Scope of Works for

INDEPENDENT COMMISSIONING CONSULTANT

London Institute of Medical Sciences (LMS) Building Project

New Facility for the Medical Research Council (MRC)

London Institute of Medical Sciences (LMS)

at the Hammersmith Campus, London

Contents

1. Introduction

The Medical Research Council (MRC) (http://www.mrc.ac.uk/) improves human health through world-class medical research. We fund research across the biomedical spectrum, from fundamental lab-based science to clinical trials, and in all major disease areas. Our research has resulted in life-changing discoveries for over a hundred years.

We are a non-departmental public body funded through the government's science and research budget. We invest in research on behalf of the UK tax payer. Scientists apply for funding for their research and applications are reviewed by panels of independent experts.

To enable innovative science of the highest standard the facilities must be maintained and upgraded as required. This project is seeking to provide the MRC London Institute of Medical Science (LMS) with a new facility, which will serve its science for the next 20-35 years.

2. Background Information to the new MRC LMS

The MRC LMS aims to be at the forefront of innovative biomedical research and in partnership with Imperial College London and others, to promote the translation of its research for maximal benefit. The institute trains and mentors the next generation of clinical and non-clinical scientists and strives to enhance the public's interest, understanding and trust in science.

The MRC LMS (formerly the MRC Clinical Sciences Centre, CSC) is a core-funded MRC Institute. Located on the Imperial College Hammersmith Hospital campus, it has strong partnerships with Imperial's Faculty of Medicine, as well as with the Faculties of Engineering and Natural Sciences. This access to medicine, physics, chemistry and engineering affords the Institute superb support for delivering on its multidisciplinary remit to strengthen the interface between clinical and basic science. LMS is located in close proximity to Imperial's White City Campus development which will provide local access not only to academic chemists and engineers, but also to industrial collaborations and expertise in entrepreneurship and innovation. The first phase of Imperial West hosts space for spin-outs and more than 70 start-ups, while the Research & Translation Hub will contain research and incubator space for 1000 researchers alongside 50 spin-out companies, designed to accelerate the commercialisation of research. This exceptional environment underpins the world leading fundamental and translational biomedical research at LMS and at Imperial College.

LMS pioneers the study of gene regulation and gene-environment interactions, capitalising on its unparalleled strengths in basic epigenetic mechanisms, physiology and metabolism, genomics and imaging, combined with bioinformatics, biostatistics and imaging. The Institute's strap line, "Genes in discovery, inheritance and health" summarises both its strengths and ambition. It reflects LMS's commitment to fundamental science, its application for understanding disease and its determination

To use this knowledge to improve human health across generations. The Institute currently comprises circa 35 investigator-led groups supported by eight research facilities.

At the most recent review by the MRC, the quality of the Institute's research and its proposals for the future were strongly endorsed, with research funding of £89.2M awarded for the period April 2016-March 2021. Among the institute's noted strengths were:

- World-leading research programmes and outstanding examples of strengths in epigenetics, genomics, metabolic homeostasis and cardiovascular disease;
- The establishment of a new, interdisciplinary Integrative Biology Section, bringing together computational and experimental expertise and showing a promising focus on single cells and molecules;
- Involvement of leading international collaborators in the Institute's programmes; productive links with Imperial College, which promote and enhance interdisciplinary training and research;
- Innovative clinical science training programmes, producing clinicians with a strong foundation in basic research; innovative basic science career pathways;
- And field-leading public engagement.

2.1. Institute's Mission and Organisation

The LMS aims to be at the forefront of innovative biomedical research and in partnership with Imperial College London and others, to promote the translation of its research for maximal benefit. The institute trains and mentors the next generation of clinical and non-clinical scientists and strives to enhance the public's interest, understanding and trust in science.

At the Hammersmith Campus, where the new LMS facility will be situated, it contains two major teaching hospitals. It is therefore ideally placed to work with on-site partners to facilitate translational pull-through of its work. LMS scientists also exploit multidisciplinary opportunities with colleagues from Imperial College London, combining biological sciences with other disciplines, in particular engineering, physics, mathematics and computer science.

At full strength, the LMS will comprise over 35 research groups organised into the three research sections Epigenetics, Integrative Biology, Genes and Metabolism. The research groups are also part of the Institute of Clinical Sciences (ICS), which is a Department in the Imperial College London Faculty of Medicine with the two divisions Imaging Sciences and Molecular Sciences.

2.2. The Institute's Vision

Each of the MRC Units and Institutes undergo a strict review process, in which the scientific output of the last five years and the strategic plans for the future are reviewed by a panel of international specialists, who are leading in the field of the respective research. These Reviews (QQR) determine the future of the Unit/Institute and the relevant funding required.

The MRC Clinical Sciences Centre has consistently been very successful in these reviews, gaining approval for new science directions, additional research groups, new equipment, etc. In the recent QQR it was acknowledged that the Institute is in need of more presence and an improvement of facilities to cater for the future research needs.

One of these areas is the increasing contribution by and focus on the potential provided by new imaging equipment and the importance of bioinformatics. New types of imaging equipment (Super Resolution Microscopy, Cryo Electron Microscopes, etc.) have demands on the facilities, which the current laboratories cannot provide.

The LMS is also critically in need of new animal facilities to provide a long term solution for innovative *in vivo* imaging, physiology and metabolic research.

One of the most important aspects of this project is to provide facilities, which are flexible for future developments, change of science directions and opportunities for collaborations.

2.3. *MRC LMS Existing Facilities, Issues and Opportunities*

Figure 1 shows the facilities currently occupied by the MRC LMS (formerly the MRC Clinical Sciences Centre). Some of these relatively new facilities. These are spread over the Hammersmith Campus and hence do not provide a home for the Institute.

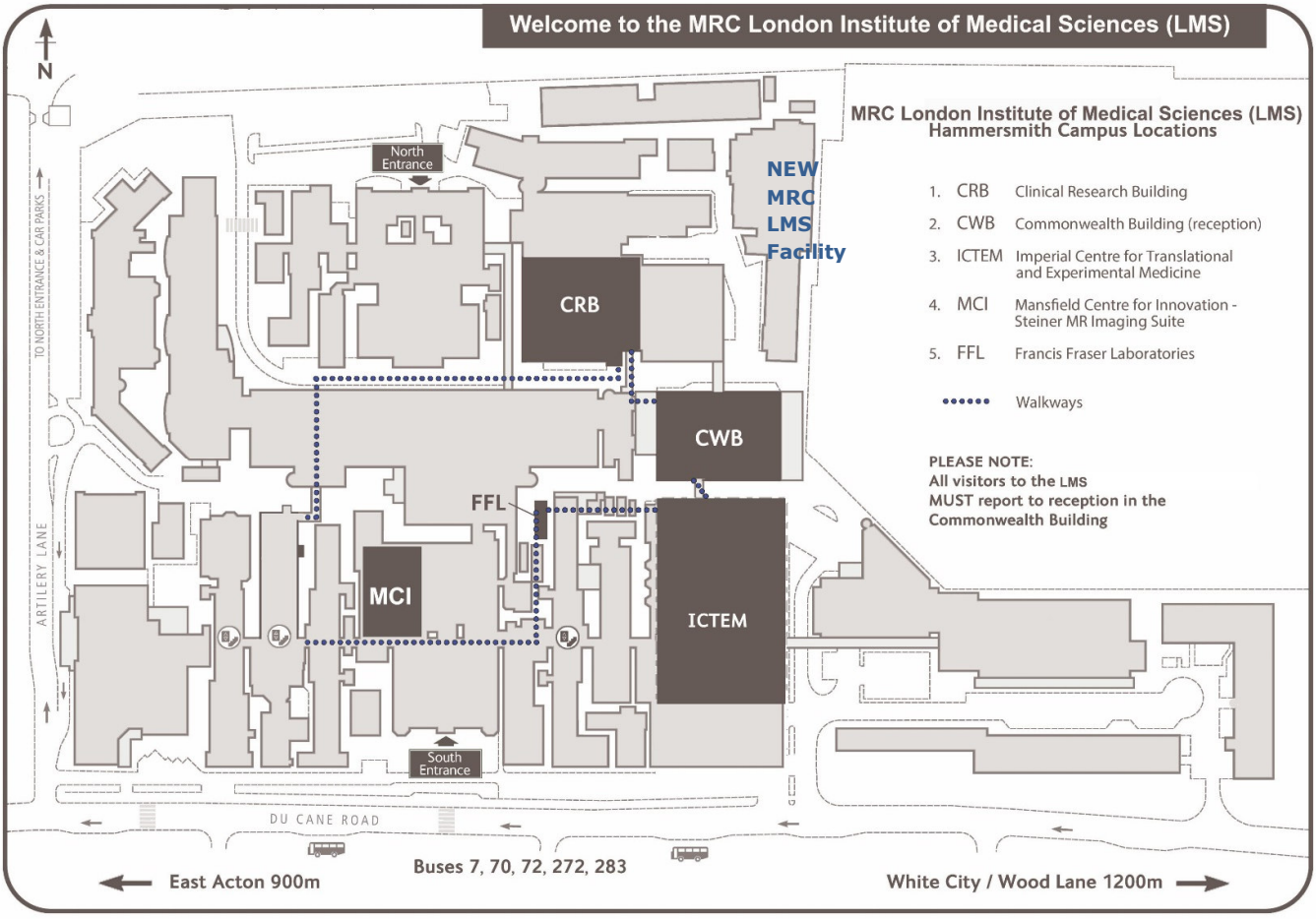


Figure 1 - Locations of LMS facilities at Hammersmith Campus

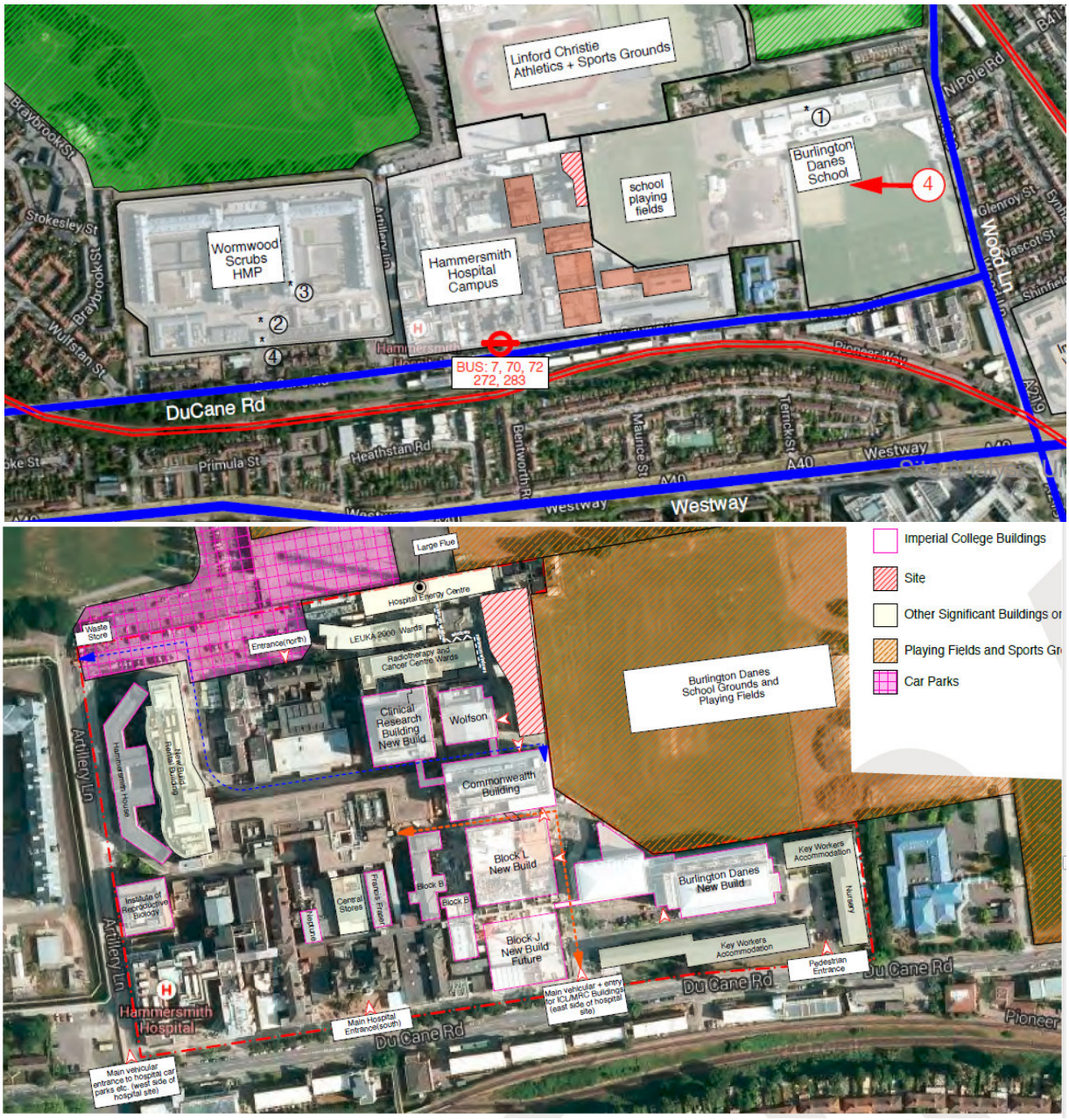


Figure 2 – Arial Photographs of the Hammersmith Campus

The Institute is currently located within 5 buildings on the Hammersmith Campus. The Clinical Research Building (CRB) forms the hub for the Epigenetics Section, as well as housing about half the groups from the Genes and Metabolism Section and the Integrative Biology Section. The remainder of the Genes and Metabolism Section is housed on the second floor of the Imperial Centre for Translational and Experimental Medicine (ICTEM). Groups working on innovative imaging technologies are located within the Mansfield Centre for Innovation, which includes facilities for 1.5T and 3T MR imaging, as well as next generation microscopy (including PALM-STORM, SIM and STED), Administration and the main Data Centre are located in the Commonwealth Building (CWB). Imperial College's experimental animal facility (H1), which is critical for the work of many of the LMS research groups, is located on the lower floors of CRB. *In vivo* imaging is in the Francis Frasier laboratories

Across the LMS, accommodation is now extremely cramped with no available space for expansion of activities or for hosting the innovative interdisciplinary collaborations which are increasingly important to the institute's ability to deliver. Furthermore, adoption of new technologies, particularly new imaging modalities, is critical to the Institute's long term success, but is currently inhibited not only by lack of space, but also by power constraints to several of the buildings and by lack of ground floor accommodation for vibration sensitive instruments. The CRB and Mansfield Centres are particularly problematic due to the age of the buildings and the infrastructure. Furthermore, access to modern experimental animal facilities is critical for approximately half of the research programmes at the LMS, but is currently severely hampered by a lack of space for modern procedure rooms within the existing H1 facility.

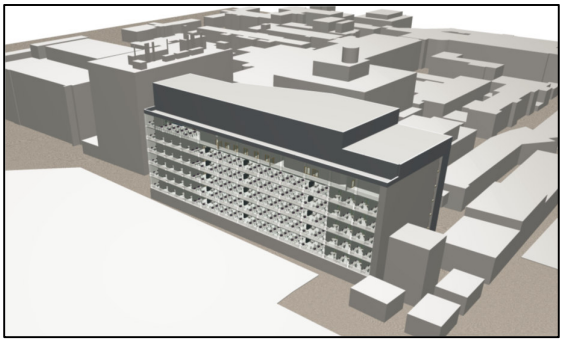
Procedure rooms, with adjacent facilities for long term holding, are critical for longitudinal metabolic, neurological and behavioural monitoring facilities as well as for state-of-the-art in vivo imaging equipment (photoacoustics, bioluminescence, ECHO-MRI, 2-photon microscopy etc). Most of the current facilities are aged and the areas struggle with sufficient air supply, cooling, etc. Insufficient flexible space to house modern technology, such as Super-Imaging Microscopes and Cryo-Electron Microscopes as well as lack of procedure room and facilities for longitudinal studies is holding the Institute back from delivering and developing their research to their full capability.

In 2012, the MRC undertook the decommissioning and demolition of the Cyclotron Building (see **Figure 3 overleaf**). Building was raised to the ground (ground floor slab level) and is now available for re-development to create the new LMS facility.

The MRC has a remaining lease of 34 years for this site and is potentially seeking to undertake the negotiations with the Imperial College Healthcare Trust (ICHT) in order to use the opportunity for a new build which will cater for the institute's future needs and provide the infrastructure required to maintain and increase its scientific impact.

Priorities for the institute include the provision of a fit for purpose experimental animal facility which will meet LMS's future needs, and a new in vitro imaging centre, which will bring together the Institute's existing imaging equipment and, crucially, provide additional high quality space for the incorporation of new state-of-the art imaging technologies such as cryo-EM.

The new building also provides an opportunity to consolidate LMS researchers, ideally within a single building, but certainly within fewer locations than at present, which will provide a more conducive environment for communication and collaboration across the institute. Release from leases/SLAs on existing space may provide for some "return" by saving of costs the current cramped conditions in LMS and to provide flexible collaborative space for interactions with partner organisations, including with Imperial College, are also important considerations.



2.4. Partnership with Imperial College

Imperial College London (ICL) is one of the world's leading universities, consistently rated in the top ten. It is the only UK University to focus exclusively on science, technology, engineering, medicine and business and the only one to have had the application of its work to industry, commerce and healthcare central to its mission since its foundation.

Imperial College London has committed £25M to the new LMS building, and is currently scoping options for use of the building, to determine the research discipline/s to be based there. One attractive possibility is to use the new build as part of an initiative to consolidate Imperial's substantial community of researchers working in Infections and Immunity onto the Hammersmith campus. This would offer new scientific opportunities, particularly in the areas of emerging infections and antimicrobial resistance, which have been recognized as critical research priorities for the MRC and the UK more generally.

Partnership with LMS provides an opportunity for Imperial College London to invest in new, state-of-the-art facilities on the Hammersmith campus, as well as the potential for subsequent redevelopment of space vacated by LMS. The new building will serve as a focus for interdisciplinary research involving academics and industrial partners across the Hammersmith and White City campuses. The shared occupation of the new development by LMS and Imperial provides new opportunities for collaboration and underlines the College's commitment to working in long term partnership with MRC and in particular LMS, to deliver a world leading programme of biomedical and translational research.

In the recent capital funding round, the UK Government has ring-fenced £50m for the design and construction of a new laboratory facility for the LMS building, including a long-term solution for an appropriate provision for Central Biological Services (CBS). In combination with the potential contribution by ICL, this project will have a value of approximately £75m. However, the MRC and ICL are currently actively seeking additional funders to maximise the space and consequently the science that is to be taking place in the new facility.

3. Cyclotron Site Details

3.1. General

The plot (**see Figure 3**) was previously occupied by the Cyclotron building. It is located at the North East perimeter of the Hammersmith Campus, adjacent to the Wolfson Education Building, Cancer Centre (radiotherapy) and the ICHT Maintenance and Energy Centre. Immediately adjacent is the Burlington Dane Academy, with their playing fields being directly next to the property border.

The Cyclotron building was at the leading edge of science, having hosted the first cyclotron and consisted of heavily constructed facilities to hold the magnet and target area as well as specialist areas for patient application.

It was constructed in various phases which resulted in a very complex building, with different floor levels, eight storeys high.

The Cyclotron Building was demolished in 2015 (http://www.mcgee.co.uk/projects/cyclotron/)

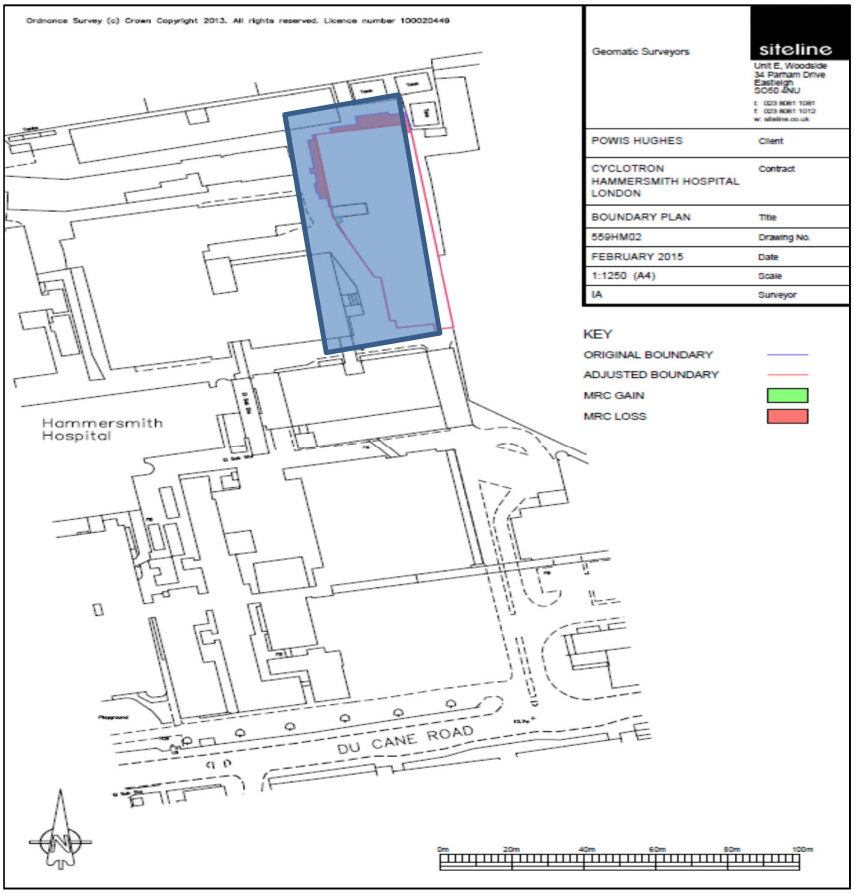


Figure 3 - Site Outline of the Cyclotron Plot

Figure 4 – Photographs of the Cyclotron Plot

3.2. Site Specific Issues

The scope of the decommissioning and demolition of the Cyclotron Building in 2015 stopped short of demolishing the ground floor slab and removing the foundations. Voids below the Ground Floor slab have been backfilled with gravel and the site secured at the agreed boundaries with hoarding.

