

# **Meridian Water Housing Infrastructure Fund Rail Enhancement scope options paper**

## **For discussion**

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## **Background**

Enfield Council is a leading partner in the bid to the Housing Infrastructure Fund (HIF), for financial support to enable Meridian Water, and other housing projects along the STAR railway route, to receive a better rail service and enable greater road capacity.

The investment is in turn aimed to accelerate the rate of progress with principal housing projects, and to stimulate a greater volume of housing provision and take up (including housing sales) along the Upper Lee Valley.

The current HIF bid was shortlisted by the Ministry of Housing, Communities and Local Government (MHCLG) earlier in 2018. A full bid is required by summer 2018, involving the GLA and council stakeholders, with submission in September to MHCLG. A decision may be announced in the Government's November 2018 budget, or later.

## **Context**

During 2012-15, Enfield Council, the GLA and other Upper Lee Valley stakeholders, and transport partners including Transport for London (TfL) and Network Rail, had backed a 4 trains per hour local service each way (4 tph), as part of the regeneration of the Upper Lee Valley Opportunity Area.

Provision of a 'walk-on' local train service was critical, to provide a trusted link into the Victoria Line and Liverpool Street trains at Tottenham Hale, and onwards to Stratford to access the Thames Gateway, Canary Wharf and the rest of Docklands, and the Central Line and Crossrail.

However, the Department for Transport (DfT) reprioritisation of plans to use of the Lee Valley main line tracks for outer suburban and Stansted trains, when it reached its decision in 2015 on the new franchise specification to be offered to bidders for the Anglia train services. The result of changes had resulted in the integrated service, with 2 tph local calls on the two main line tracks at Meridian Water and 2 tph on the new 3<sup>rd</sup> track (so 4 trains an hour in total), was reduced to be 2 tph on the 3<sup>rd</sup> track – a train every half-hour – plus occasional peak periods calls on the main line tracks – effectively a '2+' tph service.

HIF provides an important opportunity to redress the balance, and invest in some extra infrastructure which in turn will enable the desired services to be re-instated, from about 2021 onwards. This timescale usefully aligns with the likely delivery dates for the first major tranches of new housing on the Meridian Water site.

## Progress towards the HIF bid

Since this time, a work stream has been on going including a wider number of interested stakeholders to review how to achieve the 4tph service. The West Anglia Main Line (WAML) is a very congested route and priority is given to the high revenue (central London to the outer suburban commuter belt) and strategic route of the 15 min interval Stanstead Express.

During 2016/17 extensive optioneering work had been undertaken with Network Rail to review how additional capacity could be provided at Meridian Water. After Enfield submitted its EOI in September 2017, Enfield took the lead (as it had with the MW station development) and with the possibility of being able to secure funding, its consultants investigated all options to achieve a minimum 4tph.

A critical element is to define the best options for the transport infrastructure and rail services, which achieve the best value outcomes for the MHCLG target outputs. Put simply, this means that there should be a clear link between the required rail infrastructure and new housing e.g. the business case must demonstrate that 4 tph is required to sell or service the new housing.

The project team has reviewed five principal rail service options for the immediate HIF bid, then reduced that to a more practical short list of three, which achieved 4 tph or better at Meridian Water. These were Options 1A, 1B and 2C. Two of these initially achieved 4 tph or better at the neighbouring Haringey station at Northumberland Park. A revision to the third option means that all three short-listed options now achieve the 4 tph or better target at Meridian Water and its neighbour.

A more detailed assessment is now in hand. The emerging results favour Option 2C, both in terms of transport assessments such as benefit/cost ratio, and net cash return, and also in terms of the wider advantages and outcomes for housing as defined by MHCLG. This should be a win-win.

### What is Option 2C?

This is best explained by describing briefly the preceding elements:

(1) the planned '2+' tph service from **May 2019**

(2) early thoughts for a simple high-frequency shuttle train (**Options 1A and 1B**).

