

# **Independent Programme Review and Report**

**covering the**

**WHHT Site Feasibility Report - 210820 - final**

**provided by**

**MN Planning Services Limited**

A Review of West Hertfordshire Hospitals NHS Trust's Selection of the existing  
Watford site for Emergency and Specialist Services



**MN Planning Services Ltd**

Mike Naxton MCIOB November 2020

# Independent Programme Review of the WHHT Site Feasibility Report

November 2020

## Contents

1. Purpose of the Review
2. Independent Reviewer
3. Executive Summary
4. WHHT Site Feasibility Report Programmes – Review and Analysis
  - a. Review of Report Programme
  - b. Review of Programme Structure and Contents and Logic
  - c. Review of Watford Site Programme Options E & F
  - d. Comparison Review Between the existing Watford Site Options and the New Site Options
  - e. Benchmark Build Period Review
  - f. Summary of Risks
5. WHHT Report Programmes and Impacts of the Review Finding
  - a. WHHT Report Programmes with Critical Path Analysis (CPA) Software
  - b. WHHT Report Programme – Programme A with Adjusted Programme Durations
  - c. WHHT Report Programme - Programme B Missing Programme Activities
  - d. WHHT Programme – Programme C with Works shown post FBC sign off
6. Conclusion

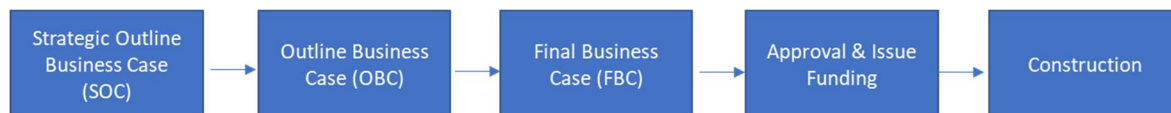
## Appendices – Programmes

- A. WHHT – Base RFLPS Programme Redraw
- B. WHHT – Programme A with Adjusted Build Periods
- C. WHHT – Programme B with Missing Programme Activities
- D. WHHT - Programme C with Reduced Risks & Works Post FBC Sign Off
- E. WHHT - Review Programme Overall Summary

## **1. Purpose of the Independent Review**

The objective of this review is to determine if the suggested programmes and time scales within the West Hertfordshire Hospitals Trust (WHHT) Site Feasibility Report (SFR) published in August 2020 meet the NHS process of project sign off (as detailed below) and to provide feedback on possible issues, durations and risks with the programmes, and to establish if the sites can be substantially complete to meet the HIP1 funding cut off deadline of the end of 2025.

The sequence of the NHS Approval Process to obtain funding is:



The following documents have been reviewed and referenced as part of the review process and should be read with this report for a full understanding of the proposed options, this report sets out to give a summation of the programme alternatives only

1. WHHT Site Feasibility Report (prepared by Royal Free Property Services – RFLPS) 210820 – final
2. WHHT Site Feasibility Report - Appendices 210820 – final
3. 20200918-WHHT-EC-options - framework-appraisal-0-8
4. WHHT/NIFES Six Facet Survey Exec Summary Ref 20532 -070918
5. WHHT Strategic Outline Case – July 2019 (SOC)

To allow direct comparison this report uses the same activity durations as are used in the WHHT Site Feasibility Report.

## **1. Independent Reviewer – Mike Naxton**

This review has been provided by MN Planning Services Limited, commissioned by the New Hospital Campaign and undertaken by Mike Naxton MCIOB.

### **Brief Career Resume**

The Reviewer has had extensive experience of programming and planning during his 47 years in the industry, becoming a Member of the Chartered Institute of Building in 1983.

For the last 35 years Mike has been a professional planner with both Tier 1 Main Contractors in pre and post Contract capacities covering a wide range of projects in the Commercial, Residential, Retail, Leisure, Education, Nuclear and Healthcare Sectors that included the Chelsea and Westminster Hospital development. Other roles include acting for the Client the ODA works at the £1.1b 2012 Olympic Athletes Village Accommodation. Provided in-house training covering planning techniques and software systems for Osbourne, Wates and Alfred McAlpine. Past responsibilities have also included Value and QA Management in the capacity of a qualified QA Auditor.

In the last 7 years Mike has established and successfully managed his own Planning & Programming Business working as a Consultant for a variety of Clients on Projects that have included forensic planning assignments.

## **2. Executive Summary**

The following summary provides a succinct overview of the findings from this Review of the WHHT Site Feasibility Report (SFR) undertaken by RFLPS, but it is recommended that the whole document is read to gain a clear understanding of the relevant considerations and reasons for the conclusions reached.

It is understood that deliverability of the possible options within the HIP1 timeframe is the Trust's primary focus. Their reason is to have the best chance of securing funding and being able to embark on improvement work as quickly as possible at the Watford Hospital Estate due to its very poor condition.

Whilst RFLPS have produced two programmes for each option - 'optimistic' and 'pessimistic', the only option that would be near to meeting the 2025 HIP1 delivery criterion, is Watford Option F, achieving substantial completion of the new Emergency Care building but excluding the remaining refurbishment of other buildings and adopting programme risks, and requiring circa £70m separate funding prior to the (Final Business Case) FBC funding being in place.

The completion dates set out in the SFR do not represent a like-for-like comparison, with options A-D representing totally new Emergency and Planned Care Hospitals and E and F representing only the new buildings proposed for the Watford Emergency Hospital Campus. The Watford options do not consider the refurbishment work requirements required to complete the project requirements.

As there are no details of the design, massing and enabling works of the schemes required it is very difficult to assess if the durations for each option in the SFR are correct, I have taken them at face value. However, I have also compared the build periods to similar previous projects as a Benchmark for Sites E and F. The Watford Enabling works periods need confirming from detailed investigations and surveys, and there seems no reason for the new site option activity periods to differ from the Watford sites periods, other than the obtaining of Planning Consent due to their Green Belt status.

It is evident (from Section 7.3 on page 28 of the WHHT Site Feasibility Report) that the basis used by RFLPS in preparing their 'optimistic' programmes assumes actions on the site generally progressing in a timely, positive and favourable manner. The Report (on page 37) states that for Watford Site F (WO) the 'optimistic' programme for this option is based upon a number of 'working at risk' assumptions. Similar assumptions would appear to be made for Watford Site E (WR), but this has not been stated. It is very clear that showing a hypothetical pathway for satisfying the HIP1 funding requirements was the objective of the Report rather than applying activity durations and sequence links that would naturally apply in order to arrive at reasonably reliable completion dates, i.e. major enabling works prior to funding being available.

It appears that RFLPS (see pages 36 & 37 of the SFR) may not have fully considered the risks associated with overbuild or major construction on an operational hospital campus, as there is no mention of the working restrictions which would impact the construction periods for the enabling and new works.

RFLPS have also made assumptions that demonstrate that conditions and risks have not been considered in the programme durations. As an example of this the 2018 Six Facet Survey of the condition of the Trust's buildings identifies that the utility infrastructure services currently serving the Watford Hospital estate are in very poor condition. However RFLPS have assumed that these will be suitable and will have adequate capacity to serve the new buildings.

RFLPS suggest that opportunities may be found later to save time against their 'optimistic and working at risk' timelines. From experience of public sector redevelopment projects of this nature, the reverse is much more likely to be the case. It would seem that the programme is already at risk due to the late appointment of the Architect, which would seem to be delaying the initial required programme activity '*Complete Short-list Options Designs & Massing and Other Activities to identify preferred option (incl site surveys/due diligence)*' and when reviewing the Benchmark projects, it should be noted that Keir's Broadmoor Project was completed nearly 2 years later than the build period given as part of the FBC.

Furthermore, I would question the statements made by RFLPS (on pages 36 and 37 of the WHHT Site Feasibility Report) in relation to risk and deliverability. In my experience and from the Six Facet Survey I do not believe that the statements are realistic.

Until such time as all site conditions that exist are exposed and investigated within the ground, and the existing buildings and infrastructures are surveyed, there continues to be significant risk that additional work will be required. This is almost certain to adversely impact on the completion dates. The periods allowed for these works should reflect the potential risks. It is my understanding that it is good and normal practice for reasonable caution to be applied to public sector projects of this nature, particularly at Strategic Outline Case and Outline Business Case stages. Contingency provisions are required to be added to cost estimates for 'Optimism Biases' and this approach should also be adopted in relation to time.

There is also the question of how the early enabling works will be funded as they are being progressed prior to FBC funding being available.