The scientific work undertaken in the Cyclotron Building involved the use of various radioisotopes, most of which were short-life. However, some were long-life radioisotopes, which are still detectable in specific areas of the ground floor slab and may be present in some of the areas below the slab. MRC have undertaken a survey of the remaining ground floor slab and are currently reviewing the status of the area in order to determine, if a complete removal of the foundations and ground floor slab is required. If so, this would need to be taken into consideration in the design development or enabling works.

For the housing of the magnet and relevant ancillaries, the structure of floors, walls and ceiling were constructed in very thick, heavily reinforced concrete. As part of their design assessments the designers are asked to consider the suitability of the existing foundations for the future facility.

4. Scope of this Commissioning Consultant Appointment

The services which the MRC is seeking under this appointment are those of an independent Commissioning Consultant for RIBA Stages 0-7, to advise the Project Manager and Client on all Commissioning, Testing, Verification and Validation (TCVV) matters.

Commissioning & Testing: is deemed to be the setting to work of individual engineering services systems to provide that it meets the performance requirements set out in the Stage 4 design, as produced by the Lead Designer.

Verification: is deemed to the proving of the operation of all commissioned services systems in conjunction with each other and will included demonstrations that all interfaces properly function. Also, that all fault and failure modes operate correctly.

Validation: is the demonstration and acceptance of commissioned and verified systems by a licenced or especially skilled 3rd party authority.

The Commissioning Consultant will act predominantly in an auditing and compliance capacity, making sure that the appropriate documentation and activities are undertaken by the Lead Designer and Main Contractor regarding the commissionability, Testing, Commissioning, Verification and Validation (TCVV) aspects of the project and that the installed systems meet the design criteria in good time before Practical Completion and handover of the new LMS facility.

The Commissioning Consultant will work closely with the Project Manager, Client stakeholders, Lead Designer and Main Contractor in the development of the Testing, Commissioning, and Verification and Validation (TCVV) aspects of the project.

A separately appointed Lead Designer shall undertake the multi-disciplinary design through to RIBA Stage 4 Technical Design, with the Lead Designer then novated over to the Main Contractor to perform RIBA Stage 5-7.

Refer to section 4.6 for the duties of the Commissioning Consultant.

4.1. The Client

MRC, 2nd Floor, David Phillips Building, Polaris House, North Star Avenue, Swindon, SN2 1FL.

4.2. Project Manager and Cost Manager

Turner & Townsend, One New Change, London, EC4M 9AF

4.3. The Site Address

MRC London Institute of Medical Science (LMS), Hammersmith Hospital Campus, Du Cane Road, London, W12 0NN

4.4. *Programme / Milestones*

Important Note: These following dates are not absolute, but will be finalised upon appointment, subject to various approvals.

Task / Milestone	Start	End
Lead Designer Tender Period	March 2017	May 2017
Appoint Lead Designer	June 2017	June 2017
Commissioning Consultant Tender Period	May 2017	June 2017
Appoint Commissioning Consultant	June 2017	June 2017
RIBA Stage 0-1 – Definition and Brief	June 2017	September 2017
RIBA Stage 2 - Concept Design	October 2017	December 2017
RIBA Stage 3 - Developed Design	January 2018	April 2018
RIBA Stage 4 – Technical Design	April 2018	August 2018
Main Contractor Tendering Period	October 2018	December 2018
Main Contractor Selection and Appointment	January 2019	January 2019
Construction	February 2019	March 2021
Testing, Commissioning and Validation	March 2021	April 2021
Soft Landing Period	April 2021	May 2021
Transition into new LMS Facility	May 2021	August 2021
LMS Live in New Facility	August 2021	August 2021

4.5. *Project Governance*

4.5.1. *Project Board*

The Project will be led and managed by the MRC Major Projects Department. The governance of the project has been established with current Project Board, to which the project delivery team reports via the Turner & Townsend Project and Cost Managers.

The Project Board is the strategic decision-making forum at which project issues and risks are considered and decisions taken direction and management of the project. This includes setting the tolerances that the project will work within, management by exception and providing guidance and support to the project.

The Project Board will meet monthly and minutes will be taken and distributed to those attending by the Project Manager.

4.5.2. *Stakeholder Board*

A Stakeholder Board has been established with the current stakeholders to discuss and drive forward issues to permit the design and construction of the LMS facility. It consists of representatives from Imperial College London and London Institute of Medical Science, with further stakeholders added as required.

The Stakeholder Board meets monthly and minutes will be taken and distributed to those attending by the Project Manager. Upon appointment, the Lead Designer will be asked to attend the Stakeholder Board meetings as required.

4.6. *Duties of the Commissioning Consultant (RIBA Stages 0-4)*

The Commissioning Consultant's roles and responsibilities during RIBA Stages 0-4 inclusive include, but are not limited to, the following:

1. Review the designs produced by the Lead Designer during RIBA Stages 0-4 for commissionability. A report will be produced by the Commissioning Consultant in advance of each RIBA Stage Gateway Review, which will document any concerns, non-conformance or improvement measures needed to be addressed by the Lead Designer prior to progressing to the next design stage and ultimately before going out to tender at the end of RIBA Stage 4. The report will be issued in PDF format, for review and acceptance by the Project Manager. Once accepted, it will be uploaded to Huddle.

2. Monitor and support the development of robust design deliverables by the Lead Designer concerning TCVV, including TCVV requirements embedded into specifications and drawings and which can ultimately be properly commissioned by the Main Contractor.

3. Chair monthly commissioning meetings, to review the commissionabilty and functionality of the MEP design, as developed and designed by the Lead Designer. The Commissioning Consultant shall produce meeting minutes from the commissioning meetings and issue those out as necessary to the Project Team.

4. Keep full and proper records of all meetings attended to or conducted by the Commissioning Consultant. At the end of the project, the Commissioning Consultant shall provide a CD containing all relevant reports and meeting minutes issued by the Commissioning Consultant during the project.

5. Involvement in the review of the controls systems being developed by the Lead Designer, including all key safety systems/ interlocks associated with the Supply AHUs, Extract Fans, Fume Cupboards, MBSC, LEVs, Ventilated Cages etc.

6. Provide a succinct monthly Commissioning Consultant report in MS Word format and converted to PDF, to then issue to the Client appointed Project Manager, which will include, but not be limited to, the following:

    - A review of progress, by reference to key dates and project milestones
    - A review of principle actions undertaken during the period and a forecast of principle actions for the forthcoming period
    - Review of problems requiring resolution
    - A list of key issues, including potential changes
    - A list of outstanding information or decisions required to maintain design progress in accordance with the design programme

7. Develop a Commissioning Masterplan (CMP) document, to convey the requirements which the Lead Designer is to take to achieve the Client's objectives for the project, from the TCVV perspective.

8. Monitor the developing designs against the overall Commissioning Master Plan.

9. Be satisfied that the TCVV requirements are transferred into the tender documents and drawings.

10. At all times, act in a spirit of mutual trust and co-operation towards the Client and in full co-operation with the Client appointed Project Manager.

11. Work with the Lead Designer to ensure the success criteria are fully articulated and the appropriate provisions are included for in the approved design.

12. Establish the clients' requirements for operation of the completed building and its engineering services. Determine a set of measurable success criteria for commissioning the project. Document the output on this as necessary in MS Word and issue to the Project Team.

13. Prior to a Main Contractor being appointed, make recommendations to the Client and Project Manager on the need for any specialist contractors to execute any sections of the commissioning and validation elements.

14. Support the Client and Project Manager in assessing commissioning related information or proposals from the Main Contractor, pre-Contract Award.

15. Maintain a register of key commissioning issues including actions and timescales. To be issued by the Commissioning Consultant each month to the Project Team.

16. Participate in project risk reviews when invited. Comment specifically on commissioning related risks including appropriate mitigation actions.

17. Provide technical and written input as requested by the Project Manager to formal RIBA Stage Design Reports.

18. Identify any particular external authority who may have influence over or be involved with commissioning and validation related activities. Develop and document a plan for their engagement throughout the life of the project.

19. Assist the Lead Designer and Project Manager to identify whether the Home Office licencing process is applicable to the project and therefore whether it needs to be a condition of the contract.

20. Agree with the client team the quantum, standards and format of evidence documents that will be required to support any licence or statutory applications related to commissioning and use of the building.

21. All documentation produced for or in relation to this project will become ownership of the MRC. Permission for use on other projects and/or publications will be required from the Project Director.

22. All documentation is to be shared on the Client portal (Huddle). Audit trail for the submission for documentation and their approval is on this system. Appropriate training will be provided.

23. Technical assessment of the Main Contractor tender responses and proposals, with respect to Commissioning, Testing, Verification and Validation of the MRC LMS.

24. Promptly notify the Client and Client appointed Project Manager in writing of any matter that will affect the timing, cost or quality of the works in relation to the services and the magnitude thereof and price mitigation.

25. Not without the prior written consent of the Client and Client appointed Project Manager, issue any instruction that would materially vary the project, increase cost or time taken to complete the project.

26. A minimum of one month before conclusion of the pre-contract process, ensure the key documents are updated and issued to the Project Manager

27. Support the Client team and Project Manager in assessing commissioning related information or proposals included in the Main Contractor tender returns.

28. Identify the requirements for stable running periods and data logging of system performance, once the systems are set to work under automatic control. Check that the agreed requirements are captured in the conditions of contract.

29. Review and comment on the proposed construction programme including TCVV activities. See that key milestones are identified and that adequate time is allowed for in the final stages of the project for the TCVV activities. This will include defining an appropriate time allowance for TCVV activities after the main construction works are substantially complete.

4.7. Duties of the Commissioning Consultant (RIBA Stages 5-7)

The Commissioning Consultant's roles and responsibilities during RIBA Stages 5-7 inclusive include, but are not limited to, the following:

30. Following appointment of the Main Contractor and their specialist M&E Contractor, implement and lead a preparation and planning process for all testing, commissioning, verification and validation (TCVV) issues identified pre-contract.

31. Assess the appointed Main Contractor and identify who in the construction team will take overall responsibility for coordinating and delivering the TCVV processes.

32. Assist the Project Manager in responding to any Main Contractor Requests for Information relating to TCVV activities.

33. Seek a detailed testing and commissioning programme from the Main Contractor, to include logic links, critical path, float and highlight any specific interdependence with construction activities. Review the testing and commissioning programme and inform the Project Manager of its adequacy.

34. Check that the programme developed by the Main Contractor considers soft landings and seasonal re-commissioning requirements that will be necessary post project handover.

35. Develop with the Main Contractor, a Completion Checklist which establishes the testing and commissioning documentation which will be required to be issued by the Main Contractor at Practical Completion of the project.

36. Seek assurance and evidence that during the commissioning phase of the project, the ventilation and hydronic systems will achieve volumetric design requirements, fume cupboards achieve design face velocity requirements and satisfactory containment results.

37. Be satisfied that All TCVV activities and the overall handover documentation from the Main Contractor are properly operational and covered by record information.

38. Establish the notice periods for the availability of witnessing authorities and make sure the main contractor factors the requirements into the master plan / programme.

39. Update the key commissioning issues register following monthly commissioning meetings.

Testing

40. Identify the integrity testing requirements for each individual system from the specifications and confirm requirements with the client team.

41. Establish a project specific strategy by which each individual system can be integrity tested to demonstrate compliance with the project and/or regulatory requirements.

42. Identify test points that allow incremental testing to suit site works as they progress and also test points to be used for whole system tests at completion.

43. Identify all test points and facilities on the installation drawings.

44. Agree the format of test certificate proforma's for general approval with the witness authority.

Commissioning

45. Determine the operational requirements of each individual system and check that measures and devices are in place to allow the design parameters to be set, measured, controlled and demonstrated. Such features should include:

    - Flow measuring points.
    - Temperature/pressure measuring points.
    - Pressure measuring points.
    - Flow control devices (regulators, dampers, commissioning stations etc.
    - Manometers/DP points.
    - Gauges.
    - Metering points.

46. Make sure all test points and commissioning facilities are included on the installation drawings.

47. Establish the interface requirements of each individual system with all other systems to feed into the verification process.

48. Agree the format for the Client to witness the performance of the installed engineering systems, once they have been tested and commissioned by the Contractor.

Verification

49. In conjunction with the Main Contractor, develop an interface matrix to formally identify all system interfaces that need to be established and proven.

50. In conjunction with the Main Contractor and Client team, carry out a cause-and-effect analysis of all of the services systems to identify what is the likely consequence of faults and failures occurring.

51. From this analysis, produce with the main contractor a cause and effect matrix to inform the detailed development of the controls systems to minimise the operational impact on the project.

52. Agree the format of verification certificate proforma's for general agreement with the client authority.

Validation

53. In conjunction with the Project and Client stakeholders, identify and document with the Main Contractor, what engineering services systems require the input of a 3rd party validator to sign the system off.

54. Agree the format for validation certification including a process for sign-off with the Client

Implementation – Site Works

55. Establish the general format of the TCVV documents to be presented by the Main Contractor. All documents should be clear in intent and clearly identify:

    - The activity
    - Whether test it is part of a series (e.g. test 2 of 5 etc.)
    - The number of pages in the document pack (e.g. page 3 of 6 etc.)
    - The base criteria against which pass/fail status is determined
    - The measured results versus base design
    - Clear statement of pass/fail outcome
    - Tester identity
    - Witness identity
    - Witness authority

- Date

If the outcome is a fail status, the document must clearly identify how the failure has been addressed, with all new signatures required in evidence.

56. Make sure documentary evidence is presented on pre-agreed proforma's and collated in an orderly manner for inclusion in the handover documents.

57. Make sure the Main Contractor submits documentary evidence that a test or activity has been successfully undertaken to his own satisfaction before requesting witnessing from any authority.

58. Regularly review and comment on the detailed testing and commissioning programme including all TCVV activities.

59. Check that all documentary evidence is safely stored in good order for inclusion in the handover documentation.

60. Provide a regular monthly report regarding all TCVV related matters in a format to be agreed with the Project Manager.

61. Work with the Project Manager and Client's Team so that TCVV activities are completed and signed off in full before Completion is awarded.

Testing (Site Works)

62. Identify who will be responsible for the testing processes and who is required to witness the same.

63. Work with the Main Contractor who must systematically test all services that are required to have integrity tests carried out. Both in part as works progress and as a whole when all works associated with that system are complete.

64. Make sure the main contractor generates the appropriate documentary evidence that the tests are complete (for both pass and fail status tests).

65. If an integrity test fails, with the main contractor, identify the source of failure, rectify and re-test. Make sure documentary evidence is reissued showing the test passing following rectification.

66. Ensure all documentary evidence is safely stored on Huddle and in good order for inclusion in the handover documentation.

Commissioning (Site Works)

67. Identify who will be responsible for the commissioning processes and who is required to witness same.

68. With the Main Contractor, ensure that all system are systematically commissioning to confirm that the design duty is being delivered as required at all parts of the system. This should be undertaken when the system is complete.

69. Make sure the appropriate documentary evidence is produced by the Contractor and confirms the system commissioning is completed (pass or fail). It must clearly show the measured performance vs. the design performance.

70. If the commissioning fails to demonstrate that the design parameters are being achieved work with the Main Contractor to identify the source of failure, rectify and re-test. Make sure documentary evidence is reissued showing the pass status following rectification/

71. Make sure the Main Contractor is storing all documentary evidence in good order for inclusion in the handover documentation. The Commissioning Consultant will liaise with the Contractor to ensure the documentation is issued to the project team and stored electronically on the project extranet site hosted and maintained by the Contractor.

Validation (Site Works)

72. Identify who will be responsible for the validation of each particular system or processes and who is required to witness same. This may be a Main Contractor appointed specialist, a Client appointed specialist or a 3rd party licencing authority.

73. Ensure the format of the documentary evidence for validation is properly understood and all witnesses and their authorities are properly identified in advance.

74. Identify the notice period required for the availability of the required witnesses.

75. Working with the Main Contractor:

    - Systematically demonstrate that all services and systems operate properly under automatic control and that all system interfaces are properly established.
    - Demonstrate that the cause and effect actions properly operate automatically and that all alarms properly function.
    - Immediately generate the appropriate documentary evidence that the system performs properly and effectively to the validators' satisfaction.
    - Make sure documentary evidence is produced for both pass and fail status tests.

76. If validation activities fail to demonstrate that the correct integrity, performance and control are being achieved, working with the main contractor to identify the source of failure, rectify and re-test. Make sure documentary evidence is reissued showing the pass status following rectification.

77. Some validation may be required in advance of verification demonstrations and some may only be able to commence after the verification demonstrations are complete. Make sure these are properly considered and planned.

78. Identify the requirements for stable running periods and data logging of system performance once the systems are set to work under automatic control. Check that the agreed requirements are captured in the conditions of contract.

Project Close-out

79. Participate in Completion Review Meetings as reasonably required by the Project Manager. Report on the status of commissioning related activities on site.

80. Support the quality monitoring team in ensuring that any snagging or defects related to

81. Participate in a post-completion review meeting.

82. In conjunction with the Main Contractor, make sure that seasonal re-commissioning activities are properly carried out to see that the plant and services operate properly at the peak season conditions. These activities will be undertaken in the 12-month post-completion period. Also see that the handover documentation is properly updated to reflect the seasonal re-commissioning activities.

Appendix SOW-A – Design Responsibility Matrix

MRC LMS

DESIGN RESPONSIBILTY MATRIX

This document details the provision of professional services to be provided, and indicates the parties responsible for providing those services within the project environment, and at each RIBA workstage. This document covers all aspects of project services and is intended to be core to all projects and deemed to be inclusive on all projects unless amended as part of the project agreement.

Section 1 Consultancy Services Generally

Project: MRC LMS
Revision version and date: 09 March 2017

This section covers all general provision of services across all stages of a project. The Consultants shall provide to the client, design and other services for the works in accordance with the requirements of the agreement and shall include (but shall not be restricted to) the following:

Legend:

P	Involvement Required in a **PRINCIPAL** Role
S	Involvement Required in a **SUPPORTING** Role
A	**ATTENDANCE** Required
✔	To advise, support and participate in action if requested

In addition to the undernoted services/actions, the Architect will assume the role of Lead Designer (unless agreed otherwise) and will be responsible for organising the design team, timeous delivery of accurate, co-ordinated and compliant information.

Reference	Section 1 CONSULTANCY SERVICES GENERALLY (Applicable to any/all stages of project)	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
1.1	Provide Architectural Design Services	**Y**			**P**									
1.2	Provide Interior Design Services	**Y**			**P**									Finishes specification and selection for all areas.
1.3	Provide Landscape Architectural design services	**N**												To be confirmed
2.1	Provide Structural Engineering Design Services	**Y**				**P**								
2.2	Provide Civil Engineering Design Services	**Y**				**P**								
2.3	Provide Highways Engineering Design Services (excluding architectural bridge structures)	**Y**				**P**				**S**				Specialist to advise on highway specific requirements, C+S engineer to include in their specification and drawings.
2.4	Provide Geotechnical Engineering Design Services	**Y**				**P**								Preparation / Scoping of specification for site testing and interpretative reporting – SI by Specialist Contractor.
2.5	Provide Soils Engineering Design Services	**Y**				**P**								In relation to foundation solution.
2.6	Provide Below Ground Drainage Design Services (excluding foul treatment works design but including attenuation tank design)	**Y**				**P**	**S**							Include measures and connections to existing infrastructure.
2.7	Provide Contaminated Land and Environmental Engineering Services	**Y**				**P**	**S**							Limited Service in support of Building Regulations.
2.8	Provide Structural Survey Services	**Y**				**P**								For any retained structures
2.9	Provide Topographical Survey Services	**Y**			**P**	**S**	**S**							Preparation / scoping of brief for survey - Topographical Survey by Specialist Contractor.