**Option 2C is an amalgam of these and also requires additional infrastructure, for its timetable.**

**May 2019's** 2+ tph service relies on using more intensively the trains which provide the present half-hourly Hertfordshire-Tottenham Hale-Lea Bridge-Stratford route ('HS' trains), shown **black** below. Most of these wait at Stratford for over 20 minutes, before resuming their return journey, because of the timing requirements on the Lee Valley main line. <sup>1</sup>

By heading north sooner from Stratford, these trains have enough time to get to Meridian Water on the new 3<sup>rd</sup> track, calling at all stations as a STAR train (shown **red** below), come back after a few

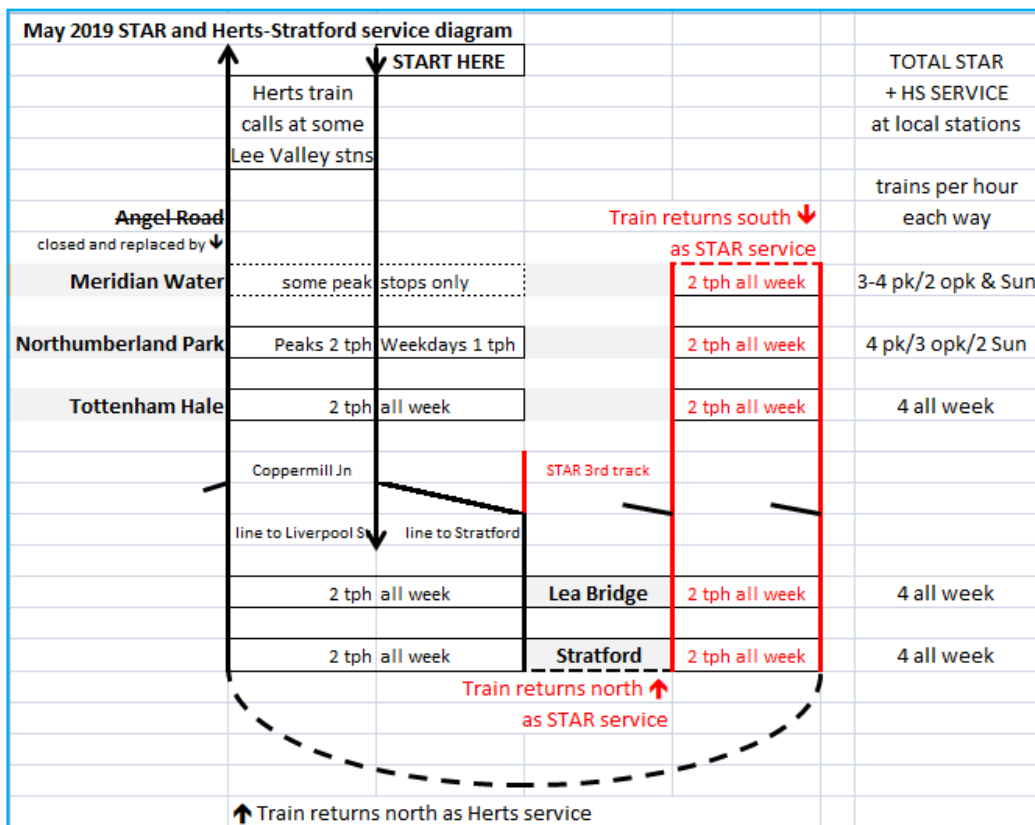
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<sup>1</sup> Trains are 'flighted' on the 2-track Lee Valley railway, with the slower, local trains required to follow in the footsteps of the faster trains to Stansted and Cambridge. At present, HS trains have an enforced long wait at Stratford, to slot in at the right time at Coppermill Junction, on the return journey northwards.

minutes, and then resume a service to Hertfordshire only a half-hour later than before. This needs just one extra train in use.

The time taken to shuttle to and from Meridian Water on the 3<sup>rd</sup> track, 25 minutes or less, means that there is no need with a half-hourly service for any extra passing loop or platforms. It is an electrified single track, with 3<sup>rd</sup> platforms at Tottenham Hale, Northumberland Park and Meridian Water.