## **Main Risks of the Watford Options**

The Main Risks that the Watford Option Programmes pose are summarised below [refer to section 4f for the comprehensive risk schedule]

1. Developing the 1:200 design prior to signing off the selected scheme
2. Construction of a Multi storey carpark to replace the existing surface car park prior to funding and OBC (which is not shown on the programme)
3. Undertaking Enabling Works of Temporary Accommodation & Decanting after OBC approval but prior to FBC funding being in place
4. Undertaking Demolition, survey site preparation and diversion works after OBC approval prior to FBC funding
5. The length of time within the programme for the above enabling works (in 2, 3 and 4 above) due to unknowns, as it would appear no detailed surveys have been undertaken to confirm the programme periods claimed by RFLPS.
6. The impact of working restrictions on a live Hospital Campus Site and the impact on the periods assigned to new build and refurbishment.
7. Maintaining a suitable internal hospital environment during the adjacent enabling works, initial demolition, new build construction process and final demolition works.

In contrast, similar occupied-site risks do not exist for clear/greenfield site projects. The new Grange hospital at Cwmbran could be a relevant example to use as a comparator. I note the statement made by RFPLS in the SFR executive summary that 'in an overall programme of circa 5 years it would not be unreasonable to assume an improvement of between 3 – 6 months'. My experience is that this is highly unlikely for a redevelopment project of the nature being considered at Watford given the optimistic programme periods claimed.

Two final comments; firstly, the term 'substantially complete' is not an industry definition and is open to wide interpretation. It is often used and, often, causes misunderstanding, especially to lay clients and professionals outside of the industry. Secondly, the completion dates set out in the SFR do not represent a like-for-like comparison, with options A-D representing totally new Emergency and Planned Care Hospitals and E and F representing only the new buildings proposed for the Watford Emergency Hospital Campus.

The programmes set out in the SFR have been recreated in this review, using a critical path programme software package. This allows the programmes to be replicated, to show a true comparison between the options. See the table below.

- A. WHHT – Base RFLPS Programme Redraw
- B. WHHT – Programme A with Adjusted Build Periods
- C. WHHT – Programme B with Missing Programme Activities
- D. WHHT - Programme B with Reduced Risks & Works Post FBC Sign Off

Key Dates Table

	A. WHHT – Base RFLPS Programme Redraw		B. WHHT – Programme A with Adjusted Build Periods		C. WHHT – Programme B with Missing Programme Activities	D. WHHT - Programme C with Reduced Risks & Works Post FBC Sign Off
	Substantially Complete Date (excludes 3month WHHT Commissioning Period)	Completion date after WHHT Commissioning	Substantially Complete Date (excludes 3month WHHT Commissioning Period)	Completion date after WHHT Commissioning	Completion date	Completion date
Site	Optimistic	Optimistic	Optimistic	Optimistic	Optimistic	Optimistic
B (EH) New Build	14/04/2027	14/07/2027	23/11/2026	23/02/2027	23/02/2027	23/02/2027
E (WR)	09/12/2026	09/03/2027	12/04/2027	12/07/2027	17/10/2029	20/11/2030
F (WO)	09/01/2026	09/04/2026	07/05/2026	07/08/2026	07/02/2029	20/01/2030

On the face of the programme timescales set out in the RFLPS SFR, the Watford sites would seem to provide the shortest solution to satisfy the HIP1 requirements. However, when the refurbishment periods are added to the timescales, along with the enabling and demolition works which are planned to start after the FBC has been approved and the funding is in place, the new site option is shown to be nearly 3 years quicker. Even if the time reductions to the RFLPS assumed periods are added back to the new site option periods, it would still be circa 2 years 6 months quicker to build a new hospital on a new site.

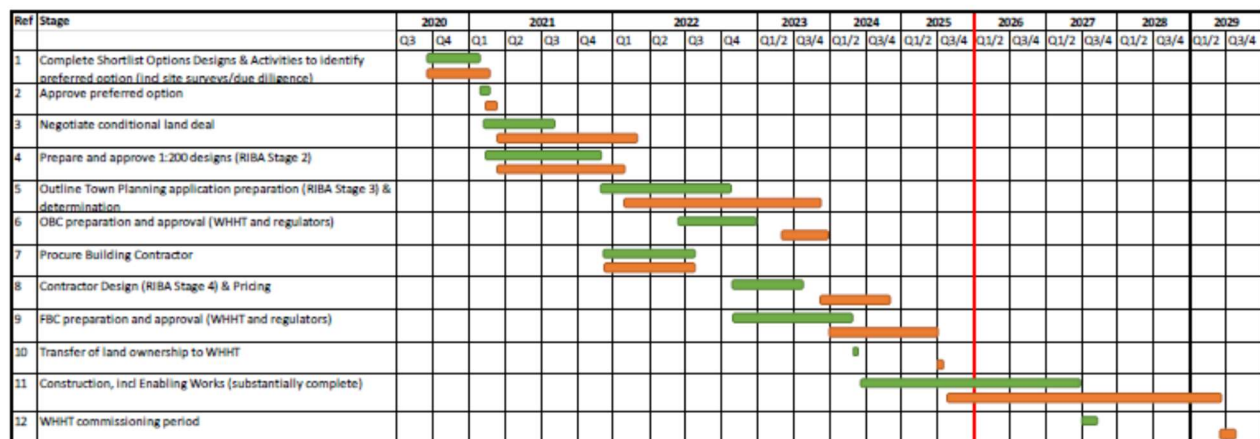
### 3. WHHT Site Feasibility Report Programmes

The WHHT Site Feasibility Report – 210820 includes the following programmes (fig 7.4 below) depicting the summation of the feasibility report’s findings in time scales and show the substantial completion dates (fig 7.5 below) for the optimistic and pessimistic time scales for each site.

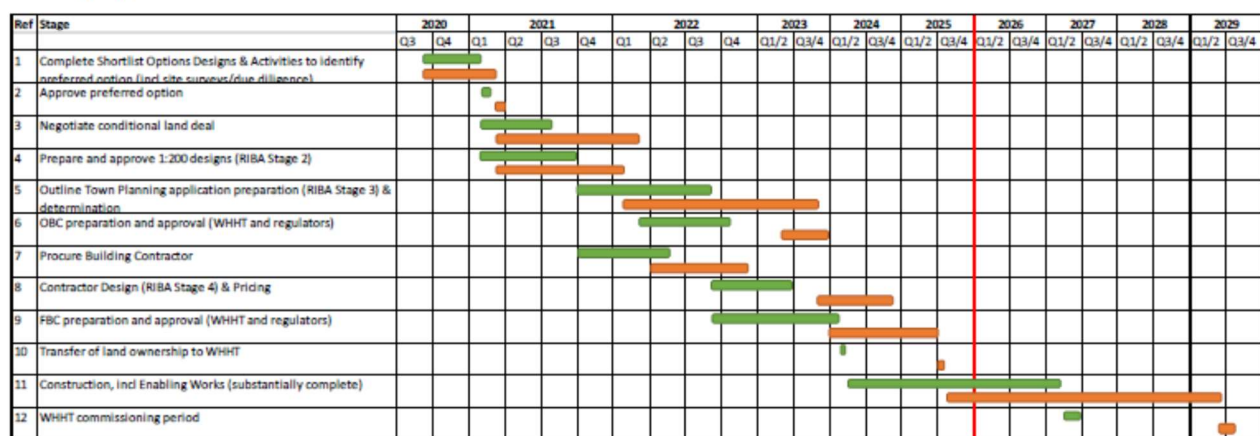
There are separate programmes for each of the 4 new site options – Options A to D, with two further options at the existing Watford Hospital Site – E and F

**Figure 7.4 – Site Programmes**

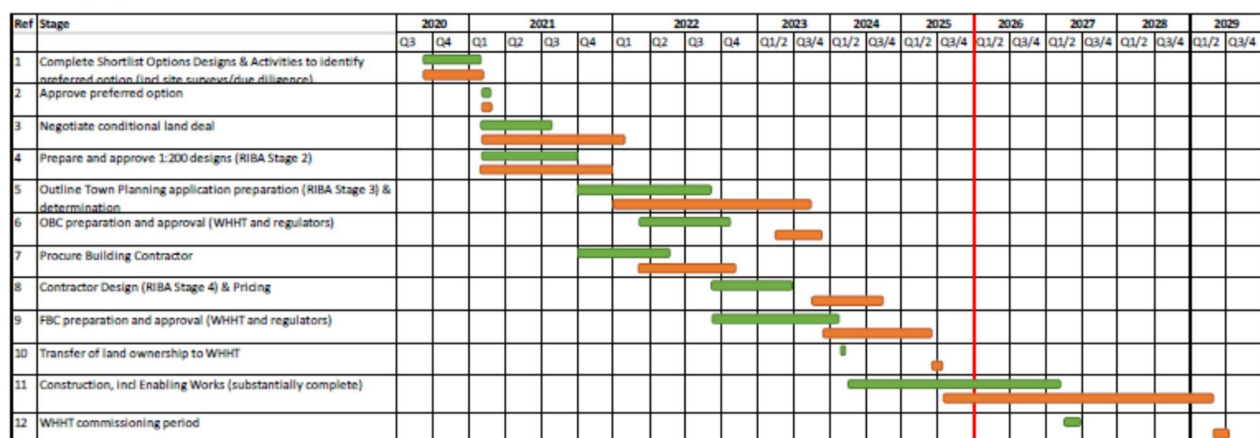
#### Site A (KL)



