paris Agreement to cut CO2 emissions.

Yours

Malcolm Beecher
North Surrey Green Party
[redacted]