This has an important bearing on the proposed HIF options, because with the infrastructure now under construction there will be no margin to accommodate any more trains while retaining a through STAR service to Meridian Water. Existing main line calls would however be retained.



**Options 1A and 1B** are low capital cost options, and concentrate on splitting the 3<sup>rd</sup> track into two operating sections, with a high-frequency 4 tph **“North STAR”** shuttle service ‘locked-in’ to the Tottenham Hale-Meridian Water section of line.

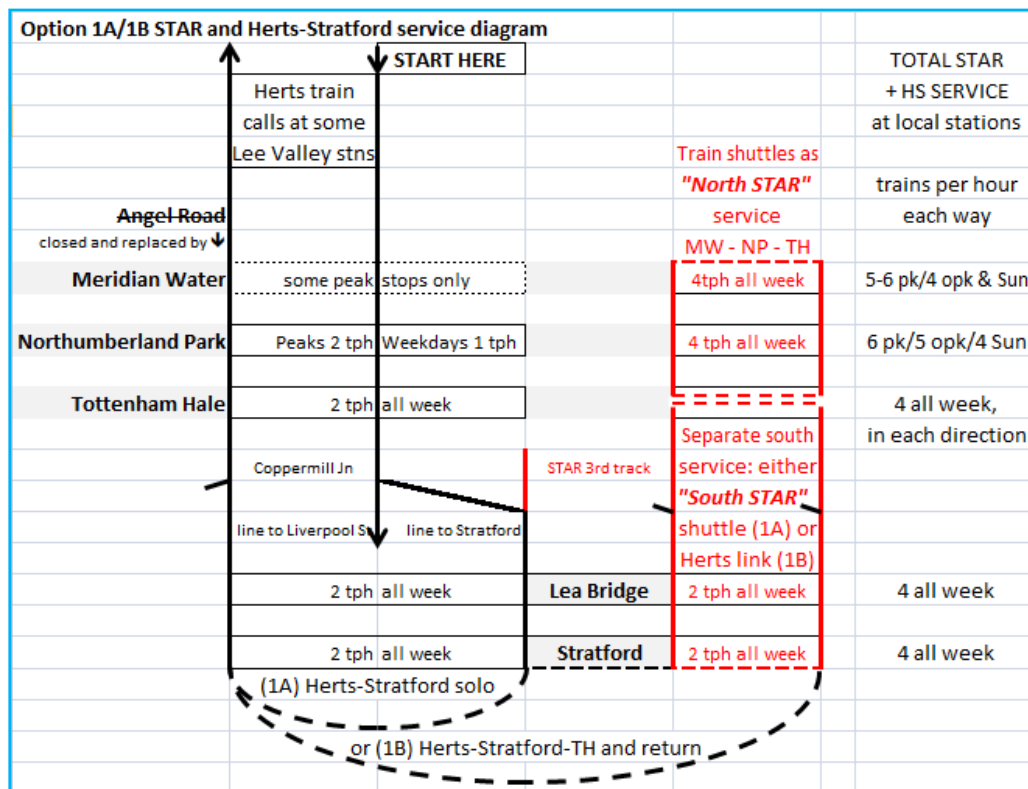
This achieves the 4 tph ‘walk-on’ objective at Meridian Water and Northumberland Park stations, connecting at Tottenham Hale with the London and regional rail and tube networks, including the Victoria Line, Liverpool Street, Stratford and West Anglia trains.

The penalty is an enforced interchange to/from Stratford at Tottenham Hale, for various parts of the week. However travel objectives via Stratford are a minority of journeys, so that a good frequency shuttle might be a price worth incurring.

Differences between 1A and 1B are whether (in 1A) the Stratford-Tottenham Hale extra service should be another stand-alone **“South STAR”** shuttle, or (in 1B) they should be allied to the Herts trains (as in

the May 2019 timetable). Extra signalling would be needed, to protect one train from meeting the other when they share the 3<sup>rd</sup> track. 1B would also require a lengthy platform extension at Tottenham Hale, as the Stratford train might be in Tottenham Hale at the same time as the “North STAR” shuttle.