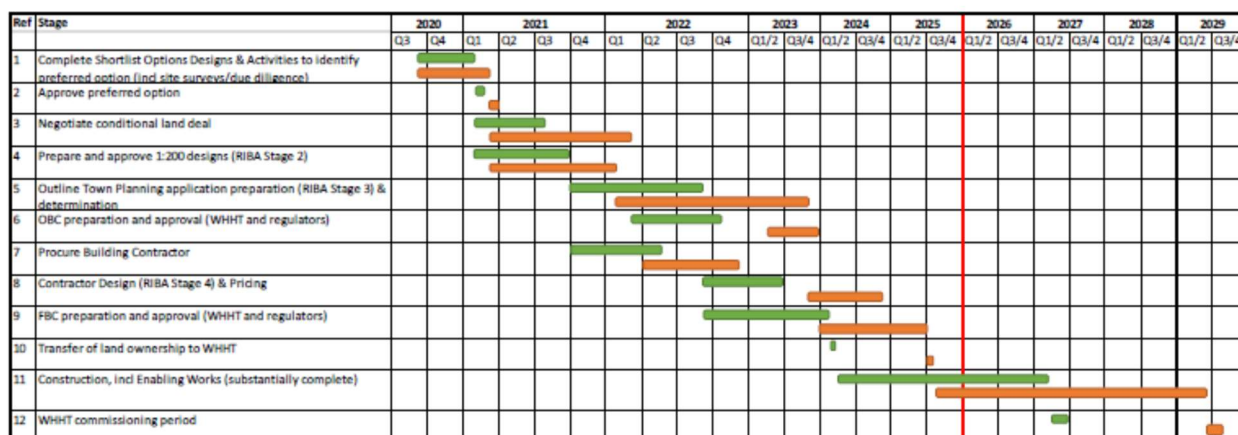
#### Site B (EH)



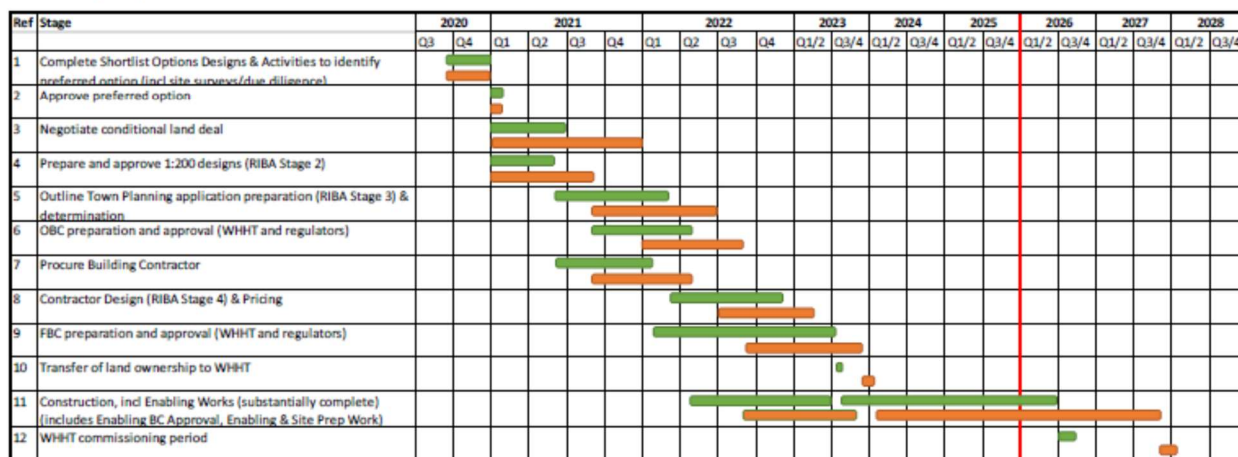
#### Site C (CG)



### Site D (RA)

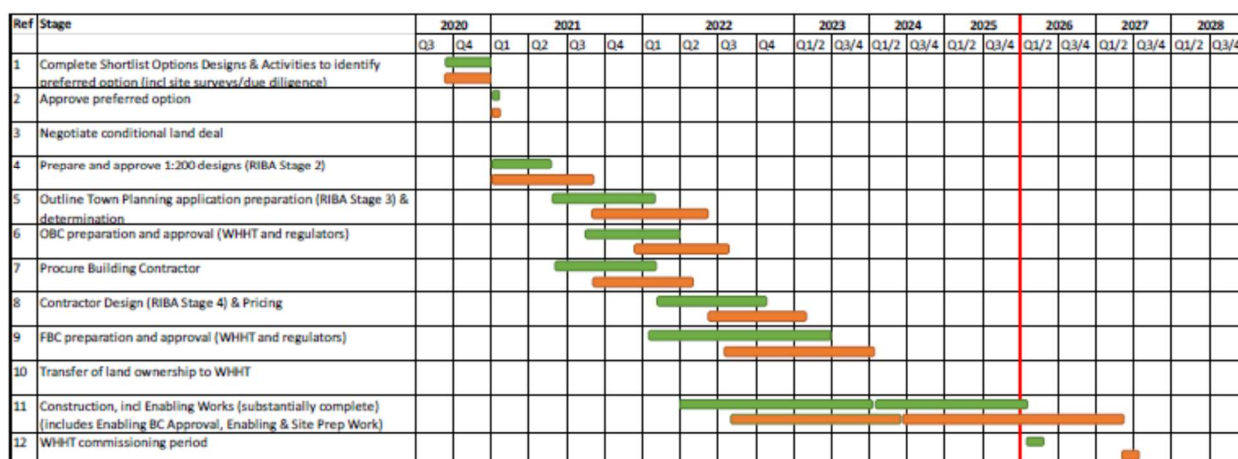


### Site E\* (WR)



\* The Site E (WR) programme considers the delivery of an Emergency Care facility

### Site F\*\* (WO)



\*\* The Site F (WO) programme indicates the processes and timescales associated with bringing forward the new build element of the Emergency Care facility (see figure 2.2). See Appendix K for detail on the enabling and decant works required. Further estate reconfiguration and refurbishment works will be completed subsequent to the delivery of the new build to realise the on-site Emergency Care provision over a c.2 year period.

**Figure 7.5 - Programmes Summary**

Site	Substantially Complete Date	
	Optimistic	Pessimistic
A (KL)	June 2027	May 2029
B (EH)	March 2027	May 2029
C (CG)	March 2027	Apr 2029
D (RA)	March 2027	May 2029
E (WR)	June 2026	Oct 2027
F (WO)	Jan 2026	Apr 2027

The Substantially Complete date has been taken as the Construction “Practical Completion” date, when the building works are complete and the facility is handed over allowing WHHT their three month period to undertake fitting out and final commissioning of the new facility, prior to the new facility being fully operational.

To enable a more realistic like-for-like comparison with the other programmes within this report the table below shows the dates of when the new facility would be operational following the WHHT Commissioning Period using the WHHT report programmes above.

	Completion Date (includes the 3 month WHHT Commission Period)	
Site	Optimistic	Pessimistic
A (KL)	Sep-27	Aug-29
B (EH)	Jun-27	Aug-29
C (CG)	Jun-27	Jul-29
D (RA)	Jun-27	Aug-29
E (WR)	Sep-26	Jan-28
F (WO)	Apr-26	Jul-27

## **4. WHHT Site Feasibility Report Programmes – Review and Analysis**

### **4 a. Review of the WHHT Site Feasibility Report Programmes**

In this review the programme start date have been assumed as the 14<sup>th</sup> September 2020. On this basis the initial programme activity of “Complete Short-list Options Designs & Massing and Other Activities to identify preferred option (incl. site surveys/due diligence)” should be nearing completion, but it is known that the Architect for the Scheme has only been recently appointed, which would suggest that the programmes within the report are already in delay which would result in a later completion date for each scheme option.