Reference	Section 1 CONSULTANCY SERVICES GENERALLY (Applicable to any/all stages of project)	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
2.10	Provide Fire Engineering Design Services	Y			S	S	S			P				Provide advice on the application of a Fire Engineered solution.
2.11	Examine and advise on existing Building Structure , Asbestos etc.	Y			S	P	S	S						
3.1	Provide Mechanical Engineering Design Services	Y			S		P							Include for spatial co-ordination of all M&E services within the building structure.
3.2	Provide Electrical Engineering Design Services	Y			S		P							As 3.1
3.3	Provide Public Health Engineering Design Services	Y			S		P							As 3.1
3.4	Provide Sanitary Systems Engineering Design Services	Y			S		P							Architect to select sanitary ware.
3.5	Provide Above Ground Drainage / Waste Disposal Design Services	Y			S	S	P							Pop up setting out by Architect
3.6	Provide Lift / Escalator Design Services	Y			S	S	P							Include for undertaking a traffic analysis of passenger lifts to ensure adequacy of provision. Provide dimensional information for lift pit and shaft. Internal finishes selected by architect.
3.7	Provide Communications Systems Design Services	Y	S				P							Communication strategy to be provided by MRC. Consultant to develop specification and design.

Reference	Section 1 CONSULTANCY SERVICES GENERALLY (Applicable to any/all stages of project)	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
3.8	Provide IT Design Services	**Y**	**S**	**S**	**S**		**P**							ICT brief and strategy to be provided by MRC. Consultant to develop structured cabling design based on strategy.
3.9	Examine and advise on existing Building Services Systems	**y**					**P**							For any retained buildings and systems
4.1	Provide Acoustic Design Services	**Y**			**S**	**S**	**S**			**P**				
4.2	Provide Laboratory Planning Design Services	**Y**	**S**		**P**	**S**	**S**			**S**				
4.3	Provide services in relation to application of the Disability Discrimination Act	**Y**			**P**	**S**	**S**							In relation to the physical design and specification of the facilities for Building Regulations compliance
5.1	Attend Design Team Meetings	**Y**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**		As Required.
5.2	Attend Client Meetings	**Y**	**A**	**A**	**A**	**A**	**A**			**A**	**A**			As required.
5.3	Attend Contractor Meetings	**Y**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	As Required.
5.4	Attend Design Review Meetings	**Y**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	As required.
5.5	Attend Site Visits during construction	**Y**	**A**	**A**	**A**	**A**	**A**		**A**	**A**	**A**	**A**		As Required.
6.0	Complete and submit in a timely manner the monthly dashboard reports and other project updates as required by MRC.	Y		**P**	**S**	**S**	**S**	**S**	**S**	**S**				Design Team to provide monthly progress reports to Project Manager.
6.1	Provide information to discuss proposals with and incorporate input from other consultants	Y	✔	✔	✔	✔	✔		✔	✔				May apply to other consultants; refer project specific requirements.

Reference	Section 1 CONSULTANCY SERVICES GENERALLY (Applicable to any/all stages of project)	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
6.2	Manage the incorporation of Specialist Consultant and/or Contractor Design Information	**Y**		✔	✔	✔	✔		✔	✔				As 6.1
6.3	Provide information (drawn or otherwise) to others for Cost Planning and Control Purposes throughout the Project	**Y**	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	As 6.1
6.4	Undertake Value Management / Value Engineering exercises in connection with the Project	**Y**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	Led by the Cost Manager
6.5	Participate in Risk and Opportunity Workshops in connection with the Project	**Y**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	Led by the Project Manager
6.6	Advise on matters or obligations arising under the CDM Regulations.	**Y**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	Led by the Principal Designer
6.7	Produce Designer's Risk Assessments (or suitable alternative) as may be required under the CDM Regulations, including adding residual risks onto drawings.	**Y**		✔	✔	✔	✔		✔	✔			✔	As 6.1
6.8	Assess specific site risks in relation to ground conditions / abnormals / contamination and the like.	**Y**		**S**	**S**	**P**	**S**		**S**					
6.9	Assess specific site risks in relation to Japanese Knotweed, Giant Hogweed etc.	**N**												
6.10	Liaise with Statutory Authorities (Planning/Building Control/Fire Brigade/EHO/SEPA/Licensing etc)	**Y**	**S**	**S**	**p**	**S**	**S**			**P**				

Reference	Section 1 CONSULTANCY SERVICES GENERALLY (Applicable to any/all stages of project)	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
6.11	Apply for necessary Statutory Authority Consents (Planning /Building Control/Fire Brigade EHO/SEPA/Licensing etc) and any necessary relaxations, amendments and/or re-submissions	Y	S	S	P	S	S			P				
6.12	Conduct exceptional negotiations with Statutory Authority Bodies	N												
6.13	Liaise with Public Utilities bodies (Electric/Gas/Water/Telecoms etc)	Y	S	P	S	S	S							
6.14	Apply for necessary consents to Public Utilities Bodies (Electric/Gas/Water/Telecoms etc)	Y	S	P	S	S	S							
7.1	Provide information in relation to Local Authority, Government or other grants	N												
7.2	Make submissions to UK Heritage Bodies and/or Non-Statutory Bodies	Y	S	S	P	S	S			P				
7.3	Provide information to Advisory Bodies	Y	P	S	S	S	S							Support Client as required
7.4	Negotiate with Advisory Bodies	Y	P	S	S	S	S							Support Client as required
7.5	Advise on rights including easements and responsibilities of Owners & Lessees	Y	P	S	S	S	S							Support Client as required
7.6	Provide information on rights including easements	Y	P	S	S	S	S							Support Client as required

Reference	Section 1 CONSULTANCY SERVICES GENERALLY (Applicable to any/all stages of project)	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	and responsibilities of Owners & Lessees													
7.7	Negotiate rights including Easements	Y	P	S	S	S	S							Support Client as required
7.8	Provide services in connection with Party Wall Negotiations	Y		S	P	S								
7.9	Advise on the use of energy in new buildings	Y	S	S	S	S	P							
7.10	Contribute to life cycle analysis of proposed buildings to determine their likely cost in use	Y	S	S	S	S	S	P						
7.11	Provide services in connection with environmental / sustainability studies	Y		S	S	S	P							Environmental / Sustainability Low/Zero Carbon Technology study required.
7.12	Provide architectural detail / information for 3D Architectural Visualisation Services	Y		S	P	S	S			S				
7.13	Provide services in connection with BREEAM and other like studies.	Y		S	S	S	P							The Consultant's design is required to achieve a BREEAM Excellent rating.
8.1	Manage FF&E selection, compile Room Data Sheets and co-ordinate drawing / room layouts.	Y	S	S	P	S	S			S				Architect to develop and manage project specific RDS. Client to specific laboratory equipment Selection.
8.2	Co-ordinate M&E and FF&E Room Layouts	Y		S	P	S	S							
8.3	Advise on works of Special Quality	N												
8.4	Prepare information for Installation of works of	N												

Reference	Section 1 CONSULTANCY SERVICES GENERALLY (Applicable to any/all stages of project)	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	Special Quality													
8.5	Inspect installation of works of Special Quality	N												
8.6	Advise on commissioning or selection of Works of Art	**Y**	**S**	**S**	**P**	**S**	**S**							Only as far as project requires.
8.7	Prepare information for installation of Works of Art	**Y**	**S**	**S**	**P**	**S**	**S**							Only as far as project requires.
8.8	Provide industrial design services	**N**												
8.9	Examine and advise on existing Building Systems	**N**												
8.10	Provide Town planning and Urban Design Services	**Y**			**P**					**P**				Architect or specialist planning consultant to lead on all planning matters
8.11	Provide Graphic Design Services	**N**												
8.12	Provide exhibition design services	**N**												
8.13	Provide presentation material design services	**N**												
8.14	Provide model making services	**N**												
8.15	Provide photographic records	**N**												
8.16	Provide Building Services Survey	**N**												
8.17	Participate in / undertake AEDET or DQI design assessment	**N**												
8.18	Carry out special constructional research for the Project including Design of prototypes, mock-ups or models etc.	**Y**		**S**	**P**	**S**	**S**	**S**	**S**					Mock Up of laboratory or other spaces will be required. Provide design information for mock-up construction.
8.19	Provide BIM services in accordance with BS:1192:2007 and PAS1192-2:2013	**Y**		**S**	**P**	**S**	**S**	**S**	**S**	**S**				Develop a project BIM Execution Plan

Section 2 Consultancy Pre-Construction Services

Project: MRC LMS
Revision version and date: 09 March 2017

This section covers all general provision of services during the pre-construction stages of a project. The Consultants shall provide to the client, design and other services for the works in accordance with the requirements of the agreement and shall include (but shall not be restricted to) the following:

Legend:
P Involvement Required in a **PRINCIPAL** Role
S Involvement Required in a **SUPPORTING** Role
A **ATTENDANCE** Required
✔ To advise, support and participate in action if requested

In addition to the undernoted services/actions, the Architect will assume the role of Lead Designer (unless agreed otherwise) and will be responsible for organising the design team, timeous delivery of accurate, coordinated and compliant information.

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	0 - Strategic Definition and 1 - Preparation and Brief													
1.1	Obtain Employer's Requirements Documentation, Budget and Timetable	**Y**	**S**	**P**										
1.2	Review Employer's Requirements	**Y**	**S**	**S**	**P**	**S**	**S**	**S**		**S**				

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	Documentation													
1.3	Obtain information about the site from the Client	**Y**	**S**	**S**	**P**	**S**	**S**	**S**		**S**				
1.4	Visit the site and carry out an Initial Appraisal	**Y**	**S**	**S**	**P**	**S**	**S**	**S**		**S**				
1.5	Not used	**N**												
1.6	Not used	**N**												
1.7	Advise on the need for specialist contractors, subcontractors and suppliers to design and execute parts of the Works	**Y**			**P**	**S**	**S**							
1.8	Carry out such studies as may be necessary to determine the feasibility of the Client's Requirements	**Y**	**S**	**S**	**P**	**S**	**S**	**S**		**S**				
1.9	Review with the Client alternative design and construction approaches and cost implications	**Y**	**S**	**S**	**P**	**S**	**S**	**S**		**S**				
1.10	Advise on the need to obtain planning permission, approvals under Building Acts and/or other statutory requirements	**Y**		**S**	**P**	**S**	**S**			**P**				Architect or specialist Planning Consultant to lead on planning matters

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
2.1	Advise on environmental impact and prepare report	Y		P	S	S	S			P				Specialist consultant if required on ecology
2.2	Advise on the suitability and selection of sites	N												
2.3	Make measured surveys, take levels and prepare plans of sites	N												
2.4	Provide criteria for obtaining measured site survey by others	Y		S	P	S	S							To allow topographical survey to be commissioned and design to be completed
2.5	Arrange for investigations of soil conditions of sites	Y		S		P								
2.6	Provide criteria for obtaining investigations of soil conditions on sites by others	Y		S		P								To allow Site Investigation to be commissioned and design to be completed
2.7	Advise on the suitability and selection of Building Methods	Y		S	P	S	S	S		S				
2.8	Make measured surveys and prepare drawings of existing buildings	N												
2.9	Inspect and prepare report and schedule of dilapidations	N												
2.10	Advise on means of escape in buildings	Y		S	p					P				Architect or Fire Engineer to lead on fire strategy
2.11	Advise on change of use in	N												

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	buildings													
2.12	Investigate and report on building failures	**N**												
2.13	Arrange for and inspect exploratory work by contractors specialists in connection with building failures	**N**												
2.14	Prepare a layout for the development of a site	**Y**		**S**	**P**	**S**	**S**			**S**				
2.15	Prepare a layout for a greater site area than that which is to be developed immediately	**y**		**S**	**P**	**S**	**S**			**S**				
2.16	Prepare development plans for a site or a large building or a complex of buildings	**Y**		**S**	**P**	**S**	**S**			**S**				
2.17	Prepare drawings and specifications of materials for the construction of Site roads and sewers	**Y**		**S**	**S**	**P**				**S**				
2.18	Make structural surveys and report on the structural elements of buildings, asbestos etc.	**N**												

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
2.19	Investigate and advise on floor loadings in buildings	Y		S	S	P	S							
2.20	Investigate and advise on structural fire protection in buildings	Y		S	S	S	S			P				By specialist Fire Engineer
2.21	Investigate and advise on acoustic requirements in buildings	Y		S	S	S	S			P				By specialist Acoustic Consultant
2.22	Investigate and advise on fire protection and alarms in buildings	Y		S	S	S	S			P				Specialist Fire Engineer
2.23	Investigate and advise on security systems in buildings	Y		S	S		P							In accordance with a defined security strategy to be developed with the Client
2.24	Undertake survey of existing external engineering related services on a site (removed under enabling works / remaining on site)	Y		S			P							Preparation / scoping of brief for works to be undertaken by a specialist contractor.
2.25	Undertake survey of existing internal services in a building	N												
2.26	Investigate and advise on fire protection in existing buildings	N												
2.27	Create project specific Project Initiation Document	Y	S	P	S	S	S	S	S					

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	2 - Concept Design													
	Based on the information developed during stages 0-1:													
3.1	Review existing and create project specific Brief / Employer's Requirements, update PID	**Y**	**S**	**S**	**P**	**S**	**S**	**S**		**S**				
3.2	Prepare Outline Proposals	**Y**		**S**	**P**	**S**	**S**			**S**				
3.3	Prepare special presentation drawings, brochures, models or technical information for use by Client or others	**Y**		**S**	**P**	**S**	**S**			**S**				Submission information for Business Case Approval
3.4	Carry out negotiations with tenants or others identified by the Client	**N**	**S**	**P**	**S**	**S**	**S**	**S**		**S**				
3.5	Prepare and make application for Outline Planning Consent	**N**		**S**	**S**	**S**	**S**			**S**				By Planning Advisor, with documentation provided by Design Team
	3 - Developed Design													
4.1	Review and validate Employer's Requirements, including the identification of any discrepancies existing within the document, relevant to the design	**Y**	**S**	**S**	**P**	**S**	**S**			**S**				

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
4.2	Develop Scheme design from approved outline proposals or Employer's Requirements and Contractor's Proposals, taking account of all amendments arising out of design development	**Y**		**S**	**P**	**S**	**S**	**S**		**S**				Incorporate advice from specialist consultants, namely Lab Planner, façade Engineer, Fire Engineer, Acoustic Engineer, etc.
4.3	Submit scheme design showing spatial arrangements, materials and appearance for approval by Client or others	**Y**	**S**	**S**	**P**	**S**	**S**							
4.4	Prepare Accommodation Schedules	**Y**			**P**		**S**	**S**		**S**				Target or required content to be prepared by client, actual/as-drawn to be prepared and managed by architect
4.5	Prepare Room Data Sheets – combined architectural and M&E	**Y**			**P**		**S**							Verify / Update those issued by Client where appropriate. Format to be agreed but following ADB typical content.
4.6	Prepare drawings and schedules identifying Demolition / Alteration Works	**Y**			**S**	**P**	**S**							
4.7	Consult with tenants/others identified by Client	**N**												
4.8	Provide Landscape design	**N**												
	3 - Technical Design													

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
5.1	Review and validate Employer's Requirements, including the identification of any discrepancies existing within the document, relevant to the design	**Y**		**S**	**P**	**S**	**S**			**S**				As 3.1
5.2	Develop detail design from approved scheme design proposals or Employer's Requirements and Contractor's Proposals, taking account of all amendments arising out of design development	**Y**		**S**	**P**	**S**	**S**			**S**				
5.3	Prepare and make application for Detailed Planning / Reserved Matters Consent	**Y**		**S**	**P**	**S**	**S**			**S**				
5.4	Carry out Building Control liaison, particularly in relation to proposed fire strategy	**Y**		**S**	**P**	**S**	**S**			**S**				
5.5	Review/ check and comment on detailed design by specialist supplier / sub-contractors undertaking detailed design for elements of the project.	**Y**		**S**	**P**	**S**	**S**							
5.6	Research and Prepare/obtain suitable utilities and way leave	**Y**		**S**	**S**	**S**	**P**							

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	drawings													
5.7	Provide builders work information in connection with the mechanical, electrical and plumbing services.	**Y**		**S**	**S**	**S**	**P**							
5.8	Provide information to enable necessary plant and equipment supports / structure, including platforms, walkways, access ladders, stairs, etc to be designed by other consultants.	**Y**		**S**	**S**	**S**	**P**							
5.9	Provide other consultants with detailed information on the size and location of plant and equipment rooms and of major service ducts and routes	**Y**		**S**	**S**	**S**	**P**							
5.10	Prepare outline Work Package information in sufficient detail to allow the preparation of Builders Quantities and for sub-contractors to provide detailed quotations (initial market testing)	**Y**		**S**	**P**	**S**	**S**			**S**				
5.11	Provide Landscape design	**N**												
5.12	Paving and Surfacing of Roads, Car Parks, Service Yards and Footpaths	**Y**		**S**	**P**	**S**	**S**			**S**				The Architect will provide fully co-ordinated and dimensional external layout drawings and specification.

Reference	Section 2 Pre-Construction Activities	Service Required	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	Design / Layout / Details													The Structural Engineer will provide advice / comment in the form of sketches and 'over-marking' of Architect's drawings to allow site layouts and levels to be co-ordinated with drainage and technical highways design. Engineering advice will include retaining structures within the landscape, swept path / road visibility splay analysis, phasing, kerb details, paving and surfacing make-up's, specifications, drawings and the like.

Matrix of Services and Project Responsibilities - Section 3 Consultancy Construction Services

Project: MRC LMS
Revision version and date: 09 March 2017

This section covers all of the services during the technical design procurement and construction stages of a project. The Consultants shall provide to the client, design and other services for the works in accordance with the requirements of the agreement and shall include (but shall not be restricted to) the following:

Legend:

P Involvement Required in a **PRINCIPAL** Role
S Involvement Required in a **SUPPORTING** Role
A **ATTENDANCE** Required
✔ To advise, support and participate in action if requested

In addition to the undernoted services/actions, the Architect will assume the role of Lead Designer (unless agreed otherwise) and will be responsible for organising the design team, timeous delivery of accurate, coordinated and compliant information.

The following services are subject to a review of the procurement for the construction contractor and the novation of the design services to the contractor. This schedule sets out the services for a full novation of the design services.