Both options offer a 4 tph service north of Tottenham Hale, with a short journey time (4 minutes), and a requirement for two drivers, to speed the time to change ends and start off in the other direction (like tube drivers do at some termini, alighting from one train and taking a later one, while a second driver is ready to board at once). This would be needed on the “North STAR” shuttle, as otherwise only a 3 tph service could be run with one driver (with 6 minutes to change ends). Another train would be leased for this shuttle.



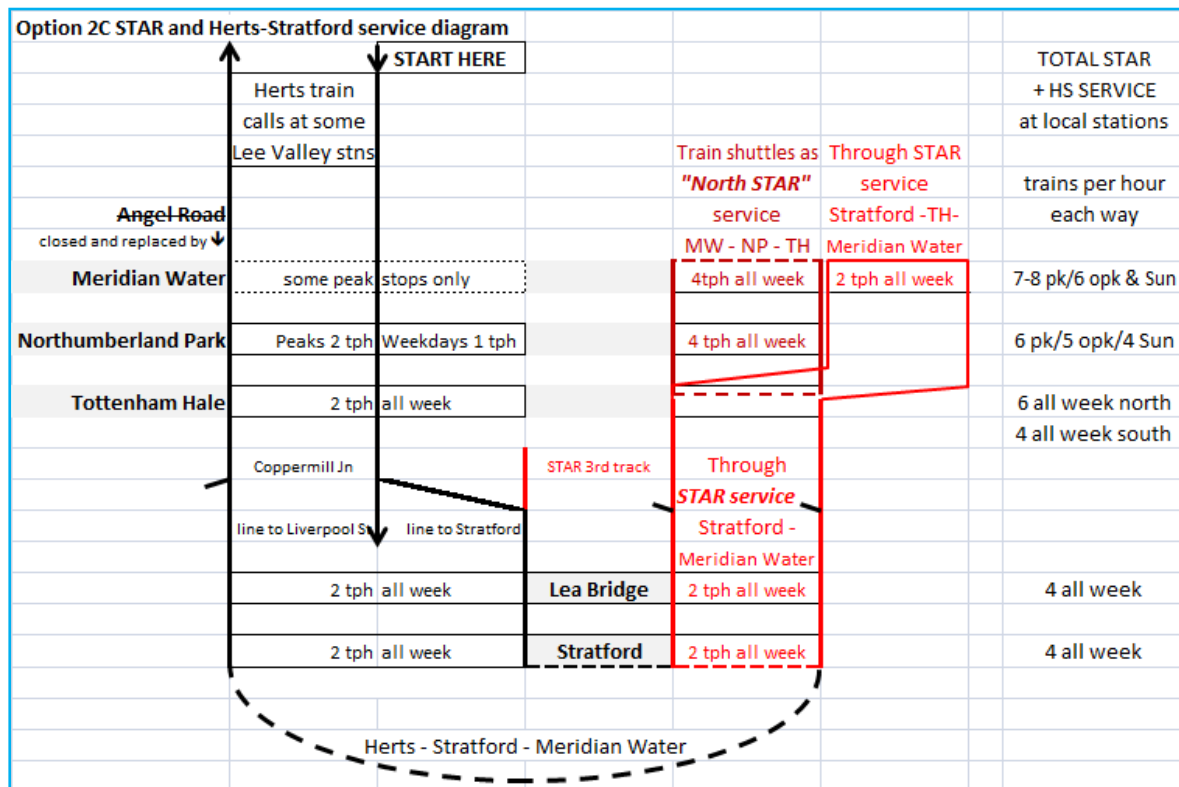
### Option 2C in detail

**Option 2C** aims to maximise service frequency on the Tottenham Hale-Meridian Water sector. It also aims to maintain the Option 1A/B service level achieved at Northumberland Park.

