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SURFACE

Management Plan Volume 3 Surface Delivery

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Contents

1 Purpose 4

2 Introduction 4

3 Scope 5

3.1 Contractual Basis 5

3.2 Surface Works 6

3.3 Central Section 8

3.4 Programme-Wide 9

3.5 Heathrow Spur 10

4 Definitions & Abbreviations 11

5 Organisation & Responsibilities 12

5.1 CRL Surface Directorate Accountabilities for Surface (On Network) Works 12

5.2 CRL Surface Directorate Responsibilities for Surface (On Network) Works 12

5.3 CRL Surface Directorate Role for Heathrow Spur Works 15

5.4 CRL Programme Directorate and Support Functions Responsibilities for Surface Works . 15

6 Key Management System Documentation 19

6.1 CRL Procedures 19

6.2 ONW Meetings Structure 19

7 Reference Documents 20

8 Standard Forms & Templates 21

1 Purpose

The Crossrail Management Plan documents the arrangements adopted by Crossrail for the delivery of the Crossrail Programme in accordance with the Delivery Strategy [Ref 5]. It is arranged in four volumes as follows:

- Volume 1 Corporate, Support and Specialist Function Directorates [Ref 1]
- Volume 2 Central Section Delivery [Ref 2]
- Volume 3 Surface Delivery [this document Ref 3]
- Volume 4 Operations [Ref 4]

This document is the Management Plan Volume 3 Surface Delivery, which describes how the Crossrail Surface Directorate manages the Surface Works. The surface works comprise the On Network Works undertaken by Network Rail and other work by contractors engaged directly by Crossrail.

This document, references the functional support plans, processes and procedures relevant to the Delivery Directorate.

2 Introduction

The Surface Directorate is comprised of a portfolio of projects including the On Network Works, Heathrow Spur works, and other 'cash-funded' projects. A summary of these projects is outlined below:

A) Network Rail, On Network Works (ONW), Financing Charges, Delivery Incentives.

The Surface (On Network) Works (ONW) comprises the upgrade of 90Km of existing mainline rail routes connecting Central Section portals to the terminal stations at Reading / Maidenhead, Abbey Wood and Shenfield. The works involve the reconfiguration and upgrade of route infrastructure to meet the functional and performance requirements of the future Crossrail Service.

The ONW is being designed and implemented for Crossrail Limited (CRL) by Network Rail (NR) and has major interfaces with the Central Section at the tunnel portals and at Heathrow Airport (Heathrow Spur). Delivery incentives have been established which reward NR for achieving pre-agreed Key Outputs and Key Dates.

For CRL, the delivery of the ONW is being overseen by the CRL Surface Directorate who is also responsible for managing the overall relationship with NR and coordinating CRL engagement.

Crossrail is obliged to pay NR's costs associated with financing the works prior to the costs being logged on to the NR Regulated Asset Base (RAB). Crossrail Surface manages this expenditure.

NR is the Infrastructure Manager (IM) for the rail network that connects with the Crossrail's Central Operating Section for which RfL are to be IM.

B) The Heathrow Spur Works.

Crossrail trains will serve Heathrow via Heathrow Airport Ltd.'s (HAL) spur tunnel and railway infrastructure off the Great Western railway. The infrastructure is owned and managed by HAL with NR appointed as the Infrastructure Manager for the tunnels and railway systems.

Modifications are required to the Heathrow Spur infrastructure to support the Crossrail trains and services. Crossrail Surface manages the procurement of these works which are mainly undertaken via NR (separate from the ONW) or HAL.

Crossrail Surface manages the compensation arising from works affecting HAL's infrastructure and operation.

C) Other 'Cash-funded' Works.

Surface also manages some projects which are being delivered by NR through the Implementation Agreement. These are termed 'cash-funded' in order to differentiate the funding from the NR Regulated Asset Base (RAB).

3 Scope

NR has responsibilities and specific interests in a number of areas relating to NR's wider role and specifically for the On Network Works, each of which is described in more detail in this Section. Those interests range between the undertaking of specific work packages that are required for the final CRL alignment on western and eastern spurs, through to the protection of existing assets and operations in the Crossrail Central Section.

3.1 Contractual Basis

NR play an important role in the specification, delivery, commissioning, operation and funding of Crossrail. Accordingly, it has several roles and a suite of agreements have been established to document NR's rights and obligations. The suite of agreements and its principle features are shown below:

3.1.1 Protective Provisions Agreement (PPA)

The PPA was established during the Parliamentary stage of Crossrail between the Secretary of State and NR. The PPA protects NR's role as the Network Operator during the construction of Crossrail and gives NR elective rights in relation to carrying out the On-Network Works, which NR exercised.

3.1.2 Track Access Option (TAO)

The TAO commits NR to provide specified railway paths for the operation of Crossrail Services by a Crossrail Train Operating Company (CTOC) subject to the establishment of a regulated Track Access Agreement.