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
	4 – Technical Design													

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
1.1	Review Employers Requirements / Contractors Proposals / Bid and Contract etc. Documentation, including identification of any discrepancies existing within the document, relevant to the design	Y		S	P	S	S	S	S	S	P	S		
2.1	Co-ordinate Production Information output and content	Y		S	P	S	S		S	S				
3.1	Develop Production Information from approved detail design proposals or Employer's Requirements and Contractor's Proposals, taking account of all amendments arising out of design development, including but not restricted to the following:	Y		S	P	S	S		S	S				Incorporate advice from specialist consultants
3.1.1	General Arrangement Floor Plans	Y			P	S	S		S					As 3.1
3.1.2	Detail Floor Plans	Y			P	S	S		S					As 3.1
3.1.3	General Arrangement Roof Plans	Y			P	S	S		S					As 3.1
3.1.4	Detail Roof Plans	Y			P	S	S		S					As 3.1
3.1.5	General Arrangement Elevations	Y			P	S	S		S					As 3.1
3.1.6	Detail Elevations	Y			P	S	S		S					As 3.1
3.1.7	General Arrangement Sections	Y			P	S	S		S					As 3.1
3.1.8	Detail Sections	Y			P	S	S		S					As 3.1
3.1.9	External Building Envelope Design / Details	Y			P	S	S		S				S	As 3.1
3.1.10	Window / Glazing Design / Details	Y			P	S	S		S				S	As 3.1
3.1.11	Ceiling Design / Layouts / Details	Y			P	S	S		S					As 3.1
3.1.12	Soffit Design / Layout / Details	Y			P	S	S		S				S	As 3.1

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
3.1.13	Internal Wall Design / Layout / Details	Y			P	S	S		S					As 3.1
3.1.14	Internal Partition Design / Layout / Details	Y			P	S	S		S					As 3.1
3.1.15	Internal Window / Glazing Design / Layout / Details	Y			P	S	S		S					As 3.1
3.1.16	Roof Design / Layout / Details	Y			P	S	S						S	
3.1.17	Roof Glazing Design / Layout / Details	Y			P	S	S						S	
3.1.18	Roof Drainage Design / Layout / Details	Y			S	S	P						S	
3.1.19	Floor Finishes Layout / Details / Schedules	Y			P	S	S							
3.1.20	Wall Finishes Layout / Details / Schedules	Y			P	S	S							
3.1.21	Ceiling finishes layout / details / schedules	Y			P	S	S							
3.1.22	Door details / schedules	Y			P	S	S							
3.1.23	Ironmongery schedules	Y			P	S	S							
3.1.24	Sanitary ware schedules	Y			P	S	S							
3.1.25	Room and equipment layouts / details / schedules	Y			P	S	S							
3.1.26	Co-ordinated room elevations	Y			P	S	S							
3.1.27	Window / glazing schedules	Y			P	S	S							
3.1.28	Pre-cast Lintel Schedules internal and external	Y			S	P	S							
3.1.29	Pre-cast Cill Schedules	Y			S	P	S							
3.1.30	Special Brick Schedules	Y			P	S	S							
3.1.31	Signage Layouts / Details / Schedule	Y			P	S	S						S	
3.1.32	Waterproofing / Damp proofing	Y			P	S	S							
4.1	NBS Specification Information	Y			P	S	S		S					Each consultant will assume responsibility for compiling

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
														relevant sections of NBS in relation to their works.
5.1	Interior design Scheme	**Y**			**S**				**P**					For areas where an interior specialist is required
5.2	Soft landscaping Design	**N**												
6.1	Submit Plans for proposed Building Works for approval by the Client	**Y**			**P**	**S**	**S**		**S**					
6.2	Bar Bending Schedules	**Y**				**P**								
6.3	Earthworks and Excavation Design / Layout/ Details	**Y**			**S**	**P**	**S**							Any design in relation to temporary works by Contractor.
6.4	Dredging and Land Reclamation Design / Layout / Details	**N**												
6.5	Foundations design/layout/details	**Y**			**S**	**P**	**S**							
6.6	Ground Improvement / Piling Scheme and Specification	**Y**			**S**	**P**	**S**						**S**	Performance Specification by Engineer with final pile design undertaken by specialist subcontractor.
6.7	Earth and Water Retaining Structures including Reinforced Earth Design / Layout / Details	**Y**			**S**	**P**	**S**							
6.8	Ground and Surface Treatment Design / Layout / Details	**Y**			**S**	**P**	**S**							
6.9	Below Ground Drainage Design / Layout / Details	**Y**			**S**	**P**	**S**							

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
6.10	Irrigation Systems Design / Layout / Details	**N**												
6.11	Paving and Surfacing of Roads, Car Parks, Service Yards and Footpaths Design / Layout / Details	**Y**			**P**	**S**	**S**							As Section 2 Item 5.12
6.12	Fencing and landscaping Details	**Y**			**P**	**S**	**S**							
6.13	Railways Design / Layout / Details including permanent way	**N**												
6.14	Tunnels Design / Layout / Details	**N**												
6.15	In-Situ and Precast Concrete Structural Design / Layout / Details	**Y**			**S**	**P**	**S**							
6.16	Masonry Structural Design / Layout / Details	**Y**			**S**	**P**	**S**							Layout, aesthetic details and Setting Out by Architect.
6.17	Primary Structural Steel Design / Layout / Details	**Y**			**S**	**P**	**S**							
6.18	Secondary Structural Steel or Metalwork Design / Layout / Details - (Stairs, Wind Posts, Cladding Supports, etc)	**Y**			**S**	**P**	**S**							
6.19	Outline Structural Steel Design and Specification to enable specialist contractor to complete the design and detailing.	**N**												
6.20	Structural Timber / Reinforced Plastic Design / Layout / Details	**Y**			**S**	**P**	**S**							
6.21	Check supplier / subcontractor's tender proposals, calculations, drawings and specifications.	**Y**			**S**	**P**	**S**							
7.1	Building Services System Schematics	**Y**			**S**	**S**	**P**							

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
7.2	Proposals for Testing and Commissioning Building Services Systems	Y			S	S	P							
7.3	Acoustic Design and Treatment in relation to Building Services Works	Y			S	S	P		S					
7.4	Air Compressors and Compressed Air Services	Y			S	S	P							
7.5	Air Conditioning and Mechanical Ventilation Services	Y			S	S	P							
7.6	Automatic Blinds and Shutters	Y			P	S	S							
7.7	Washing and Disposal Plant	Y			S	S	P							
7.8	Boilers and Auxiliary Plant	Y			S	S	P							
7.9	Builder's Work for Services	Y			S	S	P							
7.10	Calorifiers	Y			S	S	P							
7.11	Central Dictation Services	N												
7.12	Central Vacuum Cleaning Installations	N												
7.13	Clock Installations	Y			S	S	P							Assume that no central clock system required
7.14	Cold Water Services	Y			S	S	P							
7.15	Combined Heat and Power Installations	Y			S	S	P							
7.16	Conveyor Installations and Equipment	N												
7.17	Cooling Water Services	Y			S	S	P							
7.18	Distribution Mains for any Services	Y			S	S	P							
7.19	Electric Lighting and Power Installations	Y			S	S	P							
7.20	Electric Generation Plant and Systems	Y			S	S	P							
7.21	Electric Substations and Switchgear	Y			S	S	P							

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
7.22	Electric Transmission Systems	Y			S	S	P							
7.23	Emergency Lighting Systems	Y			S	S	P							
7.24	Energy Management Systems	Y			S	S	P							
7.25	Exhaust Gas Treatment and Flues	Y			S	S	P							
7.26	External Lighting Installations	Y			S	S	P							
7.27	Fire Detection and Alarm systems	Y			S	S	P							
7.28	Fire Protection Systems	Y			S	S	P							
7.29	Flood Lighting Systems	Y			S	S	P							
7.30	Food Preparation, Cooking and Serving Equipment	Y			S	S	P						S	Mains services only - Specialist Kitchen Contractor.
7.31	Fuel Gas Distribution Systems	Y			S	S	P							
7.32	Heating Systems	Y			S	S	P							
7.33	Hot Water Services	Y			S	S	P							
7.34	Incineration Plant	N												
7.35	Information Technology (IT) Systems	Y			S	S	P							Structured cabling only
7.36	Intruder Detection and Alarm Systems	Y			S	S	P							In accordance with Security strategy provided by others
7.37	Laundry Equipment and Services	N												
7.38	Lifts, Hoists and Escalators	Y			S	S	P							
7.39	Lightning Protection Systems	Y			S	S	P							
7.40	Medical Gas and Vacuum Services	Y			S	S	P							Including Bedhead Services
7.41	Pedestrian Movement Systems (Travelators)	N												

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
7.42	Pneumatic Tube Conveyor Systems	N												
7.43	Power for Specialist Installations (cranes, lifts, doors, etc)	Y			S	S	P							
7.44	Power Operated Louvers	Y			S	S	P							
7.45	Public Address, Personnel Location and Call Services	Y			S	S	P							Patient / staff Monitoring system also briefed. Nurse Call Requirement
7.46	Public Health and Plumbing Systems	Y			S	S	P							
7.47	Radio and TV Reception services	Y			S	S	P							
7.48	Radio and TV Transmission services	N												Generally via Internet
7.49	Radiography and similar Medical Investigation and Treatment Plant	Y			S	S	S		P					
7.50	Refrigeration and cold store installations	Y			S	S	P							
7.51	Refuse Collection, Compaction, Incineration and Disposal Systems	Y			S	S	P							
7.52	Security and Access Control Systems	Y			S	S	P							
7.53	Steam and Condensate Return Services	Y			S	S	P							
7.54	Sterilizing Equipment	Y			S	S	S		P					
7.55	Street lighting	Y			S	S	P							
7.56	Telephone Installations and Exchanges	Y			S	S	P							
7.57	Hearing induction Loop system	N												
7.58	Thermal Insulation applied to the Engineering Services Systems	Y			S	S	P							
7.59	Thermal Modelling	Y			S	S	P							

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
7.60	Vibration Control applied to the Engineering Services Systems	Y			S	S	P							
7.61	Water Filtration and Treatment Systems	Y			S	S	P							
7.62	Window Cleaning and other External Access Equipment	Y			P	S	S						S	
8.1	Attend and report at Design Review meetings	Y		✔	✔	✔	✔		✔	✔	✔	✔		
8.2	Attend and report at Client Project meetings	Y	✔	✔	✔	✔	✔		✔	✔	✔	✔		
8.3	Attend and report at Design Team meetings	Y	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		
8.4	Attend and report at Site Progress meetings	Y	✔	✔	✔	✔	✔			✔	✔	✔		
8.5	Attend and report at Site Technical meetings	Y	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	
8.6	Attend and report at Sub-contractor meetings	Y		✔	✔	✔	✔		✔	✔	✔	✔	✔	
8.7	Attend and report at Tenants meetings	Y		✔	✔						✔	✔		
8.8	Attend and report at Planning Authority meetings	Y	✔	✔	✔						✔	✔		
8.9	Attend and report at Building Control meetings	Y		✔	✔	✔	✔		✔	✔	✔	✔		
8.10	Attend and report at other Statutory Authority meetings	Y		✔	✔	✔	✔		✔		✔	✔		
8.11	Attend and report at meetings with Specialists	Y		✔	✔	✔	✔		✔	✔	✔	✔		
9.1	Carry Out Inspection of Materials On Site / At Works	Y		✔	✔	✔	✔				✔	✔		
9.2	Witness Product / Material Testing On/Off Site	Y		✔	✔	✔	✔			✔	✔	✔		As requested by Contractor
9.3	Visit site at appropriate intervals to view construction and determine that Works are being executed generally in accordance with the Contract Documents - Contractor Request	Y	✔	✔	✔	✔	✔		✔	✔				Generally Weekly

Reference	Section 3 Production Information/Construction Activities	Service Required Y/N*	Client (MRC)	Project Manager (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Principle Designer	Specialist Consultant	Principal Contractor	Services Contractor	Sub-contractor	Comment
9.4	Visit Site at appropriate intervals to view construction and determine that Works are being executed generally in accordance with the Contract Documents - at Consultant's Discretion	Y	✔	✔	✔	✔	✔		✔	✔				
9.5	Advise on need for Site Testing / Builder Works	Y		S	P	S	S		S					
9.6	Provide criteria for Site Testing / Builder Works	Y		S	P	S	S		S					
9.7	Witness Site Testing / Builder Works	Y		S	P	S	S		S					
10.1	Issue drawings to Consultants, Statutory Authorities, etc	Y			✔	✔	✔		✔				✔	
10.2	Issue drawings to construction team (full size)	Y			✔	✔	✔		✔				✔	
10.3	Issue drawings to construction team (A3)	Y			✔	✔	✔		✔				✔	
10.4	Issue of drawings in electronic format	Y			✔	✔	✔		✔				✔	
10.5	Advise on need for Acoustic Sound Testing	Y		S	S	P	S		S					
10.6	Provide criteria for Site Sound Testing	Y		S	S	P	S		S					
10.7	Provide As Built drawings for the project	Y			✔	✔	✔		✔				✔	
10.8	Prepare drawings for Conveyancing purposes	N												
10.9	Give general advice on Maintenance of the project	Y		S	S	S	S		S	P	S		S	
10.10	Provide information for the Health and Safety File and Maintenance Manuals	Y		S	P	S	S		S	S	S		S	
10.11	Compile Maintenance and Operational Manuals	Y		S	S	S	S		S	P	S		S	

Matrix of Services and Project Responsibilities - Section 4 Consultancy Construction Services

Project: MRC LMS
Revision version and date: 09 March 2017

This section covers all of the services during the procurement and construction stages of a project. The Consultants shall provide to the client, design and other services for the works in accordance with the requirements of the agreement and shall include (but shall not be restricted to) the following:

Legend:
P Involvement Required in a **PRINCIPAL** Role
S Involvement Required in a **SUPPORTING** Role
A **ATTENDANCE** Required
✔ To advise, support and participate in action if requested

In addition to the undernoted services/actions, the Architect will assume the role of Lead Designer (unless agreed otherwise) and will be responsible for organising the design team, timeous delivery of accurate, coordinated and compliant information.

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
1.1	Measured Survey of Sites (additional to / verification of information provided by Client)	Y		S	S			P		Specialist Company to carry out survey to brief prepared by Designers.
1.2	Measured Survey of Existing Buildings	Y						P		By specialist
1.3	Marked up drawing showing Demolition *Drawings of existing building(s) to be fully or partially demolished on the site to be highlighted*	Y		S	P	S			S	Undertake a desk study of available information and carry out a visual inspection

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
1.4	Condition Survey of Existing Building Fabric *Undertake or co-ordinate detailed condition survey of existing buildings as necessary for project. Obtain input from specialist consultant/contractor as necessary for matters such as asbestos*	N								MRC LMS site is the location of the former Cyclotron Building (demolished in 2012).
1.5	Schedule of Works required to Existing Buildings *Prepare schedule as necessary for project, based on outcome of condition survey*	N								MRC LMS site is the location of the former Cyclotron Building (demolished in 2012).
1.6	Site Plan with external levels and finishes *Minimum scale 1:500. Drawings to be developed with support from civil engineer and landscape architect. Drawings to indicate existing and proposed levels, car parking, roadways, hard standings and other similar site features. Landscaping proposals to be presented separately*	Y		P	S	S				
1.7	Floor plans with levels and schedules of areas *Plans to be prepared for each floor at 1:100/200 scale as appropriate and agreed, to include all briefed accommodation, ancillary/non-briefed accommodation and circulation space. Structural grid to be indicated*	Y		P	S	S		S		
1.8	Roof Plan *Plan at 1:100/200 scale as appropriate and agreed, indicating roof pitches, materials, gutters,*	Y		P	S	S				

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	maintenance access arrangements									
1.9	Building Sections *Long and Cross sections to be prepared at a scale of no less than 1:100, indicating building profile and co-ordinating dimensions horizontally and vertically*	Y		P	S	S				
1.10	Elevations *Elevations to be prepared for each face of the building at 1:100/200 scale, indicating all finishes from pre-agreed schedule, openings, roof profiles and key dimensions. 100/1:200 1:50/1:20 drawings where necessary to indicate any special detailing requirements and particular sizes which need to be highlighted to the cost consultant/commercial manager*	Y		P	S	S				
1.11	External Wall Sections *Detailed typical wall sections at a scale of 1:20/1:50 as appropriate and agreed, indicating roof and external wall constructions, floor/floor, floor/ceiling and window heights*	Y		P	S	S				
1.12	Internal Wall Types & Thickness *Floor plans at 1:100 or 1: 200 scale as appropriate, indicating types of wall construction, i.e. block or metal stud with plasterboard lining, wall thickness, plus any abnormal requirements, such as high levels of fire resistance or acoustic performance which may*	Y		P	S	S				

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	affect cost significantly.									
1.13	Fire Strategy Plans / Boundary Conditions *Floor plans at 1:100 or 1:200 scale as appropriate, indicating escape route and widths (including stairs), fire doors and ratings, compartmentation strategy (horizontal and vertical) and ratings of compartment walls*	Y		S	S	S		P		Strategy to be developed by Architect or Fire Engineer if appointed
1.14	Security Strategy for Building and Site *Floor plans at 1:100 or 1:200 scale as appropriate, indicating proposals for lock-down and out-of–hours use strategy for building. Site plan at no less than 1:500 scale indicating fencing locations, types and heights, site access points and gates (in conjunction with Landscape Architect).* *Carry out discussions with local Police Architectural Liaison Officer to ensure that proposals meet with the minimum standards set by 'Secured by Design'*	Y		P		S				Specialist security advisor to develop strategy
1.15	Door and Lintol Schedules *Tabulate door sizes, finishes, glazing requirements and fire ratings to comply with statutory and employer requirements*	Y		S	P					
1.16	Window, Lintol and Cill Schedules Tabulate window sizes, types, glazing and opening requirements to comply with statutory and employer requirements	Y		P	S					
1.17	Typical Handrail & Balustrade Details	Y		P	S					To Structural Engineers Performance

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	1:20/50 scale plans and sections, indicating design principles, materials and finishes for each staircase, in accordance with the pre-agreed specification and good practice detailing.									Specification
1.18	Internal Partition Construction and Finishes *Schedule of standard wall types, to be prepared in accordance with agreed specifications, and cross-referenced to 1:100/1:200 plans of each floor, indicating materials, thickness and finishes for each wall dependent on durability and acoustic requirements.* *Schedule of decoration / applied finishes to be prepared in accordance with agreed specifications and Room Data Sheets*	Y		P	S					
1.19	Internal Floor / Skirting Finishes *Schedule of applied floor finishes to be prepared for each room/area in accordance with agreed specifications and Room Data Sheets*	Y		P						
1.20	Internal Ceiling Finishes *Schedule of ceiling finishes to be prepared for each room/area in accordance with agreed specifications and Room Data Sheets*	Y		P		S				Services and Lighting to be co-ordinated within ceiling layout by Architect based on information provided by Services Engineer.
1.21	Ironmongery Schedule *Indicate all doors with requirements in addition to standard door ironmongery pack – eg: self-closing,*	Y		P						To be developed in conjunction with door manufacturer

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	floor springs, panic hardware.									
1.22	Signage Schedule / Details	N		P	S					
1.23	Rainwater Pipe Locations *Indicate locations and materials of rainwater downpipes on 1:100/200 elevations.*	Y		P	S	S				
1.24	Drainage Outlets in Ground Floor Slab *Floor plan at 1:100/200 scale as appropriate and agreed, marked up to indicate the required positions of all drainage pop-up positions passing through the ground floor slab – to include all floor gullies and drainage stacks*	Y		P	S	S				Architect to position outlets within rooms, Structural and Services Engineers to design above and below ground drainage system
1.25	FF&E / Furniture / Laboratory Layouts and Schedules *Provide CAD layouts of each area required to specialist FF&E supplier for the design of loaded room layouts*	Y		P	S	S		S		
1.26	Room Data Sheets	Y		P		S				
1.27	Kitchen layouts *Provide CAD layouts of each area required to specialist kitchen equipment supplier for the design of layouts.*	Y		S		S		P		Input / design from Specialist Company.
1.28	Boundary Walls / Fencing *Prepare, or brief landscape architect if one is appointed, to prepare site layout at 1:500 scale or*	Y		P	S					

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	thereby indicating any existing walls/fencing to be retained/repaired, and all new walls/fencing required by type and height in accordance with pre-agreed specification.									
1.29	Landscaping *Prepare, or brief landscape architect if one is appointed, to prepare site layout at 1:500 scale or thereby indicating all hard and soft landscape features, locations and quantity of all street furniture and equipment in accordance with pre-agreed specification. Identify and take cognisance of environmental and ecological restrictions which may apply – tree preservation orders/protected species/nesting birds/Japanese Knotweed etc.*	Y		P	S					
1.30	Whole Life / Life Cycle / FM Information & Interface *Provide pre-agreed specification information to FM services provider for life-cycle costing appraisal. Obtain and incorporate FM accommodation requirements.*	Y	S	S	S	S	S	P		
1.31	Accommodation and Area Schedule *Prepare and revise as necessary, accommodation schedule indicating separately all briefed, non-briefed, circulation and ancillary areas, together with overall gross internal floor area, measured in accordance with RICS Code of Measurement Practice.*	Y	S	P	S	S	S	S		Service Engineer input required in relation to Plant Room, Risers, Ducts etc

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
1.32	Not used									
1.33	Not used									
1.34	Not used									
1.35	Not used									
1.36	Not used									
1.37	Prepare and submit Detailed Planning Application	Y		P	S	S				
1.38	Complete Room Data Sheets	Y		P	S	S				
1.39	Not used									
1.40	Assist in the preparation and agreement of required Contractor's Proposals Documentation	Y		P	S	S				
1.41	Waterproofing / Damp proofing	Y		P	S					D.P.M. applied vertical tanking generally by Architect. Waterproof joints and concrete performance specification by Structural Engineer
2.1	Interpretative Ground Investigations *Obtain historical data available from public sources and carry out desktop analysis of ground conditions likely to be encountered. Compile schedule of site investigation works required to fully determine risks associated with ground conditions. Advise if existing material is likely to be suitable for purpose or if any improvement is required.*	Y			P					Review previous uses of site, site geology, water levels, previous geotechnical investigations and comment on likely ground conditions and highlight potential ground contamination, hot spots etc and make design recommendations in relation to works.
2.2	Assessment of Site Investigation Reports Prepared by Specialist *Examine and report on the implications of site*	Y			P					Assess SI information provided by Client and thereafter provide advice on physical geotechnical and contamination etc.