The WHHT Report programmes (as above, in Fig 7.4) ) are drawn in small scale in Quarter Years, for the first 3 years of the programme and Half Years for the remainder of the programme, (which is confusing,) and it is difficult to determine from the programme the exact period allowed on the programme for each activity.

#### 4 b Review of the Programme Structure and Content and Logic

The programmes logic linking should be in accordance with the description of the periods and logic in Appendix A of the “WHHT Site Feasibility Report - Appendices 210820 – final” as below, which shows the Benchmark programme criteria.

As mentioned previously, the WHHT Report programmes are drawn in small scale in Quarter Years, for the first 3 years of the programme and Half Years for the remainder of the programme, (which is confusing) and it is difficult to determine from the programme the exact period allowed on the programme for each activity, but from review of these WHHT report programmes the logic and timing of the programmes does not seem to match the benchmark programme requirements.

Benchmark Programme

Ref	Key Tasks / Milestones	Precedents	Duration (months)	Comments / Assumptions
1	Complete Shortlist Options Designs & Massing and Other Activities to identify preferred option (incl site surveys/due diligence)	Commences Sept 2020	4	Includes for each options: High level design, massing, programme, costs (capital, revenue and lifecycle), benefits, risks, valuations and capital investment appraisal. Will also require initial surveys and due diligence to inform design and costings.
2	Approve preferred option	Item 1	1	
3	Negotiate conditional land deal	Item 1	6	Started at risk. Only required if land is not already owned by WHHT
4	Prepare and approve 1:200 designs (RIBA Stage 2)	Item 1	5	Started at risk. To include further intrusive site surveys if required to inform design and costings. Assume includes 3 month pre-app process - commencing 2 months after commencement of stage (note that final pre-app discussions can occur at commencement of Task 5)
5	Outline Town Planning application preparation (RIBA Stage 3) & determination	Item 4	8	Assumes 4 months preparation & 4 months determination (to allow for validation, 12wk (non EIA) statutory process and to close out the Resolution to Grant notice, but unlikely to allow for S106 Agreement which can occur concurrent with Tasks 6 and 8)
6	OBC preparation and approval (WHHT and regulators)	Item 4 and Item 5 (less preparation timing & NHSI approval process)	8	Note assumption that OBC cannot reach treasury until outline planning permission secured (Resolution to Grant - subject to s106 Agreement). Assumes 3 month preparation and 5 month approval process (3 month NHS E/I, 2 months treasury)
7	Procure Building Contractor	Item 4	8	Assume P2020 Framework
8	Contractor Design (RIBA Stage 4) & Pricing	Items 5 and 7	9	Assume incl. designs for and resolution of reserved matters (16wk determination process to be allowed for)
9	FBC preparation and approval (WHHT and regulators)	Item 6	18	Assume FBC cannot be submitted until 'substantive' reserved matters are approved. Assume 11 months for preparation and 7 months for approval process
10	Transfer of land ownership to WHHT	Items 8 and 9	1	Only required if land is not already owned by WHHT
11	Construction, incl Enabling Works (substantially complete)	Item 10 (or 9 if 10 is N/A)	34	Assumes a timely 2yr and 10 month construction programme based on the proposed contractor informed design.
12	WHHT commissioning period	Item 11	3	

The programme logic issues identified seem to differ from the Benchmark Programme above, as detailed below -

- Item 2. The 1:200 design development is shown as proceeding at risk prior to the Shortlist Option approval (item 1). This is contrary to the Benchmark Programme above.
- Item 3. The Negotiation of the land purchase (in the Optimistic version) is proceeding at risk prior to the Shortlist Option being Approved (item 1). This is contrary to the Benchmark Programme above.
- Item 6. OBC preparation linked to the completion of items 4 and 5, but is prepared without the knowledge of the Stage 3 design so a link has been added in the ASTA programme version to complete the OBC preparation a month after the stage 3 design is complete to allow the OBC submission to reflect the stage 3 design implications.
- Item 9. There is no period shown for the “Substantive” reserve matters approval after the planning consent is granted (item 5) that should link into the 11 months FBC approval period, which is suggested as concurrent with item 6 & 7.
- Item 9. The FBC period seems to be drawn with the start being driven by Item 5. Town Planning Determination – Rather than the completion of the OBC (item 6).
- Item 8. The Contractors Design and Pricing, is linked with a month finish to start lag to the submission of the FBC for approval which is suggested in the above table. This results in the FBC preparation being developed during the sign off period of the OBC; if the FBC preparation works were started after the OBC (item 6) this would in general cause a delay to the programme end date.
- Item 9 for Site E. The FBC period start is linked to the procurement of the Contractor which brings the start date forward by some months, so the completion date of the programme is shown early on the RFPLS programme. This has been corrected in the ASTA programme reflecting the RFPLS report programmes.

#### **4 c Review of the Watford Site Programme Options E (WR) and F (WO)**

##### **Option E (WR)**

This option uses a partial land swap with part of the Watford Borough Council’s Riverwell site, together with the site area vacated by the relocation of the Pathology Block and Mortuary and existing surface car park to provide enough land area to construct the new Emergency Care accommodation.

The programme indicates an assumed period of 4 months for the “enabling works” of relocating the Mortuary and Pathology accommodation, and a 5 month period for the demolition and site preparation. It is questionable that the time allowed for these works is sufficient.

From my review of the scope of works in WHHT’s Framework Appraisal and the site plans in the WHHT Site Feasibility Report - Appendices 210820 – final, the Surge Wards area would also need to

be removed for the new build to progress. As the build areas seem to match the Option F New Build Area the enabling works programme should match the Option F enabling work periods, with demolition and site preparation periods being 8 month and 9 months respectively. This has been shown using the ASTA software format in section 5A below.

The Demolition and site preparation works would include -

- Research and intrusive surveys which can only be carried out once the buildings are vacant
- Obtaining the asbestos removal licence from the HSE
- Surveys for the disconnection of mechanical, electrical and public health (MEP) services to buildings to be demolished
- Surveys of existing MEP services and drainage routes, both above and below ground
- Provision of services to the Temporary relocated facilities
- Site Investigations and contamination surveys – some areas only available post demolition
- Remediation of contaminate within the ground
- Demolition of existing buildings
- Diversion of Drainage and Services within the new building footprint area (whilst maintaining live MEP services to the operational areas of the hospital)
- Cut and Fill site preparatory works

The enabling works and demolition are shown as being undertaken at risk, immediately after the OBC has been approved with no allowance for any time for contractor mobilisation. This contractor mobilisation period will be needed along with separate funding approval (which would seem to be at a cost of £20 to £30 million). It is otherwise evident that overall funding would follow the FBC submission and approval.

Consideration also need to be given to the maintenance of the internal environment within the retained hospital buildings whilst the demolition and new construction works are in progress, as many areas are currently naturally ventilated via windows, which are identified in the Six Facet Survey as not capable of being fully operational. It is anticipated that the buildings for demolition would require dust suppression works such as full cocooning. Both the demolition and new build processes will create disruption to the occupied hospital areas, with not only dust but also noise and vibration, all of which needs careful planning to maintain a suitable internal hospital environment.

It is noted that the existing surface car park needs to be replaced with a New Multi Storey car park providing 1450 spaces, with 390 spaces dedicated to visitors at a cost of circa £40 million, which will also need separate funding. It has been assumed this new car park is required prior to the demolition and enabling works phase, subject to the existing car park being able to be retained in position until then. This new car park is not shown or acknowledged in any of the programmes.

Refurbishment of the retained hospital buildings would also be seemed to be needed to be undertaken, as the documents suggest that a high level of maintenance is needed to bring all the retained buildings up to acceptable standards. The condition survey report '*WHHT Six Facet Survey Exec Summary*' seems to suggest the retained buildings have reached the end of their designed lifespan so the assumed refurbishment duration could increase significantly. The refurbishment works period will be subject to agreeing the number of phases and works required; a nominal 18-month period has been assumed for this work. Again, this is not shown on the programme.

After the completion of the New Building the existing PMoK building will need to be demolished and the land remediated prior to being handed over to WBC for their Riverwell Project. This work is not

shown on the programme, but is not thought to impact the hospital's operation other than that new access links will need to be established bridging from the new car park to the new building, which could be carried out during the New Build Period.

It is understood that the new and retained hospital areas will require a new coordinated IT system. It has been assumed that the retained hospital areas can have the new services installed during the new build period so that the new and the retained areas could be commissioned as one at the completion of the new build period.