3.1.3 Regulatory Protocol (Crossrail – NR Programme Protocol) [Ref 14 and 15]

Arrangements for the funding and governance of the modifications to the national network required in order to create the infrastructure capability that will enable the paths in TAO to be created are set out in the Regulatory Protocol. NR is responsible for funding the On-Network Works through logging up expenditure to the Regulatory Asset Base (RAB) and by being reimbursed through track access charges when Crossrail commences. NR develops and delivers infrastructure capability as a licensed obligation in response to CRL's reasonable customer requirements. These are expressed as functional requirements (the On-Network Functional Requirements [Ref 12]) and schedule requirements in the form of specified key dates and key output dates. The Protocol requires NR and CRL to agree to a Baseline Plan, Target Prices and pain/gain incentive arrangements. During the construction period, CRL cash funds NR's financing charges in accordance with the provisions of the CRL Charges Agreement.

3.1.4 Approved Assurance Procedures

The Approved Assurance Procedures govern NR's role as an Infrastructure Manager at the interface of the tunnels and rail systems through the central section as discharged through the processes described within Crossrail's Technical Assurance Plan.

3.1.5 Framework Implementation Agreement (FIA)

CRL is responsible for delivering the Central Section Works including enabling and permanent works at the interfaces with the national network. The FIA is a mechanism that allows CRL to engage NR to carry out design and construction activities, normally on operationally critical assets and to cash fund those activities and works. The FIA has been set up as a framework agreement so that works and services can be called off for any of the interfaces eg Westbourne Park, Plumstead, and Pudding Mill Lane.

3.1.6 Framework Asset Protection Agreement

This agreement allows CRL and its contractors to work on or adjacent to NR's infrastructure and affords NR the opportunity to ensure the safety of the network is maintained during the construction of Crossrail works by CRL's contractors.

3.2 Surface Works

NR has five major activity areas relating to the surface works:

3.2.1 On-Network Works

These are the works necessary to achieve the Infrastructure Capability on the Great Eastern, Great Western and North Kent Routes of the network specified in the NR Client Requirements **[Ref 13]** that are to be delivered by NR. This work is to be planned, programmed, procured and delivered using NR's internal processes and systems, as is the case for any other enhancement works on the network. NR must agree the overall scope of On-Network Works with CRL relative to the overall Crossrail requirements, which are defined in the On-Network Functional Requirements **[Ref 12]**. Delivery timescales and cost estimates for On-Network Works must be shared and agreed with CRL, as with all other requirements of the Protocol relative to the respective management roles of both parties. This is described further in Section 3 of this Management Plan.

The current basis of On-Network Works scope is provided in the Work Definition Documents (WDD) which, when combined constitutes the total On-Network Works scope. This is part of the KD1 submission of September 2010, each WDD representing an individual package of On-Network Works. Each WDD will form the whole of, or part of, a work package that will be progressed through the NR Guide to Railway Investment Projects (GRIP) process.

Asset Protection Agreements are not required for the On-Network Works elements of scope as the NR Crossrail Delivery team will work directly with the NR Asset Protection (ASPRO) teams to ensure that effective asset protection measures are in place for all survey and delivery works that may have an impact upon NR's operational infrastructure. NR will ensure, and are ultimately responsible for the protection of all NR assets during all phases of GRIP development. Asset protection undertaken by NR is contained within the work-scope of each individual package of works to be undertaken, and within respective cost plans.

3.2.2 Surface Interfaces

These are elements of On-Network Works that have a direct interface with other CRL projects, or other external programmes. They can be summarised as:

- Crossrail Portal Works – Plumstead, Pudding Mill Lane, Royal Oak Portal are significant interface locations, the demarcation with On-Network Works being governed by the Demarcation Drawings and supporting Demarcation Report which is signed by both NR and CRL. The Crossrail Surface Directorate is responsible for any change to demarcation relative to the scope of On-Network Works, which might be driven by ongoing design development;
- Crossrail Central Section Works – principally Paddington and Pudding Mill Lane are elements of CRL Central Section Scope, which are delivered as part of the Central Section Works, managed by Central Section Delivery Directorate and not by Crossrail Surface Directorate;
- Signalling System/ATO overlay – the SE Spur will utilise ATO to control trains through Abbey Wood Station and through the auto-reverse turn-back to the East of Abbey Wood. CRL Surface will be responsible for ensuring that NR have the requisite information to ensure that the ATO overlay can be delivered effectively based upon the assets delivered by NR;
- Rolling Stock and Depot (RSD) – CRL is procuring rolling stock and the Old Oak Common maintenance depot as a stand-alone PFI contract, and the CTOC team will be responsible for introducing the rolling stock onto the Crossrail route. Crossrail Surface Directorate are responsible for ensuring that all aspects of ONW are compatible with the RSD requirements, and eventual specification;
- Stabling and sidings - Delivery of stabling and sidings at locations other than the Old Oak Common maintenance depot is managed by the Crossrail Surface Directorate and
- Traction Power Distribution System – CRL is designing and procuring the Traction Power Distribution System,. Crossrail Surface Directorate is responsible for ensuring that there is sufficient transfer of information, and design integration between NR and CRL Technical Directorate – System Wide to ensure NR are able to complete GRIP stage designs for each spur.
- Heathrow Spur: Crossrail trains will serve Heathrow Terminal 4 through BAA's Heathrow Spur tunnel and railway infrastructure. The infrastructure is owned and managed by Heathrow Airport Limited with NR appointed as the Infrastructure Manager for the tunnels and railway systems. The scope of modifications to the Heathrow Spur infrastructure to support the Crossrail trains and services needs to be agreed between CRL and BAA with advice from NR. Once the scope is established, then NR's role in delivery will be discussed and agreed. The modifications will need to then be accepted by NR as Infrastructure Manager under Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS).