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	investigation information prepared by and provided by others. Identify areas where further information is required to mitigate risks.									investigations necessary to provide information for due diligence and for civil and structural engineering design. Review findings of site investigations in relation to works and amend design accordingly
2.3	Structural Surveys and Reports on existing Buildings *Conduct surveys sufficient to assess the integrity, stability and likely remaining lifespan of existing building structures, together with any remedial measures necessary to maintain the buildings in a safe state*	Y			S			P		Provide specification and interpretive services for a survey by specialist contractors.
2.4	Cut/ fill Analysis Drawings *Review available topographical information and undertake cut and fill study based on this to determine if a balanced solution can be obtained, or quantify approximate amount of surplus/additional material required. Identify any further topographical data required to fully assess the optimum balance of cut and fill quantities for the site*	Y		S	P					
2.5	Quantity / Degree of Contaminated Material *Review data available and carry out desktop analysis of contamination issues likely to be encountered, together with specifications for anticipated*	Y			P					

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	remediation woks									
2.6	Underpinning Requirements (where needed) *Assess and provide design solution for any underpinning requirements in relation to existing and/or adjacent buildings which will be affected by the proposals*	Y			P					
2.7	Piling / Vibro-Compaction / Ground Improvement Layout and Specification *Based on assessment of ground conditions, prepare layouts at 1:100/1:200 scale and specifications for any piling/vibro/ground improvement works necessary to achieve required bearing capacity*	Y			P			S		
2.8	Foundation Layout / Sizes *Plan at 1:100/1:200 scale indicating concrete strips and pads required, together with sizes and any required reinforcement details as appropriate*	Y		S	P					
2.9	Ground Floor Slab Layout / Details / Joints *Plan at 1:100/1:200 scale indicating overall dimensions, locations and details of movement joints, edge details, reinforcement details, under building details and finishes as appropriate*	Y		S	P	S				Below ground insulation requirements by Architect.
2.10	Upper Floor Slab Layout / Details / Joints *Plan at 1:100/1:200 scale indicating overall dimensions, locations and details of movement joints,*	Y		S	P	S				

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	edge details, reinforcement details, pc details/decking specification and finishes as appropriate									
2.11	Sub-Base Thickness / Specification *Specification information for suitable sub-base make up to suit site conditions and required loadings*	Y		S	P					
2.12	Reinforcement Quantities (kg/m3) *Schedule of quantities of reinforcement required in relation to various building elements – foundations, ground and upper floor slabs etc*	Y		S	P					
2.13	Concrete Grades / Cement Type *Schedule of grades of concrete required in relation to various building elements - over-site concrete, foundations, floor slabs, frames, as appropriate*	Y		S	P					
2.14	In-situ Concrete Frame Design / Layout *1:100/1:200 plans and typical sections to illustrate design of structural concrete frame – indicating grid dimensions, floor – to floor dimensions, column positions and sizes, beam positions and sizes, reinforcement details as appropriate*	Y		S	P	S				Dimensional criteria, finish, reinforcement weights etc to be provided.
2.15	Structural Steel Frame Design / Layout *1:100/1:200 plans and typical sections to illustrate design of structural steel frame – indicating grid dimensions, floor to floor dimensions, column positions and sizes, beam positions and sizes etc., as appropriate.*	Y		S	P	S				Complete design supported by computer model should be progressed to allow tenders to be sought

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
2.16	Secondary Steelwork Layout *1:100/1:200 plans, elevations and typical sections to illustrate design of secondary steel work provision – both hot and cold rolled – windposts, trimming steelwork for stair and service openings, roof purlins, cladding rails, eaves and soffit supports etc, as appropriate*	Y		S	P	S				
2.17	Masonry Details and Specification *Prepare performance specifications for each element of masonry work required – above ground brick/blockwork, below ground brick/blockwork, pc lintols as appropriate*	Y		P	S					Include DPC etc. details
2.18	Pre-Cast Concrete Design *Prepare design drawings at 1:50/1:100/1:200 scale of wall panels, flooring units and other pre-cast elements as appropriate*	Y		S	P			S		
2.19	Roof Truss Layout *1:100/1:200 plan and typical sections to illustrate design of roof trusses – indicating layout in relation to structural grid, pitch, member sizes, truss center, as appropriate*	Y		S	P			S		A performance specification and illustrative design drawings to be provided where a proprietary product is to be utilized, eg TRADA truss.
2.20	Underground Drainage Layout, including Land Drainage and SUDS requirements *1:500 scale site plans including building footprint indicating all underground and under-slab foul and surface water drainage pipework, pipe sizes,*	Y		S	P	S				

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	gradients, pipework materials and specifications, manhole locations, cover and invert levels, manhole construction details, connections to existing infrastructure, SUDS measures (over-sized pipes, swales, porous paving, attenuation tanks etc) as appropriate									
2.21	External Hard Paving Build Up Specifications *Prepare specifications to reflect suitable build up for the external hard paving finishes indicated on architect's/landscape architect's site plan.*	Y		S	P					
2.22	Highway Works Layouts and Specifications *1:100/1:200 scale plans and associated details indicating roads, parking and drop-off layouts, swept path analysis, road gully locations and specifications, kerb details and specifications, finishes specifications as appropriate to suit requirements for both adopted and non-adopted areas*	Y		S	P					As Section 2 Item 5.12
2.23	Retaining Wall Layout / Details *1:500 scale site layout drawing indicating locations, extent, heights and construction details of all retaining walls within the site*	Y		S	P					
2.24	Boundary Wall Details *Prepare specification for masonry boundary walls to reflect layout indicated on architect's/landscape architect's site layout drawing*	Y		S	P					
2.25	Searches for Existing Services	Y		S		P				

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	Report on results of searches of public utility records indicating extent of existing services within and surrounding the site									
2.26	Condition Survey of Existing Buildings *Drawings indicating extent of existing services within building*	N								Not applicable as site is the location of the former Cyclotron Building (demolished in 2012).
2.27	Schedule of Works required to Existing Buildings *Drawings, schematics and specifications of alterations, amendments and replacement of existing services*	N								Not applicable as site is the location of the former Cyclotron Building (demolished in 2012).
2.28	Details of Service Diversions / Disconnections *Drawings and specifications at 1:500 scale to indicate requirements*	Y		S	S	P				
2.29	Enquiries to Utilities for New Services and Diversions, etc and Obtain Costs *Copies of correspondence with Utilities Providers indicating costs and timescales for works*	Y		S	S	P				
2.30	Elemental performance specifications	Y		P	S	S				Unless otherwise agreed, eg curtain walling, precast concrete, stairs etc.
2.31	Identify plant rooms sizes / locations	Y		S		P				
2.32	Plant room schematics	Y				P				
2.33	Plant room equipment layouts *1:20/1:50 scale co-ordinated plans and sectional elevations indicating plant positions and sizes, pipe/cable/duct locations and provision for clear*	Y		S		P				

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	access to and around items requiring maintenance access									
2.34	Prepare Electrical Data Schedules / Sheets	Y				P				
2.35	Prepare Mechanical Data Schedules / Sheets	Y				P				
2.36	Prepare Schematics	Y				P				
2.37	Identify Major Plant / Trade Specialists *Information regarding any manufacturers/suppliers with whom discussions have taken place in the development of tender drawings*	Y				P				
2.38	Provide input to Building Services Cost Plan	Y				P	S			Cost Plan to be market tested (minimum 80%) at Contract Award.
2.39	Schedule of Builders Work *Schedule of all builders work item in connection with services required*	Y		S	S	P				
2.40	External Services Site Layout including External Lighting, CCTV, Vehicle Barriers, etc *1: 200 scale plans and1: 5 /1: 10 scale details, indicating all lighting, cctv camera and vehicle barrier positions, sub station locations and details, and including all underground duct locations, sizes and quantities*	Y				P				
2.41	Fire and Sprinkler Mains Layout including Sprinkler Tanks and Pump House Layout	Y			S	P				
	Co-ordinated Building Floor Plans and Sections at 1:100/1:200 scale with services layouts indicated for									

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	the following:									
	Electrical routes and main containment layouts	Y				P				
	Fire alarm layouts	Y				P				
	Internal CCTV, intruder alarms, panic alarm and access control layouts	Y				P				
	Public address and hearing loop layouts	Y				P				
	Gas distribution layouts	Y				P				
	Cold water services layout	Y				P				
	Electrical schematic	Y				P				
	Small power, telephones, TV and data layouts	Y				P				Infrastructure only to suit compliant supplied hardware briefed by Client
	Lighting layouts	Y				P				
	Kitchen services layouts	Y						P		By specialist Company
	Special installations – nurse call, special equipment supplies, etc	Y				P				
	Cable schedules	Y				P				
	Ductwork layouts	Y				P				
	Heating pipe work and radiator layouts / schedules	Y				P				
	Compressed air layouts	Y				P				
	Internal sprinkler layout	Y				P				
	Dry riser/hose reel locations/layout	Y				P				
	Air conditioning equipment layout	Y				P				
	Special installations – e.g. medical gases	Y				P				
3.1	Incorporation of Renewables into design eg. Part L	Y				P				Design to reflect brief

Reference	Section 4 Deliverable	Service Required Y/N	Project Mgr (T&T)	Architect	C&S Engineer	M&E Services Engineer	Cost Manager (T&T)	Specialist Consultant	Principal Designer	Comment
	Compliance, Bio-Mass Boilers, Solar Panel Heating, Ground Source Heat Pumps, CO2 Emissions Reduction, Rainwater harvesting and the like Provide report on potential options for renewable energy sources/supplies, together with costs and potential sources of grant funding									
4.1	Whole life/life cycle/FM information and interface	Y								

Appendix SOW-B – Detailed Requirements

No.	Facilities	Brief areas	No. People	Comments
1	Offices and Administration/ Meeting	777	26	
2	Scientific Write up and PI offices	2362	478	
3	WET Labs (Primary and Secondary)	2491	350	
4	In vitro imaging	330		
5	CBS	935		
6	In Vvivo Imaging	75		
7	Core	210	2	
8	Servicing	80		
9	ICL requirements	1439.75	154	

ID	Description	no	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of people	Comments	currenty located in	NOTES
1.1	**Administration Office** general admin computing team student administrator	1	7	140	20	should be near reception 15 admin, 5 computing	2nd Floor CWB Building.	
1.2	**single occupancy offices** Director Operations Director HR Lead HR Manager head of Computing Finance	6	10	60	6	Director's office to double up as Writeup single office for PI. Should be near both admin and lab space	Director's office in ICTEM the other ones are 2nd floor CWB Building	
1.3	6 Person Meeting room	3	11	33				
1.4.	12 Person Meeting room	3	22	66		flexible with moveable partitions		
1.5.	24 Person Meeting room	2	44	88		flexible with moveable partitions		
1.6.	Break out space / Tea point	2	10	20				
1.7.	Common Room / Cafeteria	1	120	120			6th Floor CRB	should have servery for sandwiches, snacks, tea, coffe. Water fountain. No kitchen for hot food, but could be served if prepared elsewhere on site.
1.8.	Seminar Room	1	120	120		sufficient for 120 people	2nd floor CWB	
1.9.	Public Engagement space	1	120	120		an amphitheatre-style circular arena with stacked seating would be ideal. This should be flexible enough to adapt to the style of activity , whether a formal debate, creative event, film, performance, lecture (Farady/Christmas lectures) or seminar. For 150 - 200 people.	N/A	NICE TO HAVE
1.10.	Reprographics	1	10	10				

TOTAL			**777**	**26**	

ID	Description	no.	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
2.1.	**Wet Lab Write Up (Open Plan office)** 35 groups with 10 people 5 groups with 10 people less Pis (single occupancy offices)		4	1440	360	lockers, pedestal with desk and access to corridor storage.	32 groups existing + 3 new (in recruitement) 5 groups additional collaborative work	
2.2.	**Bioinformatics** - Open Plan office 5 groups with 10 people less 5 PI offices plus 10 bioinformatic staff		7	385	55	lockers, pedestal with desk and access to corridor storage. Should be close to wet labs write up for interaction with research groups	?	number of offices could be determined by the layout? Or should they be near particular equipment?
2.3.	Imaging offices (open plan - large desk)		4	32	8	hot desking office required to locate image analysis workstations. 3 x facility staff also located with permanent desks	X no. from Neptune/Steiner (SIM) X no. from ??? X no. from Fraser	
2.4.	**Shared Offices** 1 admin 1 x GECO 3 x transgenic and WAPI	5	7	105	15	requires one filing cabinet per occupant and shelving	GECO - CRB, floor 5 (?) 1 x admin from ?? 3 x transgenic and WAPI from ??	
2.5.	**single cellular office for PI** 40 PI offices	40	10	400	40	35 PI offices close to wet lab and write up 5 PI offices close to bioninformatics	X PI from CRB X PI from Fraser X PI from Neptune Steiner	

TOTAL			**2362**	**478**

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
3.1.	**Primary Wet Lab (open Plan)** 35 groups with 10 people 5 groups with 10 people total number of 321 plus 20 PI and proteomics & genomics		4	1400	350	assumes therefore that each scientist/researcher has one write up space and one lab space.	X no. groups with XX People from CRB X no. Groups with XX people from Frasier X no. Groups with XX People from Neptune Steiner	
3.2.	Drosophillia Site and associated facilities	1	100	100		requires: central room with work stations for 20 microscopes with piped CO2 a separate room for fly incubators (with water supply/air conditioned, possibly cooled for 18°C), asmall behavioural room kept at 25°C with controlled humidity fly kitchen for fly food preparation proximity to a coldroom a quarantine room (preferrably with piped CO2) a separate microscope room equipped for flourescence screening automated doors useful for easy passage between room. Main door to suite with access control.	drosophilia to move from ICTEM. **Is somebody filling that gap, and if so, who? What is the impact on the primary wet lab and write up provisions?**	must be close to open plan wet lab, a large cold room, storage space for a substantial amount of plastics and waste stor. Ideally the room with 20 microscopes central to the facility, in the incubator room and microscope room (for flourescence imaging) opening from it. Quarantine room, kitchen and cold room close to central lab. Incubator room needs backup cooling.
3.3.	Pre PCR	1	10	10		required next to the Genomic facility.	From?	would be great to have one for every two floors, but not essential
3.4.	Post PCR	0	0	0		not required		
3.5.	Flow Cytometry	1	40	40		to house: 4 cell sorters, 3 analysers, Imagesteam, COPAS FP5000 (Worm sorter)	CRB, room 4011	
3.6.	Instrumentation room Proteomics Genomics Histology	3	40	120		**Proteomics:** 3 mass spectrometers, LTQ orbitrap, XL ETC, LTQ orbitrap Velos ETC, Q-exactive, Linked to ThermoFisher Ultimate 3000 nanoflow liquid chromatographers. **Genomics:** hi-Swq x 2, Miseq, conventional sequencing, single cell technologies including Fluidigm C1 + Biomark, biomek Fx liquid handling robot, rt QPCR, Bioanalyser, nanodrop technology, Qubit **Histology** crostats x 2, tissue mircroprocessors, Leica Utracut (need LN2), prep area	Proteomics - room 5008 CRB Genomics - CRB Histology - CRB - 2015	genomics and proteomics centrally located within laboratory floors, Histology in close proximity to in vitro imaging suite. Ideally all facilities need tobe large enough for some future expansion.
3.7	Freezer Store room	4	24	96		1 no per floor for local -80C storage.	CRB floors 3,4 and 5, room no. 3030, 4031, 5031	should provide overall for 60 no -80 freezers (excluding ICL requirement)
3.8.	Dark Room	2	10	20		1 for every second floor.	CRB , floor 3, room 3023a, 3031B, CRB, Floor 5, room 5024	this exclude floors for ICL
3.9.	Tissue Culture (CL2, Pathogens) large	7	40	280		all wetlabs to have access to tissue culture. Proximity to open plan labs and one needs to be adjacent to in vitro imaging centre	CRB, floor 3, room 3026 CRB, floor 4, room 4027 CRB, floor 5, room 5030A	
3.10.	Tissue Culture, CL2, Pathogens (medium)	1	20	20		proximity to open plan lab (which ones?)	CRB??	the other tissue culture labs are covered from CRB - are there any that have a higher pathogen risk?

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
3.11	designated radiation store	2	10	20		one at a lower floor and and at an upper floor (for sharing across the building)		
3.12	Cold Lab	5	10	50		one per floor. Useful to have 2 on some floors, so that groups with high cold room usage can be located together.		
3.13	Equipment Room	4	40	160		assumed with two per floor (depending on the size of the room)		
3.14	Electrophysiology room					requires a suite of 2 rooms, one, which must be home office designated for short term holding. The adjacent room should be large enough for 3 x systems for slice electrophysiology. Needs to be electrically stable and laser designated. Close to CBS, but dont have to be within.		proivded in CBS (Dirty Barrier)
3.15	Central Wash-up	1	60	60		washup, autoclaving and media prep room can be separate. Reasonable proximity to the laboratories		
3.16	Media Kitchen	1	25	25		washup, autoclaving and media prep room can be separate. Reasonable proximity to the laboratories		
3.17	Central Freezer Store	1	20			needs to accommodate about 60 no. -80C freezers in total for the MRC. If local storage (1 room per floor) can accommodate this number, then an additional crentral freezer store may not be required. Should be in reasonable proximity of the labs		provided under 3.7.
3.18	Liquid Nitrogen	1	50	50		current provision sufficient for about 165,000 samples. This is currently not fully utilised. A similar level of provision for the future (up to 200,000 samples) is desirable. CSC currently holds samples in 19 large dewars (capacity 7,000 samples each) and 7 medium dewars (4,000 samples each). Remainder of capacity is in central storage in ICTEM	located in the freezer stores in CRB	ICTEM capacity still required there, CSC remaining there. Prefer to have this piped in to a central location each floor
3.19	Cleaner's store	4	10	40		ideally somewhere for short term waste storage on each floor to prevent having long distances to transport it.		
	TOTAL			**2491**	**350**			

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
4.1.	**Super Resolution Imaging** Zeiss Elyra S1 SIM system with Spinning disk FLIM, Zeiss TIRF microscope (Axio Observer Z1 with TIRFIII) both on Newport RS4000 table 240 x 120 cm	2	20	40			currently in the Neptune Steiner facility	
4.2.	**Transmission Electron Microscope (TEM)** TEM Jeol JEM 1011	1	20	20		Requires a high ceiling and a prep room. Prep room could be shared with Cryo EM	BASEMENT CWB	
4.3.	Prep Room	1	20	20				
4.4.	Cryo EM	1	40	40				new provision
4.5.	**Confocal Microscopes** Leica SP5 Confocal inverted Leica SP5 confocal upright Leica SP8 confocal with STED module Perkin elmer Ultraview Vox (spinning disk confocal) space for 1 new Leica SP5/SP8 or similar	6	10	60		requires proximity to tissue culture		
4.6.	**Single Molecule Imaging** Light sheet Microscope: Leica SP8 DLS confocal.	1	20	20		To include scope for adoption of new single molecule imaging technology Requires proximity to tissue culture		
4.7.	**live Cell Imaging.** currently 10 widefiled imaging systems Larger equipment includes 1 x GE Deltavision Elite, 1 x Zeill PALM IV microdissection optical tweezers	11	10	110		ideally should also include some space for expansion to 12-15 systems (may ned two rooms?)		
4.8.	Space for new imaging modalities	2	10	20		expansion potential for imaging centre		

TOTAL			**330**	**0**

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
5.1.	Holding room for 1100 mice cages	1	150	150		unclear, whether they need to be different rooms, or if they can be held in one large holding room IVCs to have automatic watering to 100 of HR (no bottles). All holding rooms to be individually fumigable via automatic control panel.	N/A	
5.2.	Holding room for 200 Rat cages	1	50	50		IVCs to have automatic watering to 100 of HR (no bottles). All holding rooms to be individually fumigable via automatic control panel.	N/A	
5.3.	Procedure rooms			0				
5.3.1.	Surgical Room **(DIRTY BARRIER)**	3	15	45		2 surgical rooms for mice 1 surgical room for rats	N/A	
5.3.2.	Pre- and Post op **(DIRTY BARRIER)**	3	30	90		1 pre- and post op annex for each of the surgical rooms	New	
5.3.3.	Water maze **(CLEAN BARRIER)**	1	10	10		laser designation required; good to have read light facility. Quiet area (not near lifts or other entrance areas)	Room already in CRB floor 2 (H1), room 2037	
5.3.4.	Behavioural Apparatus **(CLEAN BARRIER)**	1	10	20		laser designation required; good to have read light facility. Quiet area (not near lifts or other entrance areas)	Room already in CRB floor 2 (H1), room 2035	
5.3.5.	Feeding Cage System **(CLEAN BARRIER)**	1	10	10		laser designation required; good to have read light facility. Quiet area (not near lifts or other entrance areas)	Room already in CRB floor 2 (H1), room 2035	
5.3.6.	Laser Room - Optogenetics **(CLEAN BARRIER)**	1	10	10		laser designation required; good to have read light facility. Quiet area (not near lifts or other entrance areas)	Room already in CRB floor 2 (H1), room 2035	
5.3.7.	CLAMS **(CLEAN BARRIER)**	1	10	10		laser designation required; good to have read light facility. Quiet area (not near lifts or other entrance areas)	Room already in CRB floor 2 (H1), room 1045	
5.3.8.	Telemetry **(CLEAN BARRIER)**	1	10	10		laser designation required; good to have read light facility. Quiet area (not near lifts or other entrance areas)	Room already in CRB floor 2 (H1), room 1045	
5.3.9.	Cardiac suite - In vivo echo cariography, pressure volume loop, echo Langendorf **(DIRTY BARRIER)**	1	20	20		includes the ex-vivo perfusion aparatus in one room and in vivo work in another…	ICTEM 215 and 215A	2 rooms : 1 in vivo and 1 ex vivo,near tissue culture