### **Option F (WO)**

This Option uses only land that is within WHHT's current ownership.

The Site Feasibility Report clearly identifies that the Pathology Block, Mortuary and the Surge Wards require temporary relocation prior to demolition. These buildings cover some 4,161m<sup>2</sup> and the necessary temporary accommodation will require Planning Approval. The planning approval process is not shown on the programme. This work will free up sufficient space on the site to build the 30,000 m<sup>2</sup> building on 4 Floors, for the new Critical Care and Women's Children's Hospital adjacent to the PMoK building.

Although the programme indicates the assumed 8 month period for the "enabling works" of temporary relocating the existing accommodation to Shrodells Garden or other locations in the Hospital grounds, plus the assumed 9 month period for the demolition and site prep works, it is he questionable whether enough time is being allowed for these works. Surveys and further investigation will be needed to inform the likely time scale of the enabling works which would include the works of–

- Research and intrusive surveys which can only be carried out once the buildings are vacant
- Obtaining the asbestos removal licence from the HSE
- Surveys for the disconnection of mechanical, electrical and public health (MEP) services to buildings to be demolished
- Surveys of existing MEP services and drainage routes, both above and below ground
- Provision of services to the Temporary relocated facilities
- Site Investigations and contamination surveys – some areas only available post demolition
- Remediation of contaminate within the ground
- Demolition of existing buildings
- Diversion of Drainage and Services within the new building footprint area (whilst maintaining live MEP services to the operational areas of the hospital)
- Cut and Fill site preparatory works

Consideration also needs to be given to the maintenance of the internal environment within the retained hospital buildings whilst the demolition and new construction works are in progress, as many areas are currently naturally ventilated via the windows, which are identified in the Six Facet Survey as not capable of being fully operational.

It is anticipated that the buildings for demolition will require dust suppression works such as being fully cocooning to minimise dust during the demolition process. Indeed, both the demolition and new build processes will create impacts and disruption to the occupied hospital areas of not only dust, but also noise and vibration, all of which needs careful planning to maintain a suitable internal hospital environment.

The enabling works and demolition are shown as being undertaken at risk, immediately after the OBC has been approved with no allowance for contractor mobilisation.

In addition to the Contractors Mobilisation period separate funding approval (which would seem to be at a cost of £20 to £30million) will be required prior to the overall funding being in place following the FBC submission and approval.

The report indicates that PMoK and remaining existing hospital buildings are to be refurbished once the New Building is complete, which is predicted to require a further 2-year period.

The Six Facet Survey seems to suggest that the buildings will have reached the end of their designed lifespan before commencement of the refurbishment works. It follows that there is a very high risk that the necessary works required will need to be increased significantly, requiring longer programme time with considerable cost implications. This period for refurbishment would be subject to agreeing the number of phases and works required, none of refurbishment works are shown in the programme.

It is noted that the existing surface car park needs to be replaced with a New Multi Storey car park providing 1450 spaces, with 390 spaces dedicated to visitors at a cost of circa £40 million. It has been assumed this is required prior to the demolition and enabling works phase, subject to the car parks being able to be retained in position until then. This new car park is not shown or acknowledged in any of the programmes.

It is understood that the new and retained hospital areas will require a new coordinated IT system, it has been assumed that the retained hospital areas can have the new services installed during the new build period so that the new and the retained areas could be commissioned as one at the completion of the new build period

#### 4d Comparison Review Between the existing Watford Site Options and the New Site Options

When comparing the New Site Options against the Existing Watford Site Options there are many factors which need to be considered which can influence the indicative periods of design, approval, sequence and build.

As no layouts have been developed to date it is difficult to be specific. The Periods allowed for construction on the New Sites have been reviewed against the RFLPS Watford site programme periods as a benchmark.

I have used Site B (EH) as a comparator to the retained Watford site options E and F

#### Complete Short-list Options Designs & Massing and Other Activities to identify preferred option (incl. site surveys/due diligence)

The periods adopted for the options are

- New Site Options – 5 months
- Watford Site Options – 4 months

It does not seem logical to require additional time for the New Site option as the site is not constrained by existing buildings, services and drainage as the Watford site is – it would seem more logical to allow a shorter time for New Site Option

For the programme review I suggest that the period for the New Site Option is amended to the same period of initial design as the Watford site period of 4 months

#### Preparation and Approval of the 1:200 design (RIBA 2)

- New Site Options – 8 months
- Watford Site Options – 5 months

Similarly, to the initial design the 1:200 design period for the New Site Option should be similar to the Watford Site options for the same reasons as above, the New Site Option programme will be adjusted to the Watford 5 month period

#### Stage 3 Design Planning Application Preparation Period

- New Site Options – 5 months
- Watford Site Options – 4 months

There appears to be no reason to have an increased period for the new site option compared with the Watford sites, the 4 month planning preparation period will be used for the new sites

#### Planning Determination Period

The New Sites appear to offer mainly green field sites which are on Green Belt Land which can attract objections from local groups objecting to the development, and the additional review period requiring the Secretary of State sign off so requiring a longer period for the Town Planning determination, which would be longer than the existing Watford Site options, that it seems will be supported by WBC and should achieve the minimum determination period.

However, it is understood that Site B (EH) has already been through the Secretary of State and obtained the necessary Green Belt approvals so the planning periods should equate.

For comparison for the Site B the programme could be adjusted from 6 to 5 months using the Watford Site E's planning determination period of 5 months – but at present the 6 month planning determination period has been left as the RFLPS report programme.

#### Contractor Design & Pricing Period

The current periods shown are

- New Site Options – 10 months
- Watford Site Options – 9 months

Similarly, the initial design the initial and 1:200 design periods for the New Site Option should be similar to the Watford Site options for the same reasons as above, the New Site Option programme should be the same as the Watford 9 month period.

### Construction Periods

The periods currently shown are:-

- New Site Options – 36 months
- Watford Site Options E – 34 months

The logistics of the New Site Options seem to offer large open sites which, unlike the Watford sites, are not constrained by existing structures. This would allow the new site scheme to be split into several mini projects, each with its own dedicated access, craneage and resources which could lend itself to Modern Methods of Construction (MMC) with off-site constructed pre-fabricated options which could be built in the minimum of time and combined as a whole for the testing and commissioning.

The Watford site would seem to be a restricted site area with limited access which could result in a sequential build requirement. This site could also use MMC techniques to minimise the build period, subject to a sufficient lead in period following the completion of sufficient design.

Although the New Site Build is larger at circa 80,000m<sup>2</sup> than the Watford Option E Site at circa 70,000m<sup>2</sup> but as the New Site can be subdivided in to several small parts of the whole it could be taken that New Site Build construction period should not exceed the Watford Option E construction period of 34 months on this basis alone. The direct comparison should be based on only Emergency Hospital facilities for each site and the floor area difference between the Greenfield and Watford sites is questionable and should be separately verified.

### 4e Benchmark Build Periods

#### Construction Periods & Benchmarking

There is no information contained within the WHHT Site Feasibility Study Report, its Appendices, the SOC nor the Trust's Option Framework Appraisal that shows any basis of design solutions covering any of the sites. Without the benefit of any outline design solutions and detailed knowledge of each sites abnormal work requirements it is not possible to arrive at any meaningful assessment of the construction periods.

Whilst it is reasonable to expect minimal constraints and abnormal working requirements would apply to the Greenfield sites to allow an efficient design and construction processes, this cannot be assumed for the Watford site options. The Watford site options are built adjacent to an occupied hospital with a steeply sloping site and complex drainage and services. This would result in the need to schedule in diversions as part of the decanting and demolition requirements. Other abnormal work requirements including contaminated ground treatment and ground engineering cannot be determined until surveys are undertaken after completion of the enabling and demolition works. Restricted working requirements of building adjacent to a live hospital would also need to be considered.

RFLPS's 'optimistic' new build element programme periods for all of the greenfield site options are 37 and 36 months, 34 months for Watford Site E and 24 months for Watford Site F Options.

With the absence of any design information covering the proposals for each site to arrive at a representative new build programme periods, evidence of similar NHS projects has been used to provide a comparator or directly related benchmark. I have carried out research based upon internet searches for the purposes of reviewing the construction durations included in the RFLPS 'optimistic' programmes.

### Benchmarking

#### Option F (WO)

Watford Site F has the shortest construction time of 24 months. This site option has been compared to redevelopment projects completed during the current decade of similar value and/or floor areas, but it is difficult to find many examples that have a similar project value. It appears that most other NHS Hospital Trusts have chosen to build on alternative brownfield or Greenfield sites rather than redeveloping their existing operational estates.