3.2.3 Infrastructure Manager for Surface Railway

The works that NR are responsible for delivering, as defined in On-Network Works, will be handed over to NR as Infrastructure Manager under ROGS. NR will discharge this by following its internal procedures in two key ways:

1. adherence to the GRIP lifecycle process; and
2. Compliance with NR Company and Line Standards.

Crossrail Surface Directorate's engagement in this process will be through the attendance at design reviews, attendance at key Stage Gate Reviews, and acceptance of the GRIP stage deliverables as defined by the CRL Procedures (as listed in Section 6.1 of this plan).

It should be noted that elements of the Surface Railway, e.g. Westbourne Park and Heathrow Spur, may be delivered by other parties. Subsequent Sections of this document define the role of NR in these projects.

3.2.4 Asset Owner for Surface Railway

NR is the owner of the national railway. The Crossrail Act provides for the acquisition of land and property for Crossrail and this will result in an expansion of railway lands. The Protective Provisions Agreement defines the arrangements for transfer of land to NR.

3.2.5 Relationship with TOCs, FOCs and other Stakeholders

The processes for consultation with Train Operating Companies (TOCs), Freight Operating Companies (FOCs) and other stakeholders that NR has established to satisfy its licence conditions, will be applied equally to the Crossrail works.

NR will also calculate and administer compensation payable to TOCs and FOCs for disruption of their services in accordance with the existing relevant Track Access Agreement. To ensure an equitable share of compensation payments and to avoid perverse incentives, a similar formulaic approach to compensation has been developed for disruption to the (unregulated) operations of British Airports Authority (BAA).

3.3 Central Section

NR has four major activity areas relating to the central section summarised below and managed by CRL's Central Section Delivery Directorate as described in Management Plan Volume 2 – Central Section Delivery **[Ref 2]**:

3.3.1 Infrastructure Manager at the interface with the Central Section

As Infrastructure Manager for the On Network railway systems and assets, there is a duty for mutual co-ordination and co-operation between Duty Holders. This is described in further detail in the Management Plan Volume 4 – Operations **[Ref 4]**.

3.3.2 Interface Works (Central Section)

Significant NR interfaces exist at Royal Oak Portal, Westbourne Park, Pudding Mill Lane and Plumstead Portal site locations. All of these are described in the NR Scope Book; Implementation Works maintained by Central Section Delivery Directorate. All implementation work is controlled in accordance with the Implementation Agreement Framework (17 August 2009).

3.3.3 Farringdon Station Interface

Significant works are required at Farringdon Station. These are described in detail in the Central Section Delivery Directorate's Farringdon CDM Implementation Plan.

3.3.4 Asset Protection Works (Central Section)

There are numerous locations where NR's presence is required to maintain the safety and operability of their railway. These are listed in the NR Scope Book; Asset Protection Works maintained by Central Section Delivery Directorate. Asset protection work is controlled in accordance with the Asset Protection Agreement (20 July 2009).

3.4 Programme-Wide

NR has two major activity areas relating to Programme-wide issues.

3.4.1 Provision of Support Services

The Protocol recognises that CRL needs NR to provide certain support services which encompass:

- railway systems modelling to define functional and performance targets;
- engineering systems integration, discharged via NR's attendance at the Railway Integration Authority, to deliver the end-to-end Crossrail railway;
- testing and commissioning of the Central Section railway infrastructure, discharged via NR's attendance at the Programme Board; and
- operational and maintenance planning of the Central Section railway infrastructure, discharged via NR's attendance at the Programme Board.

3.4.2 Interface with other NR projects

There are a number of NR Interfacing Projects on which CRL depend. These are projects that are being funded and delivered separately by NR and include, but are not limited to:

- GSM-R/Fixed Telecom Network - NR has a programme to deliver GSM-R network-wide, upon which Crossrail is dependent for overall communications, when fully operational. GSM-R is not funded with the On-Network Works, though it is the responsibility of the Surface team to ensure that effective co-ordination exists between the NR GSM-R programme and CRL;
- Romford RCC - Crossrail Control Centre - NR, under a non-Crossrail programme is delivering a new route control facility at Romford. NR will work with CRL to determine the requirements of the Romford Control Centre, though this work is not within the scope of CRL Surface team to manage and deliver, as the funding is outside the On-Network Works scope;
- European Rail Traffic Management System (ERTMS); and
- CP4 and CP5 renewals.

In addition, there are NR projects in the same geographical area that may impact on the Crossrail Surface Works, particularly in terms of possessions planning. These include, but are not limited to:

- Great Eastern Electrification (GEFF) - Great Eastern Re-wire Project – the GEFF programme is currently underway along the Great Eastern route and it is the responsibility of the NR Crossrail team to ensure that all On-Network Works are compatible and integrated with this enhanced OLE equipment;
- Inter-City Express Programme (IEP);
- Future Electrification Programme;
- Maintenance activities; and

Interfaces between these projects are managed by NR in accordance with their in-house planning processes.