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
5.3.10.	Classical metabolic cages (sufficient for 24 mouse cages and 24 rat cages **(DIRTY BARRIER)**	1	15	15		quiet area (not near lifts or other entrance areas)		
5.3.11.	Tissue Culture CL 2 **(DIRTY BARRIER)**	1	15	15			N/A	needed in both clean & dirty?
5.3.12.	Tissue Culture CL 2 **(CLEAN BARRIER)**	1	15	15			N/A	needed in both clean & dirty?
5.3.12.	in vivo electrophysiology **(DIRTY BARRIER)**	5	15	75		laser designation required	room already in CRB (room 2010 & 2010A) - not within the animal facility!	room for 4 rigs and prep space
5.3.13.	non-surgical procedure room (mice) **(1 x DIRTY BARRIER; 1 x CLEAN BARRIER)**	2	10	20			N/A	
5.3.14.	non-surgical procedure room (rats) **(DIRTY BARRIER)**	1	10	10			N/A	
5.4.	Staff Numbers					up to 100 staff to use the facility, however permanent staff (animal technicians, etc. TBC)		
5.4.	Pass through Autoclaves fumigation chamber pass through hatch Dunk Tank			0		single disease status and therefore single barrier at entrance. Shoe change, disinfectant mats, hand washing facilities included		CSC considers ways of using the general cage cleaning in H1
5.5.	Staff showers (in and out) and changing rooms	2	30	60		depending on no. of staff required.		briefing identifies changing areas for both sides. One side should be enough?
5.6.	Unisex toilets	6	6	36				two within each changing facility and 2 no within the facility.
5.7.	office	1	10	10	2	for facility staff only, as users will have desks elsewhere		
5.8.	hot desk open plan office	1	4	4		10 hotdesks for staff working in the CBS		
5.9.	Archive / Stationery Store/Photocopier	1	20	20	0	outside CBS		
5.10.	Consumables / Cleaner Store	1	20	20	0			
5.11.	Necropsy	1	15	15	0	Unsure, if required. Needs further investigations		
5.12.	General Store	1	15	15				
5.13.	gas bottle store	1	15					may not be necessary - depending on management.
5.14.	Laundry / Storage of coats	1	5	5				
5.15.	Cage Wash area including Autoclave, Bedding Disposal, Bedding Dispensing, Rack Washer, Bottle Washer, Local/ Barrier Filling stations, Laminar flow Cabins in Cage Wash	1	100	100				I thought, it was automatic watering system - no bottles?
5.16.	Bedding & Feed Stores	1	50	50				
5.17.	General Store	1	25	25				

TOTAL			**935**		

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
6.0	2 Photon Microscopy **(CLEAN BARRIER)**	1	15	15		2 microscopes, can be co-located but need tobe separate from other imaging technology. Needs laser	CRB 3024	
6.1	Imaging Prep Room **(CLEAN BARRIER)**	1	10	10		not a must have - currently rooms are big enough to have prep space included. If rooms are too small, a cental prep room would be needed.		NOT A MUST HAV£!
6.2.	Photoacoustic imaging **(CLEAN BARRIER)**	1	10	10		Visualsonics vevo LAZR. Could be colocated with Echo MRI and IVIS. Needs Laser Designation	FF214B	
6.3.	Echo MRI **(CLEAN BARRIER)**	1	10	10		could be co-located with IVIS and photoacoustic imaging	CRB 1012	
6.4.	Optical imaging IVIS **(CLEAN BARRIER)**	1	10	10		could be co-located with Echo MRI and Photoacoustic imaging	FF 210	
6.5.	New technologies **(CLEAN BARRIER)**	2	10	20		space for new imaging/technogogies 1-2 rooms		
6.6.	Cleaners / Consumables **(CLEAN BARRIER)**					some storage space required for consumables. Cleaners stores can be shared with rest of animal house?		

TOTAL			**75**	**0**

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
7.1.	Main Building Reception	1	50	50	2	reception for maximum 2 members of staff		adjacent to seminar room
7.2.	Data Communication (Hub)	1	60	60		Preferable to have a new data Centre, plus possibly a separate data centre for imaging. But could potentially continue current provision in CWB. It would be best for the architects to speak to the Head of IT about the current spec for Data Centre	CWB (2nd floor)	
7.3.	FM Workshops / Storage	1	20	20		useful to have a small area that can be used as a workshop by FM, and possiblty the imaging team. Also a potential additional need for storage rooms for laboratory equipment to be stored for future use.		
7.4.	Toilets	8	10	80				

TOTAL			**210**	**2**

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
8.1	general/clinical/recycling waste	1	20	20			close by the delivery bay	
8.2.	Delivery Bay	1	40	40		for equipment deliveries rather than to every day stores.		LMS still to use the general stores from ICL?
8.3.	Maintenance	1	0	0		FM sit in the admin office. A small workshop may be useful if MRC is to manage the building maintenance.	combine with FM workshop	I would suggest , that rathe r than a workshop, it should be a separate room with PC to monitor the BMS and so on (in particular with the whole building being designed with BIM). I suggest to organise a meeting with Dr. Stephen Holmes at the LMB to assist with what is needed for the Maintenance.
8.4	Security Office / Fire Safety	1				to be discussed with ICL and ICHT		should continue to be a site wide provision (ie. ICHT)
8.5	Central Stores	1	50			Anticipated to continue using the main stores from ICL.		
8.6	First Aid	1	10	10		first aid and rest room required. Close to reception		
8.7.	Gases Cylinder Store	1	10	10		**BOC store on site and currently JIT order**s. Drosophilia groups have asked for piped CO2, which requires infrastructure.		what is drosophilia using in the moment? IS it currently piped in? LMB had piped gases installed at great expense and are not using it anymore.
8.8.	Car parking (DDA)			0		there are no car park spaces on site, nor does it seem feasible that the planners will demand car parking.		
8.9	Goods lift							
8.10.	Person lift							
	TOTAL			**80**	**0**			

ID	Description	no. of rooms	floor NIA Area in (m2)	Floor NIA Area Totals (in m2)	no. of People	Comments	Location / Relocation	NOTES
9.1.	Primary open plan wet lab	1	4	304	76			
9.2.	open plan write up	1	4	260	65			
9.3.	singular write up / PI	9	10	90	9			
9.4.	shared offices	2	7	28	4			
9.5.	Tissue Culture Lab	1	102	102				
9.6.	Secondary Lab space	8	616	616				
9.8.	Cleaner/Waste Store	1	9.75	9.75				
9.9	Break out Space	1	30	30				

TOTAL			**1439.75**	**154**

Appendix SOW-C - The Building information Model (BIM) Protocol CIC BIM Pro 2013

Construction Industry Council

BUILDING INFORMATION MODEL (BIM) PROTOCOL

CIC/BIM Pro
first edition 2013

Standard Protocol for use in projects using Building Information Models

The CIC acknowledges the technical input and leadership provided by the BIM Task Group in support of the production of CIC BIM documentation.

The BIM Protocol has been drafted by Beale and Company on behalf of the CIC and the BIM Task Group

© Construction Industry Council 2013

Construction Industry Council
26 Store Street, London WC1E 7BT
tel 020 7399 7400, fax 020 7399 7425
www.cic.org.uk

First published February 2013

The publisher makes every effort to ensure the accuracy and quality of information when it is published. However, it can take no responsibility for the subsequent use of this information, nor for any errors or omissions that it may contain.

Design by Astwood Design Consultancy
www.astwood.co.uk

Printed in Great Britain

Construction Industry Council

BUILDING INFORMATION MODEL (BIM) PROTOCOL

CIC/BIM Pro
first edition 2013

Standard Protocol for use in projects using Building Information Models

Full members of the Construction Industry Council • Association of Building Engineers • Association of Consultant Architects • Association of Consultant Approved Inspectors • Association for Consultancy and Engineering • Association for Project Management • Association for Project Safety • British Institute of Facilities Management • British Institute of Interior Design • Building Research Establishment • Building Services Research and Information Association • Chartered Institute of Architectural Technologists • Chartered Institution of Building Services Engineers • Chartered Institute of Building • Chartered Institution of Highways & Transportation • Chartered Institute of Plumbing and Heating Engineering • Construction Industry Research and Information Association • Consultant Quantity Surveyors Association • Ground Forum • The Higher Education Academy (Built Environment Discipline) • Institution of Civil Engineers • Chartered Institution of Civil Engineering Surveyors • Institute of Clerks of Works and Construction Inspectorate • Institute of Highway Engineers • Institute of Specialist Surveyors and Engineers • Institution of Structural Engineers • Local Authority Building Control • Landscape Institute • National House-Building Council • Royal Institute of British Architects • Royal Institution of Chartered Surveyors • Royal Town Planning Institute • **Associate members** • Adjudication Society • British Association of Construction Heads • British Board of Agrément • British Standards Institute • Chartered Institute of Marketing (Construction Industry Group) • Conference on Training in Architectural Conservation • Construction Youth Trust • National Housing Federation • Society of Construction Law • SPONGE • UK Green Building Council

1. Introduction

This BIM Protocol has been commissioned by CIC as part of its response to the UK Government BIM Strategy. The Protocol has been drafted for use on all common construction contracts and supports BIM working at Level 2.

The Protocol identifies the Building Information Models that are required to be produced by members of the Project Team and puts into place specific obligations, liabilities and associated limitations on the use of the models. The Protocol can also be used by clients to require the adoption of particular ways of working – such as the adoption of a common naming standard.

The Protocol adopts many of the core principles used in the preparation of the CIC Consultant Appointment and Schedules of Service, particularly that project teams perform better when there is clear responsibility for action and deliverables.

This introduction and guidance sets out the principles behind the drafting of the Protocol and provides guidance with regards to its completion and use.

2. General principles adopted in the drafting of the Protocol.

The following principles have informed the drafting of the Protocol:

- The Protocol makes the minimum changes necessary to the pre-existing contractual arrangements on construction projects;
- The Protocol ensures that there is an obligation on parties to provide defined elements of their works/services using models;
- The Protocol is a contractual document which takes precedence over existing agreements; and;
- The Protocol is flexible and should be suitable for use on all Level 2 BIM projects.

3. How the Protocol works

3.1 Objective of the Protocol

The primary objective of the Protocol is to enable the production of Building Information Models at defined stages of a project. The Protocol is aligned with Government BIM Strategy, and incorporates provisions which support the production of deliverables for 'data drops' at defined project stages. The Protocol also provides for the appointment of an 'Information Manager'.

A further objective of the Protocol is that its use will support the adoption of effective collaborative working practices in Project Teams. The encouragement of the adoption of common standards or working methods under PAS 1192-2 are examples of best practice that can be made an explicit contractual requirement under the Protocol.

All parties involved in the use, production or delivery of Models on the Project (the "Project Team Members") are required to have a BIM Protocol appended to their contracts. This will ensure that all parties producing and delivering Models adopt any common standards or ways of working described in the Protocol and that all parties using the Models have a clear right to do so. The responsibility for ensuring that Protocols are in place is with the Employer named in each agreement.

© Construction Industry Council

3.2 Incorporation into contracts

The Protocol is intended to be expressly incorporated into all direct contracts between the Employer and the Project Team Members.

- On a project with separate appointments, it will be appended to the appointments of members of the design team and to the building contract.
- On a Design and Build project, it will initially be appended to the contracts of the design team entered into prior to appointment of the Contractor. When the Contractor is appointed, the Building Contract should make him responsible for providing the models and should include the Protocol. If all consultants are novated, the Protocol appended to the novated appointments will allocate responsibility between members of the design team. If some consultants are not novated, careful consideration should be given as to how the responsibilities under the Protocol will be allocated following novation.
- Project Team Members should arrange for the Protocol to be incorporated into sub-contracts which concern the use, production or delivery of Models to the extent required to ensure that the Project Team Member complies with the Protocol. This will also ensure the sub-contractors have the benefit of and are subject to the licences in clause 6.

The text of a model amendment which expressly incorporates the Protocol into direct contracts is included as the Model Enabling Amendment. The text of exemplar amendments for common contracts and appointments are published on the BIM Task Group website, www.bimtaskgroup.org.

3.3 Permitted Purposes

A key area of concern for many information providers is that the wider use of data-rich BIM will make it harder to protect IPR. The Protocol uses a general concept of 'Permitted Purpose' to define the licenced uses of Models, rather than stating the specific uses of each model.

The Permitted Purpose is defined as: "*a purpose related to the Project (or the construction, operation and maintenance of the Project) which is consistent with the applicable Level of Detail of the relevant Model (including a Model forming part of a Federated Model) and the purpose for which the relevant Model was prepared*".

In order for the definition to operate as intended it is important that the Levels of Detail are defined appropriately in Appendix 1 (Levels of Detail and the Model Production and Delivery Table).

3.4 Treatment of Intellectual Property

In light of industry concerns in respect of IPR and the increased collaboration involved in a BIM project, clause 6 of the Protocol clearly sets out the IPR provisions required to enable the Models to be used as intended and to protect the rights of the Project Team Members against infringement.

Clause 6.2 states that 'any rights (including but not limited to any copyright)….shall remain vested in the Project Team Member'. If the Employer wants to own all Project IPR, then the Protocol will need to be amended and further changes may be required in the Project Team Agreements. The existing contractual arrangements will govern the copyright position in respect of other documents produced and delivered under the Agreement.

Clause 6.3 grants a licence to the Employer in respect of the Material (the electronic information contained in the Models produced by the Project Team Member) for the Permitted Purpose and clauses 6.6 and 6.7 grant a licence and sub-licence from the Employer to the Project Team Member in respect of other information contained in Models (including material provided by the Employer or on his behalf for inclusion in the Project Team Member's Models) for the Permitted Purpose. This means that a Project Team Member will be granted a licence, via the Employer, to use the Models produced by an Other Project Team Member, subject to the terms of clause 6 and vice versa.

The licences in the Protocol include the right to grant a sub-licence on identical terms to members of the Project Team and their sub-contractors. If the Employer requires a licence to be granted to other parties in respect of the Material it will need a separate agreement from the Project Team Member. This may be in the form of a collateral warranty in favour of that third party, or the Agreement could expressly extend the benefit of the Protocol to a third party under the Contracts (Rights of Third Parties) Act 1999.

The licence granted by the Project Team Member can be revoked for non payment to the extent that any licence in the Agreement can be and the sub-licence from the Employer is subject to any right of revocation in the licence granted to the Employer.

In order to protect the Project Team Member's rights, the licences do not include the right to amend the Material/Models without consent (except in limited circumstances) or the right to

© Construction Industry Council

reproduce any proprietary work contained in the Material/Models for any extension of the Project. If a wider licence is required additional specific consent could be provided by the Project Team Member.

Clauses 6.9 and 6.10 represent that the Project Team Member and the Employer have, or will procure the right to grant the licences and sub-licences in clause 6. It is important all parties keep a clear audit trail when obtaining a Model, or part of the Model, from a third party.

3.5 Electronic Data Exchange

The Protocol aims to remove the need for separate Electronic Data Exchange Agreements between the Project Team Members by addressing the principal risks associated with the provision of electronic data, in particular the risk of corruption following transmission. Clause 5.1 makes clear that, without prejudice to its obligations under the Agreement, the Project Team Member gives no warranty as to the integrity of electronic data. Clause 5.2 excludes liability for any corruption or unintended amendment etc. of the electronic data which occurs after the transmission of a Model by the Project Team Member, unless caused by a failure to comply with the Protocol.

3.6 Definition of the Models covered by the Protocol

Models which are scheduled in Appendix 1, the Model Production and Delivery Table (MPDT), are subject to the Protocol. Models which are not listed in the MPDT do not benefit from the provisions of the Protocol. Clause 4 introduces an obligation on the Project Team Member to produce and deliver the Models in respect of which it is identified as the "Model Originator" in Appendix 1. The completion of the MPDT is described in more detail in section 6. The MPDT should be drafted accurately, as it is a contractual document, and also because it defines the Models that Project Team Members are expected to produce for a particular stage or data drop and the Level of Detail that is required at this stage.

3.7 Change management

The Protocol and appendices are contract documents. Any change to the Protocol or appendices will result in a change to the contract terms. Any variations to the MPDT or Protocol should be subject to the Change Management procedure under the Agreement, as they may be a change to the scope of services/works. As the same Protocol and appendices are attached to all Project Team Agreements, Employers should try and ensure such procedures are consistent across all Project Team Agreements if possible.

3.8 Liability for use of Models

Given the concerns associated with the wider use of data on BIM Projects clause 7 excludes liability for any use of the Material/Models which are licensed and/or sublicensed in clause 6 which is not permitted by the relevant licence/ sub-licence.

4. Information Manager

The Protocol requires the Employer to appoint a party to undertake the Information Management Role. This is expected to form part of a wider set of duties under an existing appointment and is likely to be performed either by the Design Lead or the Project Lead, which could be a consultant or contractor at different stages of the project. In some circumstances the Employer may appoint a stand alone Information Manager.

The Scope of Services for the Role of Information Management will need to be defined in the Appointment of the party undertaking the Information Management Role. Details of the scope of services of the Information Manager have been prepared by the CIC. There are two versions: a detailed version compatible with the CIC scope of services, and another simpler version suitable for incorporation with any appointment, these are published separately on the BIM Task Group website, www:bimtaskgroup.org.

The Information Manager has no design related duties. Clash detection and model coordination activities associated with a 'BIM Coordinator' remain the responsibility of the design lead.

© Construction Industry Council

The principal responsibilities of the Information Manager can be summarised as:

- Managing the processes and procedures for information exchange on projects;
- Initiating and implementing the Project Information Plan and Asset Information Plan;
- Assisting in the preparation of Project Outputs, such as data drops; and
- Implementation of the BIM Protocol, including the updating of the MPDT.

The initial responsibility for the appointment of the Information Manager lies with the Employer, who must ensure that there is an Information Manager appointed (whether by the Employer or another party) at all times until completion of the Project, save to the extent that this is the responsibility of the relevant Project Team Member.

5. The Information Requirements

The Information Requirements (IR) has been included at Appendix 2 to the Protocol so that Project wide information requirements can be expressly incorporated into all Project Team Member Agreements. Clause 4.1.2 requires the Project Team Member to comply with the Information Requirements (including any protocols, procedures and processes set out therein). The Information Requirements define how a Model must be developed, although it will not change the substance of what each party must provide. Many of the requirements included in the IR will be taken from tender documents such as the Employer's Information Requirements. An exhibit of the Employer's Information Requirements, with guidance notes, is available on the BIM Task Group website.

Appendix 2 contains an example of what might be included in an IR but the content of the IR is entirely flexible. The Information Requirements should be adapted to suit the needs of the Project. Once prepared, the IR will be appended to the Protocol attached to all Project Team Agreements. It is likely to be an evolving document and will be subject to the change control procedure under the Agreement.

It is the responsibility of the Information Manager to agree and issue the IR, which should be prepared before the Agreements are concluded, as otherwise the parties will have to rely on the other contractual arrangements, which may not address the items covered by the IR.

6. Model Production and Delivery Table

The Model Production and Delivery Table (MPDT) is a key document as it both allocates responsibility for preparation of the Models and identifies the Level of Detail ("LOD") that Models need to meet at the project stages or data drops stated in the table.

The LODs are to be defined in Appendix 1 and it is expected that this will be done by reference to a separate document/standard. A definition of LODs can be found in PAS 1192-2, and further work is being undertaken by the BIM Task Group to define specific data content requirements for BIM. It is important that the LODs are defined appropriately as they determine both the content of a Model and the Permitted Purpose for which the Model can be used. Ideally the Models included in the MPDT will have been identified in schedules to the Employer's Information Requirements.

The MPDT is to be included at Appendix 1 and should be prepared before the Agreement is concluded. The same MPDT should be included in the Protocol appended to all Project Team Agreements. The MPDT should be completed carefully on a Level 2 project, so as not to impose additional obligations than intended, or to omit models from the scope of the Protocol. Should any variations to the MDPT be introduced at a later date, the change will be subject to the same procedure as required under the Agreement.

An exemplar MPDT has been published on the BIM Task Group website. It uses APM Project Stages and references to Data Drops described in the UK Government BIM Strategy. The APM Project Stages provide the closest match between stages used on building and infrastructure project stages. The MPDT can be adapted to refer to other Project Stage references, such as the RIBA Plan of Work, or Network Rail's GRIP.

© Construction Industry Council

Definition

'BIM Protocol: the CIC Building Information Modelling Protocol in the form attached at Appendix X.'

Incorporation into the definition of the Contract Documents

'BIM Protocol'

Compliance with obligations, benefits of rights, limitations or exclusions of liability

'The Employer and the Contractor shall:

1. comply with their respective obligations set out in the BIM Protocol;
2. have the benefit of any rights granted to them in the BIM Protocol; and
3. have the benefit of any limitations or exclusions of their liability contained in the BIM Protocol'

The specific amendments required to incorporate the Protocol should be considered on a contract by contract basis and legal advice should be sought in this regard. Exemplar amendments for certain standard form contracts and appointment documents will be published on the BIM Task Group website: www.bimtaskgroup.org.uk.