I have therefore only found three examples that are shown in the table below:

<b>Project</b>	<b>Finish Date</b>	<b>Approx. Cost</b>	<b>Floor Area</b>	<b>FBC Build Time</b>	<b>Comments</b>
Chase Farm Hospital	2019	Not disclosed	24,501 M2	31 months	Build time of new building from start to operational (stated as an unprecedented achievement) Costs offset by land sales.
Salford Royal Hospital Hope Building	2011	£136M	14,309 M2	36 months	Current day cost approx. £170M
Broadmoor Hospital	2020	£242M	Approx. 29,000 M2	37 months	Specialist high security hospital This project over ran by nearly 2 years

All three of the projects in the table are smaller and appear unlikely to have required the same level of ground/substructure works as required for the Watford Site F Option.

Although Broadmoor is a specialist high security hospital and may have involved some limited additional works for that reason, it is made up of several separate blocks allowing a degree of simultaneous construction that should have reduced the overall programme period. It should be noted that the FBC build period of 37 months was exceeded by nearly 2 years.

It is noted that the development delivery performance for the Chase Farm project was unprecedented and the construction time was significantly shorter than the other two. Although there is a strong case to use the average or even the longest construction time from these three comparators, I have redrawn the programme for Watford Site F replicating the period shown for Chase Farm at 28 months (31 months less hospital commissioning period of 3 months). This

recognises the intention to fast track construction and follows the 'optimistic' basis adopted. It obviously still represents a significant risk of overrunning should it not be possible to employ adequate fast-tracking methods. The short design lead-in/pre-construction time allowed would be a negative factor that would place this period at risk.

#### Option E (WR)

Only one example of larger redevelopment projects was found; but this is not a true comparator for the Watford Site E proposals. This site is currently being constructed at the Brighton and Sussex University Hospital 3T's, a £485M redevelopment planned to be completed in phases over 9 years. It is different to the £540M proposals for Watford Site E but it has been reported as running significantly behind schedule and over cost.

Many of the conditions and issues identified for Watford Site F also exist for Site E. The nature of large and complex redevelopment projects means that they will always be exposed to a much higher risks of cost and time overruns than a new build clear site development.

RFLPS 'optimistic' programme for Watford Site E is 34 months. Whilst it is 10 months longer than the RFLPS 'optimistic' programme period for Site F it is only 6 months longer than the 28 months duration that has been derived from the benchmark comparison for Site F. When considering that the new build element for Site E is approximately double the mass for Site F it appears appropriate to use the same differential as applied by RFLPS so therefore it is considered that 38 months is a more realistic period.

#### New Site Option

I have looked at the programme times achieved on recently completed brownfield new build hospital developments and established that the 43,000 M2 Royal Papworth was completed on time in 2018 within 35 months at a cost of only £165M. More recently the 55,000 M2 Grange University Hospital was completed ahead of time in 28 months at a cost of £350M, which significantly benefited from the use of MMC off-site prefabrication.

The RFLPS 'optimistic' programmes for the Greenfield site options seem to be inappropriately based upon combined Emergency and Planned Care hospitals compared with only Emergency Care facilities and show durations of either 36 or 37 months. Based upon these comparators I see no reason to expect construction durations to exceed 34 months for any of the Greenfield Sites.

I have no doubt that a suitable brownfield or Greenfield based scheme would provide the basis for much greater time certainty than either of Watford redevelopment options. From my experience in the construction industry, designing and building on a clear site will allow greater efficiency that would also provide cost savings. That certainly appears to be indicated from the examples that are included above.

## Conclusion

In conclusion I have made the following changes to the RFLPS Optimistic Programme durations shown on the programmes in Appendix B

Substantially Complete Date (excludes 3month WHHT Commissioning Period) Original RF Prog		Revised Period of Substantial Completion (excluding 3month WHHT Commissioning Period) from the Benchmark Review
Site	Optimistic	Optimistic
B (EH) New Build	38m	34m
E (WR)	34m	38m
F (WO)	24m	28m

### 4f. Summary of Risks of the Watford options

The following schedule lists examples of risks identified during this Review. The examples are all relevant to the Watford sites. It appears that, except for securing planning consent, other risks associated with the listed Greenfield sites (or alternative sites) can be identified before acquisition and that would determine which site is selected.

Ref	Descriptions of Risks to Programmes	Cause of Risk
1	Rejection of Greenfield site options before the feasibility of the Watford sites have been established. Potential delay and abortive time in early development of plans	The Watford Sites appear to have been selected without adequate investigation of the conditions through surveys and consideration of the proposed works can be safely carried out whilst the hospital continues in service
2	Proposals will not satisfy NHS and DHSC requirements and will not be approved. Potential delay and abortive time in early development of plans	No basic design solutions have been identified to confirm the viability of accommodating the required facilities on the Watford sites. Inadequate development of proposals to establish that they would best meet the time and cost objectives
3	NHS and DHSC will not allow relaxation of standard approval procedures and authorise expenditure at risk. Potential significant delay to the start of construction works	The 'optimistic' programmes for the Watford sites are based upon substantial expenditure at risk before FBC viability has been established. This is against prudent and standard procedures
4	Delays to the pre-construction programmes for the Watford based options and lack of design readiness for fully effective commencement and continuity of the works. This is also likely	The design and associated pre-construction activities in the 'optimistic' programmes have been compressed and overlapped to the extent that they apply excessive pressure on the Watford Site options due to the need to integrate the

	to limit the opportunities for pre-fabrication off-site.	works within existing facilities and infrastructures. This will require on-going investigation and co-ordination throughout the design process.
5	Possible inability to secure a viable land swap agreement with the Riverwell developers in conjunction with planning consents. Preferred option may not be proceedable	It appears that a land swap agreement for Watford Site E must allow for 340 apartments to be built on the Trust's estate to replace the consent that the developers have for the Riverwell site. It is also noted that a solution and agreement must be found for 'blue light' access with the close vicinity of the proposed schools
6	Delayed progress of the site works due to the exposure of unforeseen conditions on the existing Watford Hospital land	Changes and additional requirements not identifiable until after demolition of existing buildings, ground surveys and completion of structural design. Additional remedial or replacement works may also be found necessary to the utility services infrastructures, many parts of which are stated to be in very poor condition. It is noted from the SOC that there have been regular breakdowns that have caused disruption to patient treatments.
7	Delayed progress due to working restrictions due to the requirements of working within or close to the existing operational hospital	Solutions to protect patients and the public during demolition and construction have not been identified but apart from obvious requirements to limit work times, noise and contamination there it is a strong likelihood that special provisions will need to be put in place to maintain the internal environment for patients in the PMoK block due to the poor condition of its envelope

## **5 WHHT Report Programmes and Impacts of the Review Finding**

### **Introduction**

In order to be able to demonstrate the impacts of the missing programme elements and alternative timings and sequence, the above RSFL report programmes have been redrawn using ASTA Powerproject Software. This allows the programmes to be rescheduled to identify the critical paths that are driving the completion date of each option. This also enables the corrected predicted completion dates to be calculated and compared with the end of 2025 HIP1 target date.

Only 3 programmes have been developed, one representing the four new site options A to D, using the option B (Eastern Hemel Hempstead - EH) programme, and two separate programmes for the Watford site Options E and F. The Programmes only show the optimistic time option as a comparator between the options. The critical path analysis (CPA) programmes allows one to see if the options meet the HIP1 deadline of substantial completion (Practical Completion of the Build Process) by the end of 2025.

The programmes are shown with a monthly time scale with the end of 2025 as the HIP1 deadline for the options to be substantially (deemed to mean Practical Completion of the Build Process) complete to obtain the HIP1 funding

The Programmes have been developed in stages to show the impacts of the findings of the information analysis in section 4 of this report, the programmes have been developed in the following sequence

- A. WHHT – Base RFLPS report Programme
- B. WHHT – Programme A with Adjusted Build Periods
- C. WHHT – Programme B with Missing Programme Activities
- D. WHHT - Programme C with Reduced Risks & Works Post FBC Sign Off

#### 5 A. WHHT – Base RFLPS report Programme

The RFLPS's programmes have been drawn in the ASTA CPA software using the activity durations and logic shown in tables for each site in Appendix A of WHHT Site Feasibility Report - Appendices 210820, with the identified amendments of -

- Option E and F have had a lead period added after the OBC approval period of 4months to align the Option F completion date to the RFLPS's programme,
- Option E's enabling works and demolition period mimics option F as it appears both options require the same pre-construction works requirements
- Option E has had the start of the FBC preparation correctly linked as this was driven by the contractor procurement
- The end of the OBC preparation period is linked to complete 1 month after the completion of the Stage 3 design

The resulting dates of the programme options are shown below – please refer to Appendix A for the supporting programme.