For projects that Crossrail is dependent upon, the On-Network Works schedule will contain key milestones for all these projects, which will be linked to subsequent Crossrail activities. Monitoring and reporting against these interface milestones is described in the CRL Procedures (as listed in Section 6.1 of this plan).

Generally interfaces will be managed via the structure of meetings described in the CRL Procedures (as listed in Section 6.1 of this plan). However, certain interfaces may require more specific interface meetings which will be agreed upon and arranged accordingly.

All programmes of work to upgrade and improve the existing network that are planned by NR will be integrated into the NR Crossrail Programme by the NR Crossrail team to ensure both that any integration issues are minimised and that any opportunities (possibilities for example) are maximised.

3.5 Heathrow Spur

Crossrail will impact on BAA (incorporating Heathrow Express – HEX, Heathrow Airport Limited – HAL) during construction and operation. BAA's requirements are embedded in the suite of commercial agreements but for ease of reference are summarised here:

- **Operational:** BAA's overriding operational requirement is to maintain its services and performance and minimise the impacts on the operational railway and disruption to its passengers. This affects both its premium service, Heathrow Express, and its joint venture with First Great Western Heathrow Connect.
- **Asset Protection:** BAA requires that its existing assets are protected through the delivery of the Crossrail works and CRL (and where applicable through delegation to Network Rail) will work with BAA to identify and agree the scope of the asset protection works.
- **Engineering:** BAA's engineering requirements are captured through its standards regime that includes Network Rail Group Standards for railway systems in the Heathrow Branch tunnels. Where Crossrail works involve modification to or replacement of existing, or provision of new equipment and assets on BAA infrastructure then the works will be designed to meet with BAA engineering standards.
- **Safety and Technical Assurance:** BAA requires that proposals affecting its operations and infrastructure are reviewed by its System Review Group through which it discharges its duties under the Railways and Other Guided Systems (ROGS) safety regulations.
- **Access:** The BAA policy and procedures (managed and controlled by BAA) for accessing BAA property will apply to all CRL access requests whether for survey, enabling works, permanent works, testing and commissioning.

4 Definitions & Abbreviations

ASPRO	Asset Protection
ATO	Automatic Train Operation
BAA	British Airports Authority
CDM	Construction Design and Management
CIP	Competent Independent Person
CRL	Crossrail Limited
CTOC	Crossrail Train Operating Company
EMR	Environmental Minimum Requirements
ERTMS	European Rail Traffic Management System
FIA	Framework Implementation Agreement
FOCs	Freight Operating Companies
GEFF	Great Eastern Electrification
GRIP	Guide to Railway Investment Projects
HAL	Heathrow Airport Ltd
HEX	Heathrow Express
IDC	Inter Disciplinary Check
IEP	Inter-City Express Programme
IM	Infrastructure manager
NoBo	Notifying Body
NR	Network Rail
ONW	On Network Works
ORR	Office of Rail Regulation
PPA	Protective Provisions Agreement
RAB	Regulated Asset Base
RAB-C	Rfl Approvals Board – Crossrail
RCC	Route Control Centre
RfL	Rail for London
ROGS	Railways and Other Guided Transport Systems (Safety) Regulations
RSD	Rolling Stock and Depot
TAO	Track Access Option
TAP	Technical Approval Plan
TOCs	Train Operating Companies
WDD	Work Definition Documents

5 Organisation & Responsibilities

Crossrail Surface Directorate comprises a single team to direct, manage and support the Network Rail and Heathrow organisations for the development and delivery of the Surface works.

5.1 CRL Surface Directorate Accountabilities for Surface (On Network) Works

The following areas describe the Surface Directorate's role with respect of discharging Crossrail's obligations relating to the NR infrastructure works and services provided by NR for CRL, including On Network Works [in the event of conflict with the Protocol, the obligations within the Protocol take precedence]:

5.1.1 Requirements:

Oversight the validation & verification of NR compliance with Requirements & Protocol

5.1.2 Integration:

Support the technical and schedule integration between On Network Works and Central Section in respect of systems integration and schedule integration.

5.1.3 Efficient Expenditure:

Managing Network Rail to achieve an efficient target price, and efficient Final Outturn Cost in order to determine the efficient cost for RAB addition, below the DfT Funding Limit.

5.1.4 Stakeholder Engagement:

5.1.5 Working with Network Rail to effectively promote the project to gain the necessary approval and support from statutory bodies and the community..Wider NR Obligations:

Effective plan for NR to deliver obligations outside of the delivery of the ONW: Infrastructure Manager duties, rail system modelling services, testing and trial support, delivery of CRL 'cash-funded' works.

5.2 CRL Surface Directorate Responsibilities for Surface (On Network) Works

The following sections describe the Surface Directorate's responsibilities with respect of discharging Crossrail's obligations relating to the NR Programme, including On Network Works. The ONW Meetings Structure contained in Section 6 illustrates the forums within which these responsibilities are discharged.