Parties should consider whether any amendments are required to the scope of services of the members of the Project Team in addition to the Protocol to reflect the fact that BIM is being used.

Exemplar amendments for contracts and appointment documents will be published on the BIM Task Group website: www.bimtaskgroup.org.uk.

© Construction Industry Council

1. DEFINITIONS

1.1 In this Protocol unless the context otherwise requires, the following words and phrases shall have the following meanings:

1.1.1 **Agreement** means the agreement between the Employer and the Project Team Member to which this Protocol is attached.

1.1.2 **Employer** means the person appointing the Project Team Member pursuant to the Agreement and any valid assignee of the Employer's rights and obligations under this Protocol, subject to the terms of such assignment.

1.1.3 **Federated Model** means a Model consisting of connected but distinct individual Models.

1.1.4 **Information Management Role** means a role in connection with the Project which includes, inter alia, the establishment and management of the processes, protocols and procedures set out in the Information Requirements.

1.1.5 **Information Manager** means the person appointed, initially by the Employer, to perform the Information Management Role.

1.1.6 **Information Requirements** means the document attached to this Protocol at Appendix 2 setting out the way in which Models shall be produced, delivered and used on the Project, including any processes, protocols and procedures referred to therein.

1.1.7 **Level of Detail** means the level of detail required for a Model as specified in Appendix 1 attached to this Protocol.

1.1.8 **Material** means all information in any electronic medium prepared by or on behalf of the Project Team Member comprised in:

a the Specified Models; and

b the Federated Models, to the extent that these comprise Specified Models or to the extent that the Project Team Member owns any additional rights in any Federated Model,

excluding any material forming part thereof which is provided to the Project Team Member by or on behalf of the Employer.

1.1.9 **Model** means a digital representation of part of the physical and/or functional characteristics of the Project

1.1.10 **Model Production and Delivery Table** means the table attached to this Protocol at Appendix 1 specifying the subject matter of each Model, the person who is to produce and deliver each Model (described in the table as "Model Originator") at each Stage and the Level of Detail for each Model at each Stage.

1.1.11 **Other Project Team Member** means any person having responsibilities in relation to the production, delivery and/or use of Models and appointed by the Employer in relation to the Project, excluding the Project Team Member.

1.1.12 **Permitted Purpose** means a purpose related to the Project (or the construction, operation and maintenance of the Project) which is consistent with the applicable Level of Detail of the relevant Model (including a Model forming part of a Federated Model) and the purpose for which the relevant Model was prepared.

1.1.13 **Project** means the project to which the Agreement relates.

1.1.14 **Project Agreement** means any agreement entered into between the Employer and an Other Project Team Member in relation to the Project.

1.1.15 **Project Team Member** means the person appointed by the Employer pursuant to the Agreement.

© Construction Industry Council

1.1.16 **Project Team Models** means any Models which Other Project Team Members produce and deliver as specified in the Model Production and Delivery Table and any Federated Models (or any part thereof) produced and delivered by Other Project Team Members.

1.1.17 **Protocol** means this building information modelling protocol including Appendix 1 and 2.

1.1.18 **Specified Models** means the Model or Models which the Project Team Member is to produce and deliver as specified in the Model Production and Delivery Table.

1.1.19 **Stage** shall have the meaning stated in Appendix 1.

2. PRIORITY OF CONTRACT DOCUMENTS

2.1 This Protocol forms part of the Agreement. In the event of a conflict or inconsistency between the terms of this Protocol and any other documents contained in and/or forming part of the Agreement, except where the Protocol states otherwise, the terms of this Protocol shall prevail.

2.2 In the event of any conflict or inconsistency between a Model prepared and delivered in accordance with this Protocol and any document or information extracted from such Model, except where the Information Requirements states otherwise, the Model shall prevail.

3. OBLIGATIONS OF THE EMPLOYER

3.1 The Employer shall:

3.1.1 arrange for a protocol in substantially the same terms as this Protocol and for the obligations set out herein to be incorporated into all Project Agreements; and

3.1.2 save to the extent that such obligations are within the scope of the Project Team Member's obligations under any other part of the Agreement:

a ensure that until the end of the Project the Information Requirements and the Model Production and Delivery Table are reviewed and updated at each Stage; and

b ensure that the appointment of the Information Manager shall be changed or renewed as necessary to ensure that there is at all times until the end of the Project a person performing the Information Management Role.

4. OBLIGATIONS OF THE PROJECT TEAM MEMBER

4.1 The Project Team Member shall:

4.1.1 produce the Specified Models (excluding any material forming part of the same which is provided to the Project Team Member by or on behalf of the Employer) to the Level of Detail specified in the Model Production and Delivery Table using the level of skill and care required under the Agreement; and

4.1.2 subject to events outside its reasonable control, (including the acts or omissions of the Employer, Other Project Team Members and any third party but excluding the Project Team Member's sub-contractors), use reasonable endeavours to:

a deliver the Specified Models at the Level of Detail specified in the Model Production and Delivery Table at the Stage specified therein and in accordance with the Information Requirements;

b use the Project Team Models in accordance with any procedures therefor in the Information Requirements; and

c comply with the Information Requirements; and

4.1.3 arrange for this Protocol to be incorporated into any sub-contracts that it enters into in relation to the Project to the extent required to enable the Project Team Member to comply with this Protocol.

© Construction Industry Council

5. ELECTRONIC DATA EXCHANGE

5.1 Without prejudice to the Project Team Member's obligations under this Protocol and the Agreement, the Project Team Member does not warrant, expressly or impliedly, the integrity of any electronic data delivered in accordance with this Protocol.

5.2 The Project Team Member shall have no liability to the Employer in connection with any corruption or any unintended amendment, modification or alteration of the electronic data in a Specified Model which occurs after it has been transmitted by the Project Team Member, save where such corruption, amendment, modification or alteration is a result of the Project Team Member's failure to comply with this Protocol.

6. USE OF MODELS

6.1 The Employer and the Project Team Member agree that any provisions in the Agreement concerning the copyright (or any other rights) in and licence to use the Material, the Federated Models, the Project Team Models, any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf of the Employer and any proprietary work contained therein shall be varied to the extent necessary so that sub-clauses 6.2 to 6.8 apply to the Material, the Federated Models, the Project Team Models, any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf of the Employer and any proprietary work contained therein but if there are no such provisions sub-clauses 6.2 to 6.8 shall apply.

6.2 Any rights (including but not limited to any copyright) subsisting in the Material and any proprietary work contained in the Material shall, as the case may be, vest or remain vested in the Project Team Member.

6.3 Subject to clause 6.4 and 6.5, the Project Team Member grants to the Employer a non-exclusive licence and, to the extent that the Material and any rights subsisting therein are owned by third parties, a sub-licence, (including the right to grant sub-licences on identical terms to Other Project Team Members, which shall include the right to grant sub-sub-licences on identical terms to Other Project Team Members' sub-contractors) to transmit, copy and use the Material and any proprietary work contained in the Material for the Permitted Purpose.

6.4 The licence and sub-licence (if any), granted in clause 6.3 may be suspended or revoked in the event of non-payment to the extent that any licence in the Agreement provides for such suspension or revocation.

6.5 The licence in clause 6.3 shall not include the right to:

6.5.1 amend or modify the Material without the Project Team Member's written consent (not to be unreasonably withheld), save where such amendment or modification is:

a provided for in the Information Requirements; or

b made for the Permitted Purpose following the termination of the Project Team Member's employment under the Agreement; or

6.5.2 reproduce any proprietary work contained in the Material for any extension of the Project.

© Construction Industry Council

6.6 Subject to clause 6.8 and any right of revocation contained in the licence granted to the Employer in respect of the same, the Employer grants to the Project Team Member a non-exclusive sub-licence (including the right to grant sub-sub-licences on identical terms to the Project Team Member's sub-contractors) to transmit, copy and use for the Permitted Purpose:

6.6.1 any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf of the Employer;

6.6.2 the Project Team Models (and any part thereof);

6.6.3 any Federated Model (and any part thereof); and

6.6.4 any proprietary work contained in the same,

to the extent that the same or any rights subsisting therein are owned by Other Project Team Members or any other third party.

6.7 Insofar as the Employer owns:

6.7.1 any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf of the Employer;

6.7.2 the Project Team Models (or any part thereof);

6.7.3 any Federated Model (or any part thereof);

6.7.4 any proprietary work contained in the same; or

6.7.5 any rights subsisting in any of the above,

subject to clause 6.8, the Employer grants to the Project Team Member a non-exclusive licence (including the right to grant sub-licences on identical terms to the Project Team Member's sub-contractors) to transmit copy and use the same for the Permitted Purpose.

6.8 The licence and sub-licence (if any) granted in clauses 6.6 and 6.7 shall not include the right to:

6.8.1 amend or modify a Model without the written consent (not to be unreasonably withheld) of the Employer or the Other Project Team Member who produced and delivered that Model (or the relevant part thereof), save where such amendment or modification is:

a provided for in the Information Requirements; or

b in respect of material produced or delivered by an Other Project Team Member, made for the Permitted Purpose following the termination of the Other Project Team Member's employment under the Agreement; or

6.8.2 reproduce any proprietary work contained in a Model for any extension of the Project.

6.9 The Project Team Member represents to the Employer that it has, or that it will procure, the right to grant either a licence or sub-licence in the form granted in clause 6.3 in respect of the Material and any proprietary work contained therein.

6.10 The Employer represents to the Project Team Member that it has, or that it will procure, the right to grant either a sub-licence in the form granted in clause 6.6 or a licence in the form granted in 6.7 in respect of:

6.10.1 the Project Team Models (and any part thereof);

6.10.2 any Federated Model (and any part thereof) which does not form part of the Material;

6.10.3 any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf of the Employer; and

6.10.4 any proprietary work contained in the same.

© Construction Industry Council

7. LIABILITY IN RESPECT OF A MODEL

7.1 The Employer and the Project Team Member agree that any provisions in the Agreement concerning the use of the Material, the Federated Models, the Project Team Models, any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf of the Employer and any proprietary work contained therein shall be varied to the extent necessary to give effect to clauses 7.2 and 7.3 but if there are no such provisions clauses 7.2 and 7.3 shall apply.

7.2 The Project Team Member shall have no liability to the Employer arising out of any modification or amendment to, or any transmission, copying or use of the Material, or any proprietary work contained therein, by the Employer, an Other Project Team Member, or any other third party, other than that permitted by clause 6.3.

7.3 The Employer shall have no liability to the Project Team Member arising out of any modification or amendment to, or any transmission, copying or use of the Project Team Models, or any material forming part of the Specified Models which is provided to the Project Team Member by or on behalf by the Employer, or any Federated Models, or any proprietary work contained in the same, sublicensed or licensed by the Employer pursuant to clauses 6.6 and 6.7, by the Project Team Member or any third party, other than that permitted by clause 6.6 or 6.7 (as applicable).

8. TERMINATION

8.1 Clauses 1, 2, 3, 5, 6 and 7 of this Protocol shall continue to apply following termination of the Project Team member's employment under the Agreement.

© Construction Industry Council

Levels of Detail and the Model Production and Delivery Table

The Levels of Detail are as follows:

LOD 1 _____

LOD 2 _____

LOD 3 _____

LOD 4 _____

LOD 5 _____

LOD 6 _____

LOD 7 _____

The Stages are as follows:

STAGE 1 _____

STAGE 2 _____

STAGE 3 _____

STAGE 4 _____

STAGE 5 _____

STAGE 6 _____

STAGE 7 _____

This is a framework for a Model Production and Delivery Table. The parties may choose any other appropriate format and attach it to this Appendix.

An editable version of the BIM Protocol Appendices are provided on the BIM Task Group Website: **www.bimtaskgroup.org**

Specimen Model Production and Delivery Table

Showing models required at different project stages

LOD definitions (from PAS 1192)

1 Brief
2 Concept
3 Developed Design
4 Production
5 Installation
6 As constructed
7 In use

Stage definitions (from APM)

0 Strategy
1 Brief
2 Concept
3 Definition
4 Design (production information)
5 Build & Commission
6 Handover & Closeout
7 Operation and end of life

Model Originators identified by name

	Drop 1 Stage 1		**Drop 2a** Stage 2		**Drop 2b** Stage 2		**Drop 3** Stage 3		**Drop 4** Stage 6	
	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail	Model Originator	Level of Detail
Overall form and content										
Space planning	Architect	1	Architect	2	Contractor	2	Contractor	3	Contractor	6
Site and context	Architect	1	Architect	2	Contractor	2	Contractor	3	Contractor	6
Surveys							Contractor	3		
External form and appearance			Architect	2	Contractor	2	Contractor	3	Contractor	6
Building and site sections					Contractor	2	Contractor	3	Contractor	6
Internal layouts					Contractor	2	Contractor	3	Contractor	6
Design strategies										
Fire			Architect	2	Contractor	2	Contractor	3	Contractor	6
Physical security			Architect	2	Contractor	2	Contractor	3	Contractor	6
Disabled access			Architect	2	Contractor	2	Contractor	3	Contractor	6
Maintenance access			Architect	2	Contractor	2	Contractor	3	Contractor	6
BREEAM					Contractor	2	Contractor	3	Contractor	6
Performance										
Building	Architect	1	Architect	2	Contractor	2	Contractor	3		
Structural	Architect	1	Str Eng	2	Contractor	2	Contractor	3		
MEP systems	Architect	1	MEP Eng	2	Contractor	2	Contractor	3		
Regulation compliance analysis							Contractor	3	Contractor	6
Thermal Simulation							Contractor	3	Contractor	6
Sustainability Analysis							Contractor	3	Contractor	6
Acoustic analysis							Contractor	3	Contractor	6
4D Programming Analysis										
5D Cost Analysis										
Services Commissioning							Contractor	3	Contractor	6
Elements, materials components										
Building			Architect	2	Contractor	2	Contractor	3	Contractor	6
Specifications			MEP Eng	2	Contractor	2	Contractor	3	Contractor	6
MEP systems					Contractor	2	Contractor	3	Contractor	6
Construction proposals										
Phasing							Contractor	3		
Site access							Contractor	3		
Site set-up							Contractor	3		
Health and safety										
Design							Contractor	3		
Construction							Contractor	3		
Operation							Contractor	3	Contractor	6

© Construction Industry Council

This is a framework of a generic Information Requirements. Parties may choose to include further detail if they require.

An editable version of the BIM Protocol Appendices are provided on the BIM Task Group Website: **www.bimtaskgroup.org**

Information Requirements

1. Standards

The following standard(s) shall apply: _____

2. Parties

2.1 The parties involved in the Project are:

2.2 The role of Information Manager shall be performed by the following person or persons for the following stages:

Stages	*Person*
_____	_____
_____	_____

3. Employer's Information Requirements

3.1 The Common Data Environment shall be _____

3.2 The Models shall be developed using the following versions of the following software:

_____

3.3 The Models shall be delivered by the persons listed below in the following formats:

Person	*File format*
_____	_____

3.4 Files and layers shall be named and numbered in accordance with

_____

3.5 The following units, annotation, dimensions, abbreviations and symbols shall be used in developing a Model

_____

3.6 The following co-ordinate system shall be used

_____

3.7 The zoning requirements are as follows

_____

3.8 Data drops shall take place in accordance with the [Employer's Information Requirements/ Execution Plan]. To the extent that the [Employer's Information Requirements/Execution Plan] requires a particular piece of information to be extracted from a Model in more than one format at any particular Stage, all such formats shall be extracted from the same Model.

4. Project Procedures

4.1 The following protocols/procedures shall apply to the Project:

4.1.1 Spatial Co-ordination protocol;

4.1.2 Model approval/information exchange protocol;

4.1.3 Archiving procedures;

4.1.4 Security requirements and access rights procedures;

4.1.5 [Other]

4.2 Resolution of conflicts

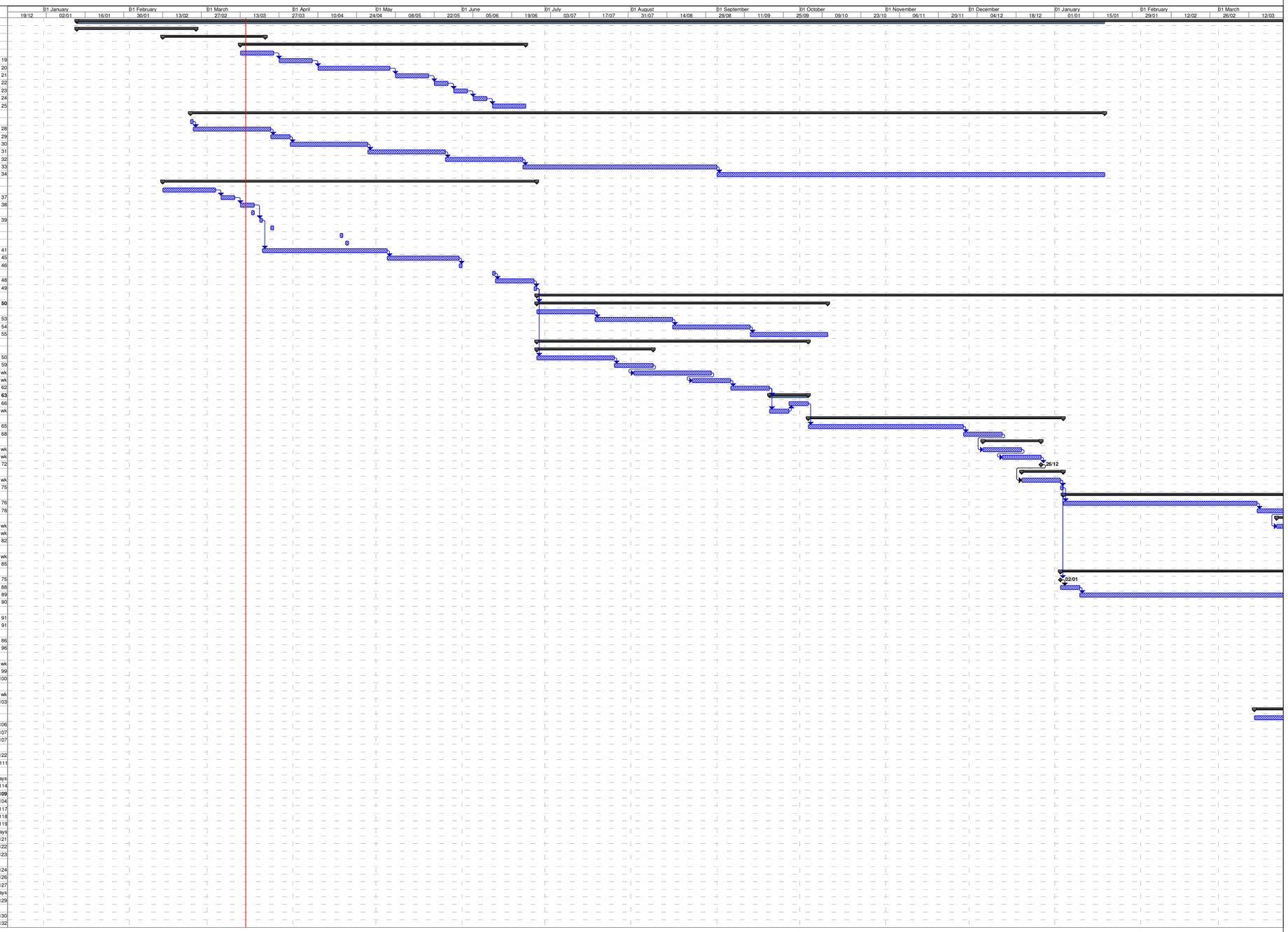
_____

specify any circumstances in which information extracted from a Model will take precedence over the Model.