– See Appendix A for the programmes

	A. WHHT – Base RFLS Programme Redraw	
	Substantially Complete Date (excludes 3month WHHT Commissioning Period)	Completion date after WHHT Commissioning
Site	Optimistic	Optimistic
B (EH) New Build	14/04/2027	14/07/2027
E (WR)	09/12/2026	09/03/2027
F (WO)	09/01/2026	09/04/2026

#### 5B. WHHT – Programme A with Adjusted Build Periods

This programme takes the resultant programme in 5A above and makes the following alterations

- Reduces the New Site option activity durations as identified in section 4d of this report to align with the Watford Site Periods except for Planning Determination
- Changes the Construction Periods of the Watford Site options E & F as the Benchmark findings in section 4e of this report

The resultant dates are shown below, please see Appendix B for the ASTA programme

	B. WHHT – Programme A with Adjusted Build Periods	
	Substantially Complete Date (excludes 3month WHHT Commissioning Period)	Completion date after WHHT Commissioning
Site	Optimistic	Optimistic
B (EH) New Build	23/11/2026	23/02/2027
E (WR)	12/04/2027	12/07/2027
F (WO)	07/05/2026	07/08/2026

#### 5C. WHHT – Programme B with Missing Programme Activities

This programme takes the programme in section 5B and adds the missing activities identified in section 4c of this report for the missing works of

- Site Surveys and Investigations to inform the design development
- Enabling works – design and construction of the new multi storey car park
- Enabling Works - Temp Accommodation design, Town Planning Approval
- Refurbishment of the Retained Hospital Buildings
- Demolition of the PMoK building
- Demolition of the remaining buildings after refurbishment

The programme assumes that the new car park and enabling works will progress at risk prior to the FBC funding being in place (circa £70million) before the pricing and funding approval for the main works.

The resultant dates for completion of this programme stage are shown below, which includes the 3 month WHHT Commissioning Period and retained Hospital Refurbishment works.

It has been assumed that the buildings to be demolished will be used to temporarily house the decanted areas of the existing hospital that are to be refurbished, so the demolition of these building will follow the completion of the Refurbishment – See Appendix C for the programme

	C. WHHT – Programme B with Missing Programme Activities
	Completion date
Site	Optimistic
B (EH) New Build	23/02/2027
E (WR)	17/10/2029
F (WO)	07/02/2029

#### 5D. WHHT - Programme C with Reduced Risks & Works Post FBC Sign Off

This programme builds on programme 5C but is amended to reduce the programme and funding risks shown in the 5C programme, which results in the site works and project end completion dates being delayed

- Progressing with the Land Purchase and 1:200 Design only after the Shortlist Design have been signed off
- Progressing the Enabling, Demolition and Site preparation works only after the FBC has been signed off and funding is in place

However, it is still assumed that the £40m Car Park will progress prior using external funding since FBC sign off will not have been achieved.

The ASTA programme is attached in Appendix D

The Summary of the Resultant Completion dates is included below:

	D. WHHT - Programme C with Reduced Risks & Works Post FBC Sign Off
	Completion date
Site	Optimistic
B (EH) New Build	23/02/2027
E (WR)	20/11/2030
F (WO)	20/01/2030

## 6. Conclusion

The dates of the WHHT Site Feasibility Report - 210820 – final programmes assessments are summarised below -

1 – Excludes 3 month Period of WHHT Commissioning Substantially Complete

1	Substantially Complete Date (excludes 3month WHHT Commission Period)	
Site	Optimistic	Pessimistic
A (KL)	Jun-27	May-29
B (EH)	Mar-27	May-29
C (CG)	Mar-27	Apr-29
D (RA)	Mar-27	May-29
E (WR)	Jun-26	Oct-27
F (WO)	Jan-26	Apr-27

2.- Includes the 3 month WHHT Commissioning Period – Facility Operational

2	Completion Date (includes the 3month WHHT Commission Period)	
Site	Optimistic	Pessimistic
A (KL)	Sep-27	Aug-29
B (EH)	Jun-27	Aug-29
C (CG)	Jun-27	Jul-29
D (RA)	Jun-27	Aug-29
E (WR)	Sep-26	Jan-28
F (WO)	Apr-26	Jul-27

The current programme proposals for Watford have certain risks contained within them in finances and time,

- All have a 1 month risk progressing design and land purchase without Sign Off of the Base Shortlist Options
- Options E & F are progressing at risk with the Car Park and Enabling & Demolition works circa £70m prior to FBC sign off and receiving Treasury funding

The Base Report Programmes for Options E & F (Watford sites) have missing activities of

- Enabling works design and planning
- Car Park Multi Storey design and construction
- Refurbishment of the retained Hospital Buildings
- Demolition of PMoK Building for Option E
- Demolition of the existing redundant Hospital Buildings post refurbishment for Options E and F

Options E & F would require the refurbishment of the retained hospital buildings and final demolition to be added in the programmes in order to give a like for like comparison with the New Site Options, and even then, given their poor condition as described in the Six Facet Survey it is not possible to arrive at a reliable conclusion as to the works required and the programme implications.

The refurbishment works on the Watford sites may require additional temporary accommodation to allow areas to be decanted into whilst the works are undertaken.

The summary below is of the completion dates of the New and Watford Site Options, and also shown on the programme as a single bar per option per Site in Appendix E (this programme shows the completion dates including the 3 month WHHT Commissioning Period)

	A. WHHT – Base RFLPS Programme Redraw		B. WHHT – Programme A with Adjusted Build Periods		C. WHHT – Programme B with Missing Programme Activities	D. WHHT - Programme C with Reduced Risks & Works Post FBC Sign Off
	Substantially Complete Date (excludes 3 month WHHT Comm. Period	Completion date after WHHT Comm. Period	Substantially Complete Date (excludes 3 month WHHT Comm. Period	Completion date after WHHT Comm. Period	Completion date	Completion date
Site	Optimistic	Optimistic	Optimistic	Optimistic	Optimistic	Optimistic
B (EH) New Build	14/04/2027	14/07/2027	23/11/2026	23/02/2027	23/02/2027	23/02/2027
E (WR)	09/12/2026	09/03/2027	12/04/2027	12/07/2027	17/10/2029	20/11/2030
F (WO)	09/01/2026	09/04/2026	07/05/2026	07/08/2026	07/02/2029	20/01/2030

As can be seen from the table above, none of the options meet the HIP1 criterion of substantial completion (Practical Completion of the Build and handover for WHHT Commissioning) of the project by the end of 2025.

The Watford site would seem to take a much longer period to deliver a fully functional facility under the proposed redevelopment plans than would be the case with the Greenfield New Build option.

It is also important to take full account of the high risk of time and cost overruns as a result of encountering unforeseen problematic conditions on an existing aged operational hospital estate such as Watford. Without the full knowledge and surveys of the existing structures and services it is always very difficult to assess the full works and programme periods required, and this can represent a programme risk.

In my experience it is rare for redevelopment projects such as proposed at Watford to complete near to time, due to not understanding all the unknowns, even with the most competent design and construction teams. The pressures to meet the HIP1 funding timeframe seem to have led to the production of programmes that may be optimistic, based upon working at risk but do not include all critical activities that can be identified at this stage.