5.2.1 Programme and Cost Control

- develop and maintain statements of Baseline Cost and Schedule;
- maintain active Risk Registers for relevant types of risk: Crossrail Managed Risk (effect changes to the Overall Target Price through Variation), Interface Risks (effect changes to the Network Rail programme cost) and Cash-Funded Risks (applicable to the cash-funded projects within Surface);
- provide periodic updates of Cost, Programme and Risk;
- undertake detailed scrutiny of cost, programme and risk plans to ensure integrity, efficiency and value for money;

- support the ongoing review and development of detailed delivery plans; and
- support the Systemwide function in development and maintenance of detailed integration, acceptance, commissioning and handover plans.

5.2.2 Commercial Strategy

- ensure all requirements and obligations relating to agreements are captured and appropriately represented in delivery plans;
- develop and maintain process of commercial assurance of compliance with agreements; and
- develop and maintain strategy for setting the target price within the affordability limit for the overall scheme.

5.2.3 Delivery

- ensure that NR meet the requirements placed upon them in a timely and efficient manner; and
- coordinate the input of CRL's corporate and Programme support functions.

5.2.4 Systems Delivery, Integration and Handover

- ensure that infrastructure and systems on the three Surface sections are designed and constructed to be compatible with those in the Central Section such that Crossrail is capable of being constructed and operated as an effective end-to-end railway.

This requires ensuring that:

- the infrastructure on the West, North East and South East sections interface and integrate with the Central Section infrastructure;
- the infrastructure interfaces and integrates with the Old Oak Common depot;
- the infrastructure is compatible with the rolling stock, particularly in terms of gauge clearance;
- the Crossrail railway operates delivers the specified performance; and
- stations are operable given the passenger demand and service levels, and traffic measures to mitigate significant traffic and transport impacts are identified and delivered.

It is recognised that NR is following its own processes and procedures for the On-Network Works as a responsible Industry Partner and Infrastructure Manager. However, in order for CRL to perform its role as System Integrator, CRL will require certain deliverables for acceptance and will undertake light touch surveillance activities called Deep Dive Reviews. The types of interfaces that require integration are summarised in Table 1 below.

The assets and systems that NR will construct and commission as part of the ONW will be handed over i.e. transfer of asset maintenance responsibility, to a number of different organisations including NR Route, RfL, and Trail Operating Companies. This is described within the Crossrail Handover Strategy and Plan **[Ref 6]**.

Category	Type	Reference / Management Documents
Schedule 'Handshakes'	Time dependencies; Handovers	Schedule, KD & KO, Milestones
	Parallel working	Route planning, T minus meetings
Engineering & Functional	NR Interfacing Project dependencies	KD1a, NR Period Report
	Central Operating Section	ICDs, Demarcations, (ref full list)
Sustainability, Community & Media Relations	Environment, Town Planning, Traffic	Interface Procedures
	Undertaking & Assurances	Interface Procedures, CDT
	Councils, Communities, Media	Stake Engagement Strategies, Stake'r database, Dashboard, Media Int Plan
Operational	Timetable & TRAIL	Input verification, TTRG
	Train & Depot	Train Int Spec (TIS), Depot Int Spec (DIS)
	TOC & CTOC	Regulated Change
Commercial	NR Protocol	NR PDB, QBR, Int Procedure
	Heathrow	Joint Int Plan, Steering & Wkg Groups
	Accelerated Renewals, 3 rd Party Funding	Baseline Plan, NR Period Report, ORR Letters
	Sponsors	Sponsor Reqts
	HS2	Risk register

Table 1: Categories of Interface with Network Rail ONW

5.2.5 Co-ordination

- Co-ordinate NR's development and delivery of the Surface (On Network) Works with Crossrail's support functions.
- Ensure Crossrail's Nominated Undertaker role is discharged by the appropriate Crossrail Director.
- Prepares and issues CRL Procedures (also known as Interface Documents) (as listed in Section 6.1 of this plan) which describes how Crossrail functions interface with Network Rail for the delivery of the Crossrail Programme.

5.3 CRL Surface Directorate Role for Heathrow Spur Works

The following define the Surface Directorate's responsibilities with respect to delivering the Heathrow Spur works:

- Discharge of the obligations relating to Heathrow contained within the Project Development Agreement, and agreements with HAL, HEX and BAA novated by the Secretary of State.
- Procure and manage the design, survey, and implementation of the works within Heathrow property boundary.
- Co-ordination with Stakeholders and Local Authority.

The responsibilities are further described within the CRL/BAA Joint Interface Plan [Ref 7]

5.4 CRL Programme Directorate and Support Functions Responsibilities for Surface Works

5.4.1 Central Section Delivery Directorate

The project management of the Central Section interface and asset protection works is carried out by CRL's Interface Manager in Central Section Delivery Directorate Projectwide.

Central Section Delivery Directorate drafts a remit for the work to be carried out, it is then used by NR to develop a brief which they submit for review by Central Section Delivery Directorate. Work may only proceed once a purchase order has been raised by CRL.

As the work proceeds, bi-weekly meetings are held with NR to discuss both technical issues and periodic status – COWD, AFC, Risks, Programme, etc. This is used to generate a monthly report and to raise issues to be resolved in the monthly round of escalation. (See Management Plan Volume 2):

NR is the elected Construction Design and Management (CDM) Client, for all works on their infrastructure. CDM roles at the interfaces with Central Section Directorate's works will be agreed and a Client election, in writing, will be made. All interface works and the Client election will be addressed in the CDM Implementation Plan developed by Central Section Directorate for the location or structural element.