After reviewing two service choices for 2C, the better structure is to retain an Option 1A/B “North STAR” shuttle service at 4 tph between Tottenham Hale and Meridian Water, calling at Northumberland Park with this extra train and two drivers. Additionally the May 2019 through STAR service would be kept on a 2 tph basis, with a partial 4<sup>th</sup> track installed from north of Tottenham Hale to Meridian Water, so that this service could run independently of the “North STAR” shuttle.

Careful timetabling and signalling at Tottenham Hale would allow both STAR services to share the same 3<sup>rd</sup> platform at Tottenham Hale. However there is no space for a 4<sup>th</sup> platform at Northumberland Park so the through STAR trains would therefore run non-stop to Meridian Water.

Use of Automatic Train Operation is a possibility for the railway at Tottenham Hale and northwards, to improve service reliability and maximise use of the shared 3<sup>rd</sup> platform, and potentially also to accelerate the shuttle's turn-round times. The new Bombardier trains to be used on STAR are already equipped for easy conversion to ATO use.



Option 2C is a better service volume overall:

- 6-8 tph at Meridian Water, so a strong stimulus for developers and for new residents;
- a high connecting frequency with tubes and with main line trains at Tottenham Hale;
- maintains services to Stratford interchange;
- with the "North STAR" shuttle, maintains the best frequency at Northumberland Park (4-6 tph), compared to the alternative service choice of switching the track uses north of Tottenham Hale, which would reduce the frequency at Northumberland Park to 2-4 tph (as in May 2019).

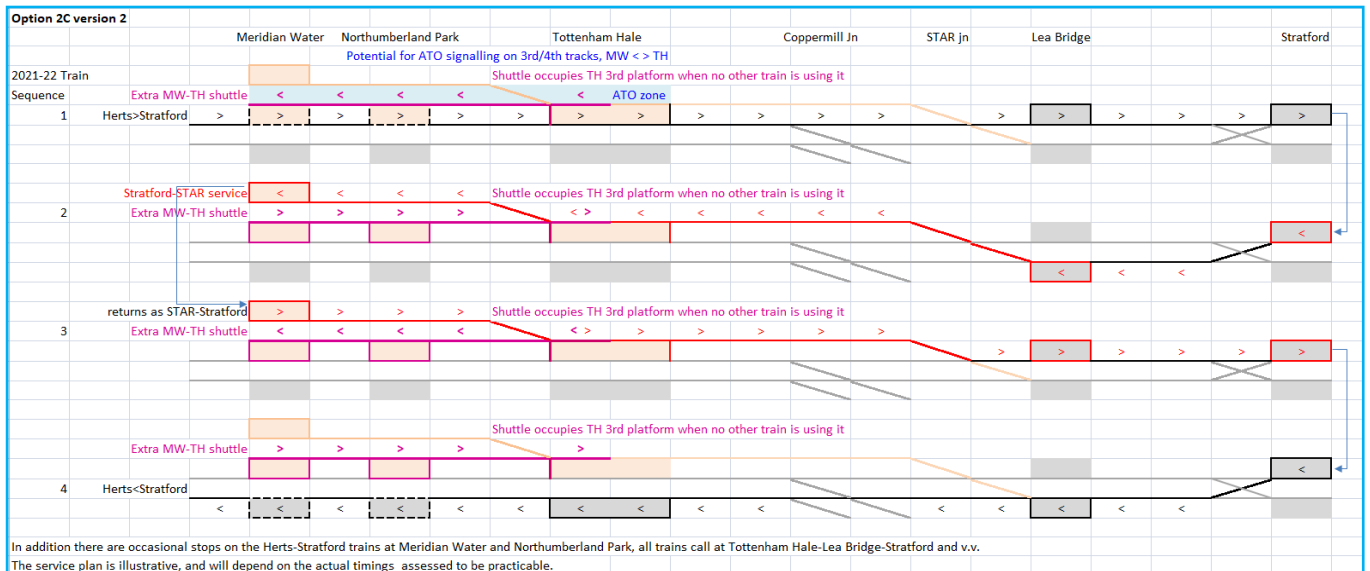
The higher frequencies will favourably assist higher Public Transport Accessibility Level (PTAL) at Meridian Water and Northumberland Park, and also at Tottenham Hale. This is an important methodology for planning and authorising higher development densities, under GLA planning rules.