© Construction Industry Council

MRC LMS
MASTER PROGRAMME

ID	Task Name	Duration	Start	Finish	Predecessors
1	**MRC LMS**	**1097 days?**	**Fri 13/01/17**	Tue 30/03/21	
2	**T&T Mobilisation**	**31 days**	**Fri 13/01/17**	**Fri 24/02/17**	
14	**Outline Business Case (OBC)**	**27 days**	**Mon 13/02/17**	**Tue 21/03/17**	
18	**Independent Commissioning Consultant (ICC) Procurement**	**75 days**	**Mon 13/03/17**	**Fri 23/06/17**	
19	Prepare Tender Documents for Independent Commissioning Consultant (ICC)	10 days	Mon 13/03/17	Fri 24/03/17	
20	T&T, MRC and UKSBS Review of Tender Documents for ICC	10 days	Mon 27/03/17	Fri 07/04/17	19
21	UKSBS Tender Period for ICC Procurement	20 days	Mon 10/04/17	Fri 05/05/17	20
22	Review ICC Bid Submissions	10 days	Mon 08/05/17	Fri 19/05/17	21
23	Interviews (tbc)	5 days	Mon 22/05/17	Fri 26/05/17	22
24	Agree ICC Selection	5 days	Mon 29/05/17	Fri 02/06/17	23
25	UKSBS Notify bidders	5 days	Mon 05/06/17	Fri 09/06/17	24
26	Mobilise ICC	10 days	Mon 12/06/17	Fri 23/06/17	25
27	**New Incoming Power Supply (UKPN)**	**236 days**	**Thu 23/02/17**	**Thu 18/01/18**	
28	Meet with MG Partnership to understand work done to date	1 day	Thu 23/02/17	Thu 23/02/17	
29	MG Partnership source updated quotation from UKPN	4 wks	Fri 24/02/17	Thu 23/03/17	28
30	T&T, MG Partnership and MRC Meet to review UKPN Quotation	1 wk	Fri 24/03/17	Thu 30/03/17	29
31	Site Meeting with UKPN (date to be agreed)	4 wks	Fri 31/03/17	Thu 27/04/17	30
32	UKPN Finalise Quote to MRC	4 wks	Fri 28/04/17	Thu 25/05/17	31
33	MRC Raise Payment to UKPN	4 wks	Fri 26/05/17	Thu 22/06/17	32
34	UKPN Mobilisation	10 wks	Fri 23/06/17	Thu 31/08/17	33
35	Site Works	20 wks	Fri 01/09/17	Thu 18/01/18	34
36	**Lead Designer Procurement**	**97 days**	**Mon 13/02/17**	**Tue 27/06/17**	
37	T&T Review MRC Scope of Works Document	15 days	Mon 13/02/17	Fri 03/03/17	
38	T&T agree Lead Designer Scope of Works Document with MRC	5 days	Mon 06/03/17	Fri 10/03/17	37
39	UKSBS Compile Lead Designer RFP	5 days	Mon 13/03/17	Fri 17/03/17	38
40	Date of posting of Contract advert to OJEU	1 day	Fri 17/03/17	Fri 17/03/17	
41	Date RFP available to Bidders	1 day	Mon 20/03/17	Mon 20/03/17	39
42	Bidder Conference (at MRC Hammersmith Campus)	1 day	Fri 24/03/17	Fri 24/03/17	
43	Latest date / time RFP clarifications submitted	1 day	Tue 18/04/17	Tue 18/04/17	
44	Latest date / time RFP clarification answered	1 day	Thu 20/04/17	Thu 20/04/17	
45	Closing date and time for Bidder to submit their response	33 days	Tue 21/03/17	Thu 04/05/17	41
46	Clarifications	18 days	Fri 05/05/17	Tue 30/05/17	45
47	Notification of proposed Contract award to unsuccessful bidders	1 day	Wed 31/05/17	Wed 31/05/17	46
48	Anticipated Contract Award Date	1 day	Mon 12/06/17	Mon 12/06/17	
49	Lead Designer Mobilisation	10 days	Tue 13/06/17	Mon 26/06/17	48
50	Commencement of Contract	1 day	Tue 27/06/17	Tue 27/06/17	49
51	**RIBA Stages (including Planning Permission)**	**207 days**	**Wed 28/06/17**	**Thu 12/04/18**	
52	**Surveys (SI, Utilities etc.)**	**75 days**	**Wed 28/06/17**	**Tue 10/10/17**	**50**
53	Scope	3 wks	Wed 28/06/17	Tue 18/07/17	
54	Procure	4 wks	Wed 19/07/17	Tue 15/08/17	53
55	On site	4 wks	Wed 16/08/17	Tue 12/09/17	54
56	Reports	4 wks	Wed 13/09/17	Tue 10/10/17	55
57	**Stages 0-1: Strategic Definition and Brief Preparation**	**70 days**	**Wed 28/06/17**	**Tue 03/10/17**	
58	**Briefing**	**30 days**	**Wed 28/06/17**	**Tue 08/08/17**	
59	Stakeholder consultation (programme of consultations to be agreed)	4 wks	Wed 28/06/17	Tue 25/07/17	50
60	Formal sign off Client brief	2 wks	Wed 26/07/17	Tue 08/08/17	59
61	Feasibility Design	4 wks	Wed 02/08/17	Tue 29/08/17	60FS-1 wk
62	Feasibility Report	2 wks	Wed 23/08/17	Tue 05/09/17	61FS-1 wk
63	Cost Plan Update	2 wks	Wed 06/09/17	Tue 19/09/17	62
64	**Client Review and Approval**	2 wks	**Wed 20/09/17**	**Tue 03/10/17**	**63**
65	Formal sign off	1 wk	Wed 27/09/17	Tue 03/10/17	66
66	Presentations, review and comment	1 wk	Wed 20/09/17	Tue 26/09/17	63FS-1 wk
67	**Stage 2: Concept Design**	**66 days**	**Wed 04/10/17**	**Wed 03/01/18**	
68	Concept Design	8 wks	Wed 04/10/17	Tue 28/11/17	65
69	Design review period	2 wks	Wed 29/11/17	Tue 12/12/17	68
70	**Stage report**	**15 days**	**Wed 06/12/17**	**Tue 26/12/17**	
71	Stage cost plan	2 wks	Wed 06/12/17	Tue 19/12/17	69FS-1 wk
72	Feasibility Report Compilation	2 wks	Wed 13/12/17	Tue 26/12/17	71FS-1 wk
73	Issue Feasibility Report	0 days	Tue 26/12/17	Tue 26/12/17	72
74	**Client Review and Approval**	**11 days**	**Wed 20/12/17**	**Wed 03/01/18**	
75	Presentations, review and comment	2 wks	Wed 20/12/17	Tue 02/01/18	73FS-1 wk
76	Formal sign off	1 day	Wed 03/01/18	Wed 03/01/18	75
77	**Stage 3: Developed Design**	**71 days**	**Thu 04/01/18**	**Thu 12/04/18**	
78	Design	10 wks	Thu 04/01/18	Wed 14/03/18	76
79	Design review period	2 wks	Thu 15/03/18	Wed 28/03/18	78
80	**Stage report**	**10 days**	**Thu 22/03/18**	**Wed 04/04/18**	
81	Stage cost plan	2 wks	Thu 22/03/18	Wed 04/04/18	79FS-1 wk
82	Stage report compilation	1 wk	Thu 29/03/18	Wed 04/04/18	81FS-1 wk
83	Issue Stage report	0 days	Wed 04/04/18	Wed 04/04/18	82
84	**Client Review and Approval**	**11 days**	**Thu 29/03/18**	**Thu 12/04/18**	
85	Presentations, review and comment	2 wks	Thu 29/03/18	Wed 11/04/18	83FS-1 wk
86	Formal sign off	1 day	Thu 12/04/18	Thu 12/04/18	85
87	**Town Planning**	**70 days**	**Tue 02/01/18**	**Tue 10/04/18**	
88	Planning application submitted to LBHF	0 days	Tue 02/01/18	Tue 02/01/18	75
89	Validation Period	1 wk	Wed 03/01/18	Tue 09/01/18	88
90	Determination Period	13 wks	Wed 10/01/18	Tue 10/04/18	89
91	Planning Decision	0 wks	Tue 10/04/18	Tue 10/04/18	90
92	**Town Planning (Post Determination)**	**65 days**	**Wed 11/04/18**	**Tue 10/07/18**	
93	Judicial review (risk period)	6 wks	Wed 11/04/18	Tue 22/05/18	91
94	Discharge of pre-start planning conditions	13 wks	Wed 11/04/18	Tue 10/07/18	91
95	**Stage 4: Technical Design**	**91 days**	**Fri 13/04/18**	**Fri 17/08/18**	
96	Design	12 wks	Fri 13/04/18	Thu 05/07/18	86
97	Design review period	2 wks	Fri 06/07/18	Thu 19/07/18	96
98	**Stage report**	**20 days**	**Fri 13/07/18**	**Thu 09/08/18**	
99	Stage cost plan	2 wks	Fri 13/07/18	Thu 26/07/18	97FS-1 wk
100	Stage report compilation	2 wks	Fri 27/07/18	Thu 09/08/18	99
101	Issue Stage report	0 days	Thu 09/08/18	Thu 09/08/18	100
102	**Client Review and Approval**	**11 days**	**Fri 03/08/18**	**Fri 17/08/18**	
103	Presentations, review and comment	2 wks	Fri 03/08/18	Thu 16/08/18	101FS-1 wk
104	Formal sign off	1 day	Fri 17/08/18	Fri 17/08/18	103
105	**Full Business Case**	**124 days**	**Wed 14/03/18**	**Mon 03/09/18**	
106	FBC documentation compilation	115 days	Wed 14/03/18	Tue 21/08/18	
107	FBC development	5 days	Wed 22/08/18	Tue 28/08/18	104,106
108	FBC finalization	2 days	Fri 31/08/18	Mon 03/09/18	109,107
109	FBC submission	2 days	Wed 29/08/18	Thu 30/08/18	107
110	**Funding Release - Client Approval Period**	**15 days**	**Mon 21/01/19**	**Fri 08/02/19**	
111	BEIS review	2 wks	Mon 21/01/19	Fri 01/02/19	109,122
112	Funding release	5 days	Mon 04/02/19	Fri 08/02/19	111
113	**OJEU Procurement Process (Contractor)**	**25 days**	**Mon 06/08/18**	**Fri 07/09/18**	
114	Prepare OJEU Notice	4 wks	Mon 06/08/18	Fri 31/08/18	104FS-10 days
115	Issue OJEU Notice	1 wk	Mon 03/09/18	Fri 07/09/18	114
116	**CONTRACTOR TENDER PROCESS**	**116 days**	**Fri 31/08/18**	**Fri 08/02/19**	**109**
117	Prepare Tender Documents	4 wks	Fri 31/08/18	Thu 27/09/18	104
118	Issue Tender Docs	5 days	Fri 28/09/18	Thu 04/10/18	117
119	Tender Period	10 wks	Fri 05/10/18	Thu 13/12/18	118
120	Tender Adjudication	1 wk	Fri 14/12/18	Thu 20/12/18	119
121	Tender Interviews	1 wk	Mon 07/01/19	Fri 11/01/19	120FS+11 days
122	Tender Report	1 wk	Mon 14/01/19	Fri 18/01/19	121
123	Client Review and Approval	2 wks	Mon 21/01/19	Fri 01/02/19	122
124	Appoint Main Contractor (& Novate Design Team)	1 wk	Mon 04/02/19	Fri 08/02/19	123
125	**CONSTRUCTION**	**599 days**	**Mon 11/02/19**	**Fri 28/05/21**	
126	Contractor Mobilisation	4 wks	Mon 11/02/19	Fri 08/03/19	124
127	Main Contract Construction Works	108 wks	Mon 11/03/19	Mon 05/04/21	126
128	Testing, Commissioning, Verification and Validation (TCVV)	6 wks	Tue 06/04/21	Mon 17/05/21	127
129	Soft Landing Period	14 days	Tue 04/05/21	Fri 21/05/21	128FS-10 days
130	Practical Completion	1 wk	Mon 24/05/21	Fri 28/05/21	129
131	**Project COMPLETION**	**61 days**	**Mon 31/05/21**	**Mon 23/08/21**	
132	Transition (Move and Start of Operations)	12 wks	Mon 31/05/21	Fri 20/08/21	130
133	LMS live in new facility	1 day	Mon 23/08/21	Mon 23/08/21	132



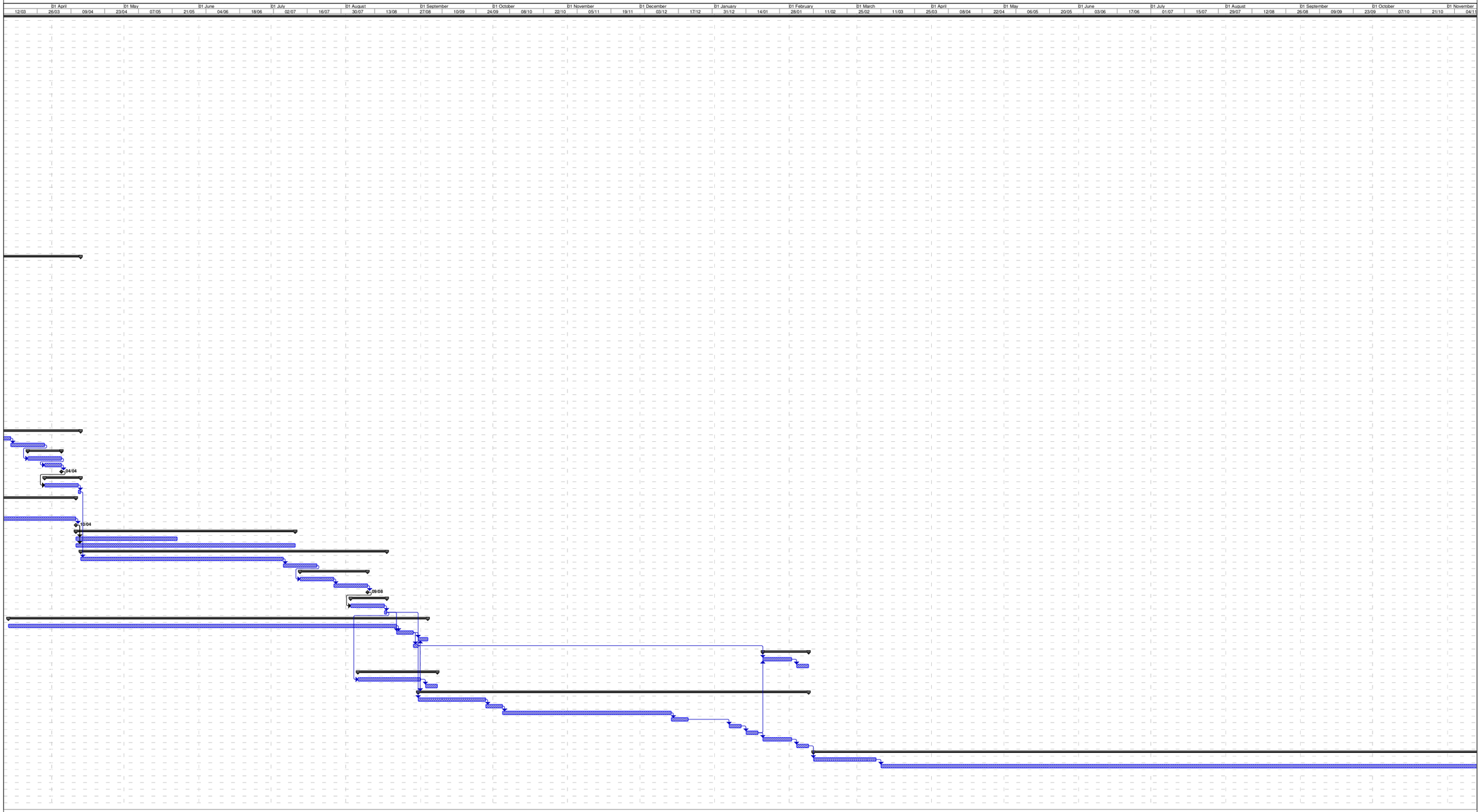
Task | Milestone | Project Summary | External Milestone | Inactive Task | Inactive Summary | Duration-only | Manual Summary | Finish-only | Deadline
Split | Summary | External Tasks | Inactive Task | Inactive Milestone | Manual Task | Manual Summary Rollup | Start-only | Progress

MRC Medical Research Council

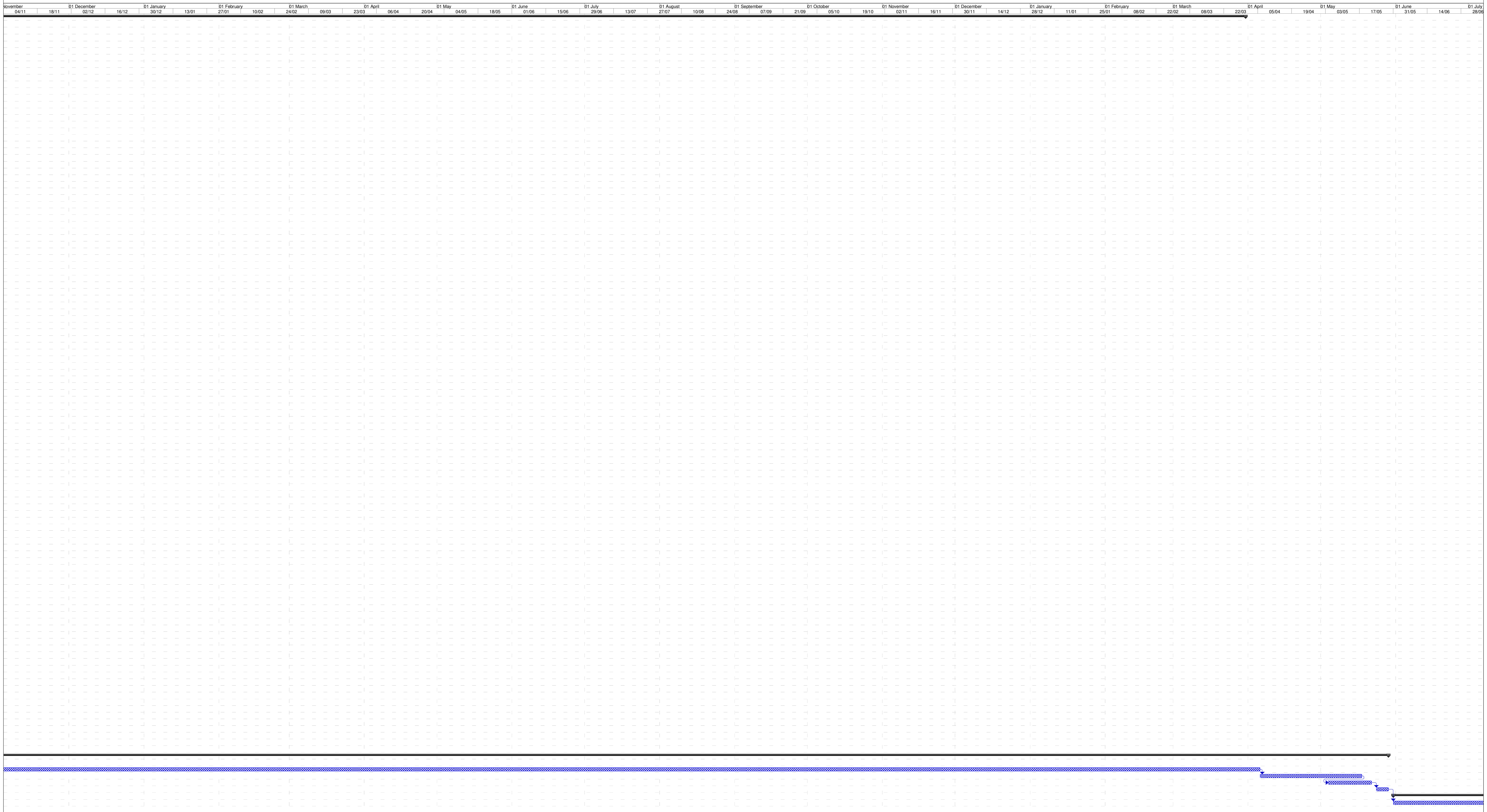
MRC LMS
MASTER PROGRAMME

Turner & Townsend

01 April		01 May		01 June		01 July		01 August		01 September		01 October		01 November		01 December		01 January		01 February		01 March		01 April		01 May		01 June		01 July		01 August		01 September		01 October		01 November
12/03	26/03	09/04	23/04	07/05	21/05	04/06	18/06	02/07	16/07	30/07	13/08	27/08	10/09	24/09	08/10	22/10	05/11	19/11	03/12	17/12	31/12	14/01	28/01	11/02	25/02	11/03	25/03	08/04	22/04	06/05	20/05	03/06	17/06	01/07	15/07	29/07	12/08	26/08	09/09	23/09	07/10	21/10	04/11



Task	Milestone	Project Summary	External Milestone	Inactive Task	Inactive Summary	Duration-only	Manual Summary	Finish-only	Deadline
Split	Summary	External Tasks	Inactive Task	Inactive Milestone	Manual Task	Manual Summary Rollup	Start-only	Progress


November
04/11
18/11
01 December
02/12
16/12
01 January
30/12
13/01
01 February
27/01
10/02
01 March
24/02
09/03
01 April
23/03
06/04
20/04
01 May
04/05
18/05
01 June
01/06
15/06
01 July
29/06
13/07
01 August
27/07
10/08
01 September
24/08
07/09
21/09
01 October
05/10
19/10
01 November
02/11
16/11
01 December
30/11
14/12
01 January
28/12
11/01
01 February
25/01
08/02
01 March
22/02
08/03
22/03
01 April
05/04
19/04
01 May
03/05
17/05
01 June
31/05
14/06
01 July
28/06

Task	Milestone	Project Summary	External Milestone	Inactive Task	Inactive Summary	Duration-only	Manual Summary	Finish-only	Deadline
Split	Summary	External Tasks	Inactive Task	Inactive Milestone	Manual Task	Manual Summary Rollup	Start-only	Progress	