5.4.2 Health & Safety

The Crossrail Surface Directorate is committed to CRL's aspiration for a Target Zero culture and is supported in this by the CRL Health & Safety Directorate.

The overall strategy and roles for Health and Safety management are detailed in The Health & Safety Manual (Management Plan) [Ref 8]

All of CRL plans and processes work together to support CRL's aspiration towards a Target Zero culture.

The underpinning ethos for all works will be a risk management and mitigation approach to project management. Crossrail Surface Directorate shall develop and implement relevant strategies and programmes that:

- ensure CRL's health and safety requirements are delivered;
- achieve effective coordination and cooperation on health & safety issues with other Industry /Delivery Partners, their contractors and external interfacing organisations; and
- provide assurance that NR is managing health and safety issues in line with CRL's expectations.

NR are the CDM Client for the On-Network Works, for the avoidance of doubt Clause 8.8 of the Crossrail – NR Programme Protocol states that; “Network Rail elects to be the only client for the On-Network Works for the purposes of the Construction (Design and Management) Regulations 2007”. CRL’s residual CDM duties for conveying appropriate information, coordinating and cooperating with neighbouring CRL sites are monitored by the coordination meetings described within the CRL Procedure for On Network Works (as listed in Section 5).

5.4.3 Projects Controls

The Crossrail Surface Directorate will interface with CRL’s Project Controls team. Support will be provided in terms of schedule management, planning and interface with the Master Control Schedule to provide additional assurance that the NR schedule is designed as a composite plan for the delivery of the Crossrail Programme.

Baseline and Change Control

Crossrail Surface works are featured in and will be reviewed as part of the overall Crossrail Baseline process, and will be subject to change control management, in line with all other aspects of the Programme.

Cost Management

The Crossrail Surface Directorate will be supported by the Programme Controls cost management function to provide additional assurance that the estimated costs are reasonable and achievable.

Risk Management

The Crossrail Surface Directorate will be supported by the CRL Programme Risk Management function to provide additional assurance that risk is appropriately managed.

5.4.4 Technical

The Crossrail Surface Directorate will be supported by the Technical Directorate as follows:

Programme Requirements

The CRL requirements to be undertaken by NR for Crossrail are set out in the “Network Rail” Client Requirements [Ref 13]. The Infrastructure Capability Requirements are set out in the On-Network Functional Requirements (ONFR) [Ref 12], which is a supporting document to the “Network Rail” Client Requirements [Ref 13].

The Crossrail Surface Directorate will be supported by the CRL’s Technical Directorate to provide assurance that the Network Rail Client Requirements [Ref 13] and the On-Network Functional Requirements [Ref 12] are met and, where necessary, change is managed satisfactorily.

Planning, Environment, Traffic Consents, Sustainability and Commitments

NR is required to comply with the Crossrail Environmental Minimum Requirements (EMR). Further details on how NR manages compliance with the:

- EMR, including interfaces with CRL, can be found in the CRL / Network Rail Interface Document for Environment
- Undertakings and Assurances can be found in the CRL/NR Interface Document for Undertakings & Assurances.

Various planning, environmental and traffic consents are required by law to undertake the Surface works. Further details on how NR manages consents, including interfaces with CRL, can be found in the CRL/NR Interface Document for Planning, Environment & Traffic Consents.

Railway Integration:

Coordinate and lead Systemwide input to the phases of Testing, Commissioning, Handover and bringing the railway into operation, through the Railway Integration Authority as described the Technical Management Plan [Ref 9].

Audit, Quality and the Crossrail Management System (CMS)

The CRL Management Systems and Quality function will:

- seek assurance that requirements passed down from the Programme-level are delivered within the Crossrail Surface Works; and
- monitor implementation of the plans and procedures defined in the Crossrail Management System (CMS) by Crossrail Surface Directorate through regular spot checks and reviews.

The primary role of the Management Systems and Assurance function is to provide assurance that the CRL Surface Directorate and NR are complying with the requirements of the Programme Assurance Strategy [Ref 10].

Auditing of processes may be included in the Crossrail audit programme and be conducted by Crossrail Internal Audit.

System Safety and Interoperability

This team will provide advice to the overall approach that NR is taking for the ONW on the Great Western and Great Eastern railways. For the SE Spur, the System Safety and Interoperability team will procure and manage the NoBo for the SE Spur section of the ONW.

Chief Engineer's Group (Engineering and Technical Assurance)

Engineering: NR undertakes its own specifications, designs and engineering management in compliance with its corporate standards and processes such as GRIP.

Technical Assurance: As an Industry Partner, NR has been engaged by Crossrail to apply its own processes and procedures to develop and deliver the On Network Works. NR has established its own Technical Assurance Plan (NRTAP) which sets out the method for providing technical assurance during the design, construction and handback stages of all projects within the ONW. This TAP prescribes how NR obtains engineering assurance in accordance with its Safety Management System as regulated by the ORR. This will include such bodies as Network Rail Acceptance Panel, Competent Independent Person (CIP), NoBo, and Engineering Specification Panel. NR applies both an internal and HQ audit process. Crossrail is kept informed on the outputs of these audits. For the SE Spur, Crossrail heads of discipline will be represented at NR's GRIP and IDC reviews.