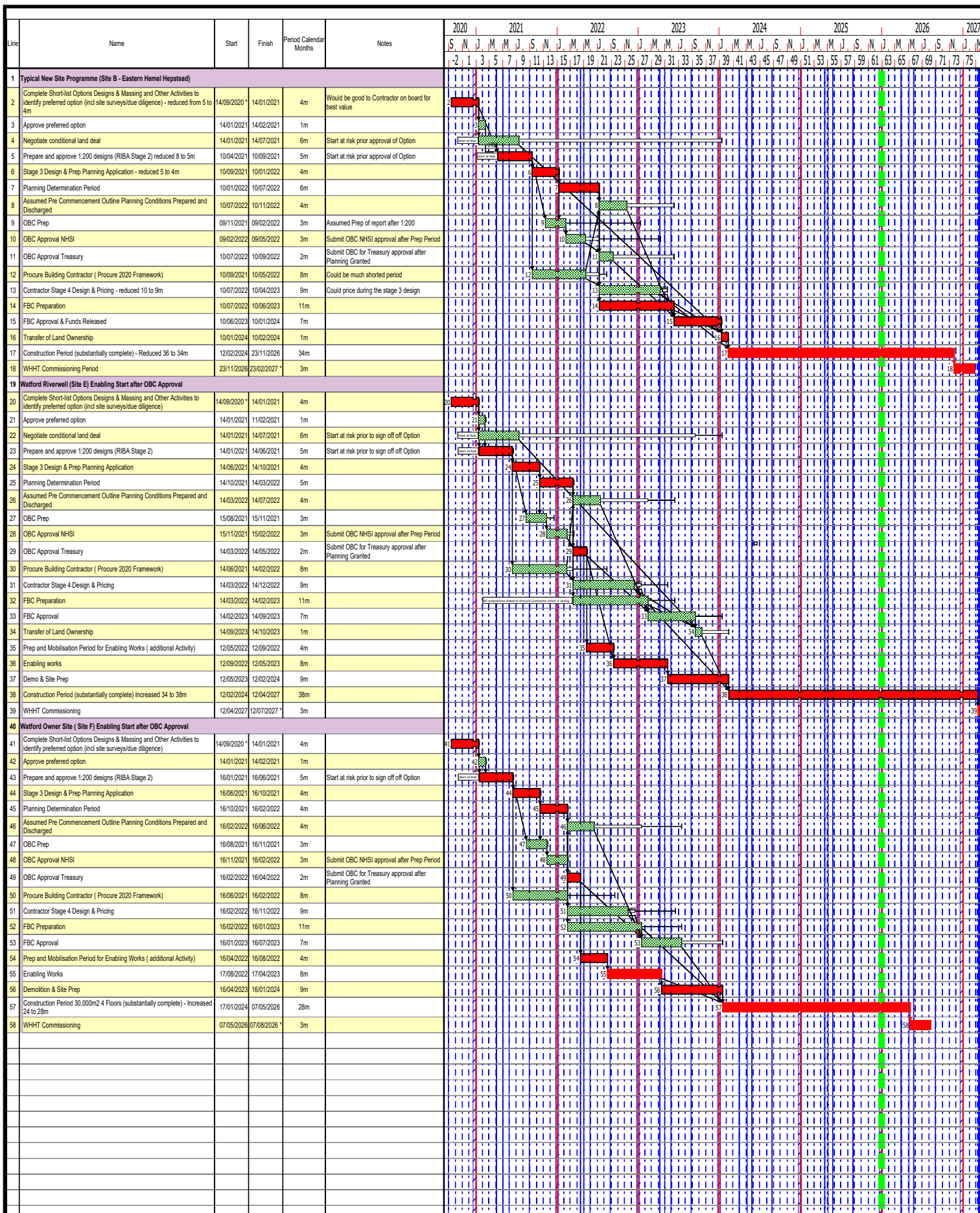
The same level of complexity of unknowns and risks would not apply to construction on a Greenfield site that in contrast would allow greater opportunities for more efficient design and construction methodology - resulting in programme certainty.

**West Herts New Hospital for WHHT**  
**A. WHHT – Base RFLS Programme Redraw - Summary Programme**  
 1 of 1

[illegible]

Drawn By : MN  
Original Issue Date : 29/10/2020  
Programme Number : NHWH  
Revision : -  
Revision Issue Date : 29/10/2020  
Revision Comment : RF Base Programmes Redrawn

**West Herts New Hospital for WHHT**  
**B. WHHT – Programme A with Adjusted Build Periods - Summary Programme**  
 1 of 1



Drawn By : MN  
Original Issue Date : 29/10/2020  
Programme Number : NHWH  
Revision : -  
Revision Issue Date : 29/10/2020  
Revision Comment : RF Base Programmes Redrawn

**West Herts New Hospital for WHHT**  
**C. WHHT – Programme B with Missing Programme Activities - Summary Programme**  
**1 of 1**

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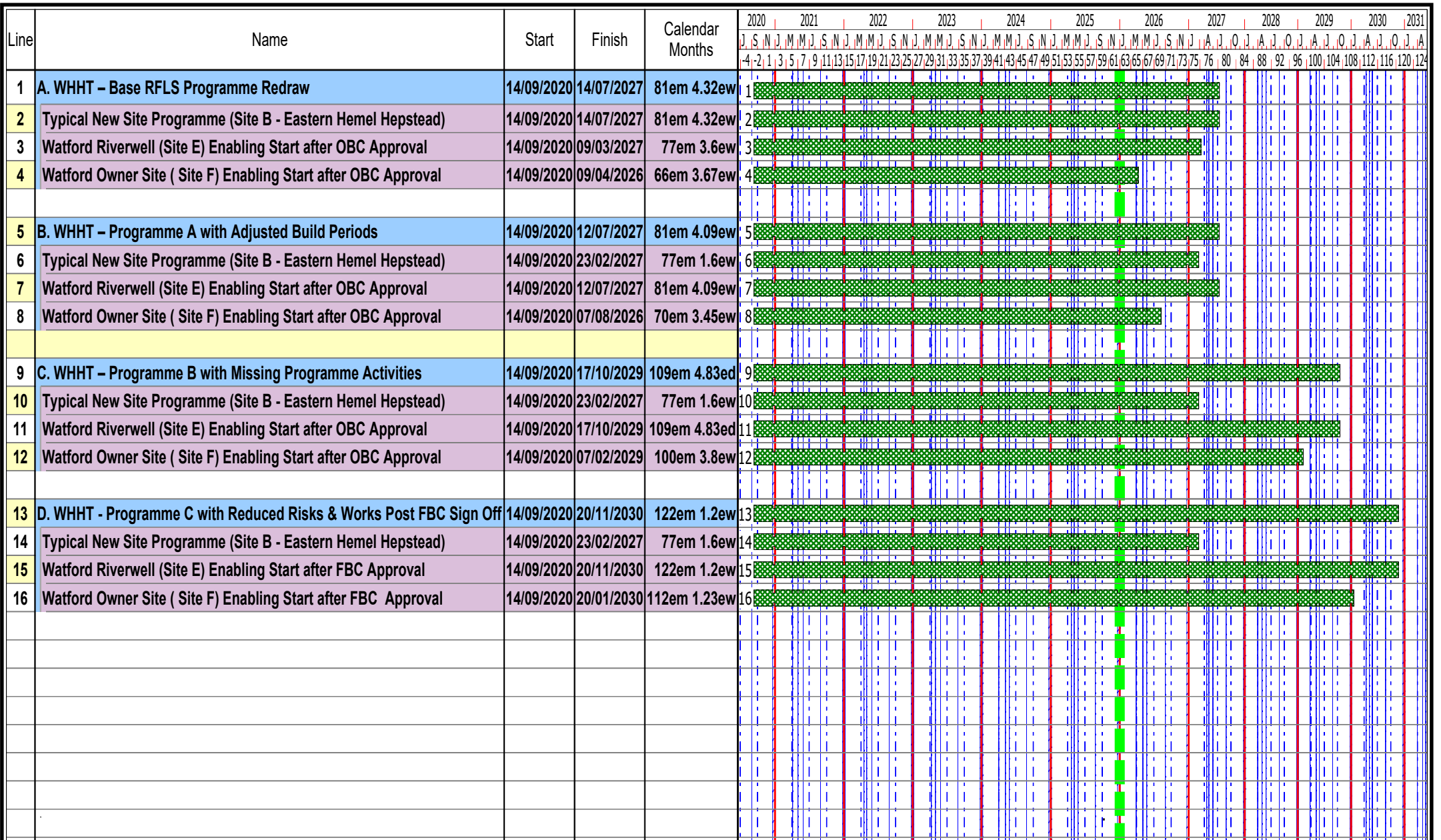
Drawn By : MN  
Original Issue Date : 29/10/2020  
Programme Number : NHWH  
Revision : -  
Revision Issue Date : 29/10/2020  
Revision Comment : RF Base Programmes Redrawn

**D. WHHT - Programme C with Reduced Risks & Works Post FBC Sign Off - Summary Programme**  
1 of 1

[illegible]

Drawn By : MN  
Original Issue Date : 29/10/2020  
Programme Number : NHWH  
Revision : -  
Revision Issue Date : 29/10/2020  
Revision Comment : RF Base Programmes Redrawn

**West Herts New Hospital for WHHT  
Programme - Overall Summary  
1 of 1**



Drawn By : Planner - Chart Properties  
Original Issue Date : 16/02/2006  
Programme Number : 00001  
Revision : A  
Revision Issue Date : 27/04/2006

Revision Comment : Revision comment - Chart Properties

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