Higher population levels will also improve rail benefits and revenues, so better rewarding the HIF investment and achieving better payback. Outline demand modelling and indicative costs, point to Option 2C achieving the highest net gain in public worth and achieving a 'good' Benefit-Cost Ratio of over 2 to 1, using the Department of Transport 'WebTAG' modelling rules over a 60 year project period. This BCR is before additional targeted housing zones are defined as a result of the PTAL changes, so it is expected that the final net worth and BCR will be greater still.

Diagrams are attached below for the operational service structure including shared use of the 3<sup>rd</sup> track and platform at Tottenham Hale, and also a table showing indicative service frequency and

operating hours. Part of the outline HIF proposal is to run the new services for a longer operating day, closer to tube hours of operation (eg from 5AM to after midnight), compared to the May 2019 timetable which will offer about 6AM to 11PM.

All diagrams have been prepared by JRC.



STAR and Herts-Stratford service levels		Option 2C Assumes that May 18 trains serving Angel Road are transferred to Meridian Water										
		Monday-Friday							Saturday		Sunday	
		Local peak taken as 07:00 to 09:59, 16:00 to 18:59										
		First time	Pre AM pk	AM Peak	Day offpk	PM Peak	Eve>21:59	22>end	Total day	Last time	All day	All day
Northbound												
Stratford	04:56	8	11	24	13	11	8	75	00:20	75	66	
Lea Bridge	05:01	7	11	24	13	11	8	74	00:25	75	66	
Tottenham Hale S	05:05	7	12	24	13	11	8	75	00:29	75	66	
Tottenham Hale N	05:06	12	23	42	23	22	16	138	00:30	97	78	
Northumberland Park	05:08	10	17	30	17	16	13	103	00:32	97	78	
Meridian Water	05:10	11	21	36	23	20	13	124	00:34	78	78	
Tottenham Hale N excludes trains not calling at Meridian Water or Northumberland Park												
Southbound												
Meridian Water	05:16	11	22	37	21	19	15	125	00:40	78	78	
Northumberland Park	05:18	10	18	30	18	16	12	104	00:42	96	78	
Tottenham Hale N	05:20 dep 5:23	12	24	42	24	22	16	140	00:44	96	78	
Tottenham Hale S	arr 5:26 05:32	7	12	24	12	12	8	75	00:45	74	67	
Lea Bridge	05:36	5	12	24	12	12	9	74	00:49	74	66	
Stratford	05:41	6	12	24	12	12	9	75	00:54	74	67	

An outline **scope of works** for Option 2C is provided below from CPMS material:

**Option 2c** (preferred) provides the requirements for 4 tracking from Tottenham Hale to Meridian Water (nearly 2.5 kilometres), but with the 4<sup>th</sup> Track bypassing Northumberland Park. This will require significant signalling, Track and Overhead electrification (OLE) works to allow for the 4<sup>th</sup> track arrangement with possibility of the need for Compulsory Purchase Order (CPO). 4 tracking does require re-work to the recently installed STAR line to allow for the infrastructure change with track, OLE and signalling being the most affected. This option would also require the opening up of the additional platform at Meridian Water. The indicative scale of capital costs is £30m, including risk and optimism bias. A separate cost review is being provided by *mbpc*.

It has also been noted as part of the GRIP 1 process that the installation of a 4<sup>th</sup> track through the Lea Valley has been identified as part of the Crossrail 2 scope, however this will not come to fruition for 15

years. The WAML (West Anglia Main Line) Project, has however allowed for passive provision for the 4 track where possible, which provides some further insight into the significant obstacles that exist for the options. This scheme could essentially form part of enabling works for the 4-tracking for Crossrail.