Where appropriate i.e. for dedicated Crossrail infrastructure, NR will provide completed assurance certificates to Crossrail Surface to demonstrate completion, maintenance transfer and / or testing & commissioning of the works.

5.4.5 Operations

The Crossrail Surface Directorate will be supported by the Operations Directorate to:

- provide guidance on operation methodology in the form of Operational Concepts.
- provide input to the interface with NR for the delivery of rolling stock and depot.

The Operations directorate will receive submissions from NR as IM for areas of interface that are required to be submitted to RfL's RAB-C.

5.4.6 Stakeholder Engagement

The Crossrail Surface Directorate will be supported, as described within the Community Relations Interface Document, by the Stakeholder Engagement team to:

- Support the interface between the design and delivery of the Surface Works and key stakeholders.
- Liaise with the NR relations team to result in a co-ordinated approach for stakeholders.

5.4.7 Land & Property

There are two areas within Land & Property that will interface with and support the Crossrail Surface Directorate:

- Acquisition: The delivery of the Surface works is dependent on access to third party land, as well as temporary and permanent acquisition of land and property. The Secretary of State has granted compulsory purchase powers to Transport for London (TfL), through its Group Property division, and under the Project Development Agreement, CRL has been given the role of compulsory purchase agent. In this role CRL:
 - arranges for the permanent acquisition of land for the On-Network Works; and
 - arranges easements and other new rights over land not compulsorily purchased but affected by the permanent layout of the On-Network Works, all as described in the Land & Property Interface Document.
- Urban Integration: CRL Surface Directorate will support the design and schedule coordination between the developing NR station designs and those urban realm designs commissioned by the UI team.

6 Key Management System Documentation

This MP will be implemented through the documents listed below.

6.1 CRL Procedures

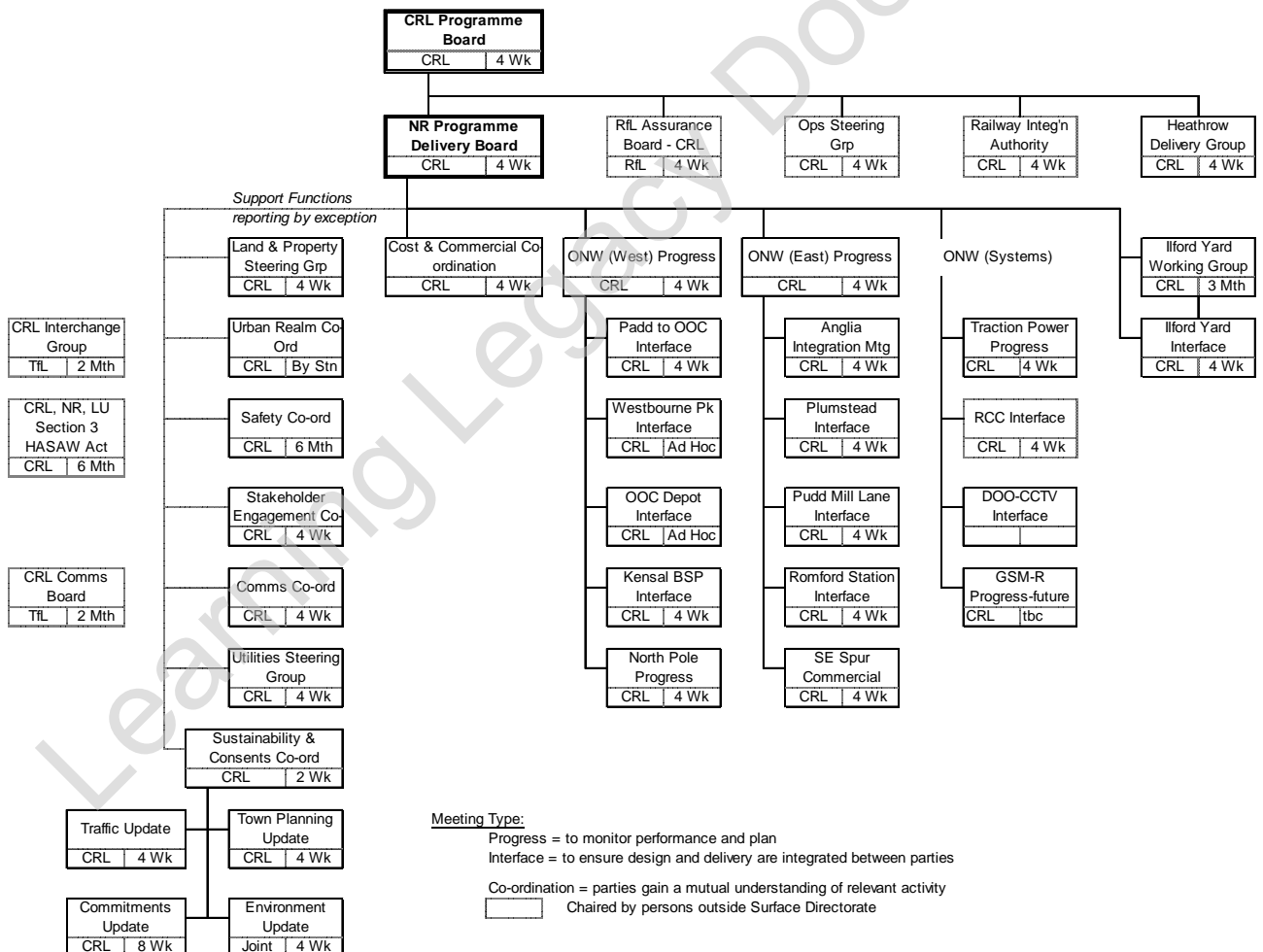
The Protocol requires CRL Documentation and Procedures to be developed in order to set out relevant strategies, plans, procedures impacting upon the NR Programme. These are listed in the reference documents section below.

Development, completion and maintenance of these procedures is co-ordinated through the Register of CRL-NR Procedures and Interface Documents [Ref 11].

6.2 ONW Meetings Structure

The diagram below illustrates how the responsibilities, in relation to the ONW, of both Crossrail and NR are discharged.

ONW Meetings Structure: Crossrail - Network Rail



7 Reference Documents

Crossrail Management Plans

Ref:	Document Title	Document Number:
1	Management Plan Volume 1 Corporate, Support and Specialist Function Directorates	CR-XRL-O4-GPG-CR001-00001
2	Management Plan Volume 2 Central Section Delivery	CR-XRL-O4-GPG-CR001-00004
3	Management Plan Volume 3 Surface Delivery	CR-XRL-O4-GPG-CR001-00005
4	Management Plan Volume 4 Operations	CR-XRL-K2-STP-CR001-50001

Other Key Reference Documents

Ref:	Document Title	Document Number:
5	Delivery Strategy	CR-XRL-Z-GST-CR001-00001
6	Crossrail Handover Strategy and Plan	CRL1-XRL-K1-STP-CR001-50001
7	CRL/BAA Joint Interface Plan	CRL1-XRL-N2-STP-CRG04-50001
8	Health & Safety Manual (Management Plan)	CR-XRL-Z7-GMN-CR001-00001
9	Technical Management Plan	CR-XRL-N2-GPL-CR001-00007
10	Programme Assurance Strategy	CR-XRL-O4-GPL-CR001-00001
11	Register of CRL-NR Procedures and Interface Documents (currently draft)	CRL1-XRL-N2-LRG-CRG04-50003
12	On Network Functional Requirements	CRL1-XRL-O8-RRS-CR001-00001
13	Network Rail Client Requirements	CRL1-XRL-N2-ACI-CRG04-00001
14	Network Rail Programme Protocol (Redacted version)	CRL1-XRL-Z8-AAG-CR001-50283
15	Network Rail Programme Protocol (Restricted access)	CRL1-XRL-Z8-AAG-CR001-50279

Register of CRL-NR Procedures and Interface Documents

Ref:	Document Title	Document Number:
16	CRL/Network Rail Interface Document for Land & Property Acquisition	CRL1-XRL-T2-GPR-CR001-00002
17	CRL/Network Rail Interface Document for Commitments (currently draft)	CRL1-XRL-N2-GPR-CRG04-00001
18	NR/CRL PET Consents Interface document	CR-XRL-T1-GPR-CRG04-00001
19	NR CRL Interface Document for Environment	CR-XRL-T1-GPR-CRG04-00002
20	CRL/Network Rail Interface Document for Crossrail Community Relations	CRL1-XRL-Z1-GPR-CR001-00001
21	CRL/Network Raile Interface Document for the ONW Variation Control Procedure	CRL1-XRL-N2-GPD-CRG04-50004
22	CRL/Network Rail Interface Document - Procedure for Control of CRL Procedures	CRL1-XRL-N2-GPD-CRG04-50001
23	CRL/NR Interface Document for Reporting	CRL1-XRL-N2-GPS-CRG04-50002
24	Management and Control of Documentation between CRL / PDP and NR	CR-XRL-Z3-AAG-CR001-00001
25	Access to DLR for Crossrail Central Works	CRL1-XRL-C-GPD-CR001-50002
26	CRL - Network Rail Interface Document Procedure for Control of CRL Procedures	CR-XRL-O4-GPD-CR001-00001
27	CRL / Network Rail Interface Document for Crossrail Community Relations	CRL1-XRL-Z1-GPR-CR001-00001
28	CRL / Network Rail Interface Document Template	CR-XRL-O4-ZTM-CR001-00003
29	CRL-NR Interface Document for Value Management	CRL1-XRL-Z9-GPR-CRG04-00001
30	Design Assurance - Ilford Yard Stabling Project	CRL1-XRL-N2-GPD-CR112_SD007_1-50002
31	Ilford Depot Crossrail Stabling Project Management Plan	CRL1-XRL-N2-STP-CR112_SD007_Z-50001

8 Standard Forms & Templates

Ref:	Document Title	Document Number:
A.	CRL / Network Rail Interface Document Template	CR-XRL-O4-ZTM-CR001-00003