

Highways England – Introduction to Drainage and Water: Awareness and Training

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Document Overview:

This guidance note provides an introduction to the importance of drainage within Highways England. It outlines the policy requirements and strategic outcomes that are required to be met by Highways England from a drainage perspective, and introduces documentation available to improve awareness and training of identified internal Highways England personnel.

It should be read in conjunction with the awareness and training programme¹ developed in August 2017 for Road Period 1.

Queries/feedback:

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¹ ArupAECOM, 2017. Drainage and Water Team Training Programme.

Highways England- Drainage and Water

1. The Drainage and Water Team

The Drainage and Water Team (DWT) is part of Highways England's Safety, Engineering and Standards Directorate (SES). The team provides technical advice to Highways England's Major Projects and Operations Directorates; ensuring that Highways England properly assesses and manages technical governance requirements and its risks. DWT considers approval of departures from standards, develops new standards, revises existing standards, and undertakes research and external stakeholder liaison with organisations including Department for Transport, Defra, Devolved Administrations, Internal Drainage Boards, Local Highways Authorities national and international committees (BSI/CEN), academia, trade organisations, contractors and consultants.

The team work to promote drainage and ensure it helps meet Highways England strategic outcomes.

2. Meeting our Strategic Outcomes

The Government's **Road Investment Strategy** (RIS) (DfT, March 2015)² sets out a vision and plan for developing the Strategic Road Network (SRN) targeting environmental outcomes amongst others, through improved operation, maintenance and modernisation of the SRN. The **Performance Specification** (DfT, Dec 2014)³, part of the RIS suite of documents, sets out what Government wants from Highways England over the course of the first Road Period from 2015-16 to 2019-20.

The Performance Specification sets out a number of performance measures that seek to focus Highways England's activities on meeting the needs of all road users and the country as a whole, maintaining a reliable and effective SRN that supports the economy while also contributing to wider environmental and social aims. The performance measures are made up of a number of Key Performance Indicators (KPIs), supported by Performance Indicators (PIs) which give additional information on Highways England's performance.

3. The Importance of Drainage

In 2010, Highways England published accounts stated the overall asset value to be £99bn. Drainage assets are understood to make up approximately **15-20%** of the overall asset value, this highlights the monetary importance of drainage on the SRN.

² [Road Investment Strategy: for the 2015/16 - 2019/20 Road Period \(DfT, March 2015\)](#)

³ [Road Investment Strategy: Performance Specification \(DfT, Dec 2014\)](#)

Sustainable Drainage Systems

Of current focus in the industry is a drive for sustainable drainage systems (SuDS), which are a way of managing rainfall that replicates natural drainage, managing it close to where it falls, replicating the infiltration found in natural environments and moving away from piped drainage systems.

From a highways point of view, where space allows (within Highways England ownership), the SuDS approach can offer good value for money as well as environmental benefits. Natural solutions with minimal interference are likely to be cheaper to implement and maintain than heavily-engineered drainage systems; indeed the solutions provided by DMRB inherently use the SuDS approach in the design of the drainage network.

4. Introduction to Drainage Key Performance Indicators/Performance Indicators (Road Period 1 2015-2020)

Highways England has eight objectives as set out in RIS1 and for each objective corresponding KPIs and PIs have been identified. A number of these are related to drainage and water as highlighted in red in Figure 1.



Figure 1 – Eight objectives for RIS1 and associated KPIs/PIs. Those drainage and water related are highlighted in red.

Delivering Better Environmental Outcomes

The DWT is looking to investigate new and innovative ways in which the future design and management of the drainage asset can be improved to support the delivery of better environmental outcomes, and a number of the PIs for this objective are focused on drainage assets.

PI: The number of flooding hotspots and culverts (high risk and very high risk) mitigated

Climate change continues to have a major impact on the country, resulting in more intense rainfall events, flooding and increased runoff and erosion. Flooding in particular continues to pose significant threats to communities living adjacent to the SRN, therefore Highways England need to demonstrate that its infrastructure can withstand the effects of these extreme weather events. The drainage infrastructure will be critical in increasing storage capacity, reducing runoff flow rates and therefore mitigating flooding hotspots and culverts.

PI: The number of outfalls and soakaways (high risk and very high) mitigated

In the event of accidental spills, in some locations pollutants are able to enter the water system easily. Water quality can also be affected by pollutants entering the system through surface water runoff and the pollution emitted by vehicles. In order to meet this PI drainage systems need to be improved to better remove a substantial proportion of suspended solids and hydrocarbons before reaching the receiving watercourse and therefore increasing the number of outfalls and soakaways mitigated.

Achieving Real Efficiency

KPI: Savings on capital expenditure

The Performance Specification specifies cost savings on capital spending of at least £1.212 billion to be achieved by the end of the first Road Period on capital expenditure. The value of drainage assets is likely to be in excess of 15% of Highways England overall asset value, and focusing upon drainage asset management will aid in delivering capital expenditure savings. Both extension of life and saving of future maintenance through capital spend are claimable efficiencies, so consideration of the whole-life cost implications of drainage schemes is also important.

Keeping the Network in Good Condition

PI: Drainage asset – inventory and condition data coverage/ PI: Structure asset – inventory and condition

Focused specifically on drainage this PI requires improvement in drainage asset inventory records.

Drainage plays an important role in ensuring Highways England meets its objectives, KPIs and PIs.

5. Other Activities

Other activities that fall within the drainage process and are key, other than the RIS and PR noted above, are those undertaken by service providers on behalf of Highways England:

Drainage Asset Management

- Inspections
- Assessments
- Cleaning
- Replacement
- Upgrading
- Removal
- Reporting
- Impact of Major Projects schemes

Flood Risk Management

- Preparedness
- Flood event management
- Reporting and assessment of events
- Flood risk assessment and management

Pollution and Control

- Spillage incident management
- Reporting and assessment of incidents
- Pollution risk assessment and management

6. Awareness and Training

This guidance has been developed in order to ensure the importance of drainage and water elements of design, implementation and maintenance are understood. This is an introduction to raise awareness of the importance of drainage on the SRN. Specific training is not proposed in many instances, as standards, policy and data are readily available on other platforms. However, a programme has been developed which identifies appropriate awareness and training interventions in specific elements of drainage for relevant Highways England staff, and includes signposting to all relevant existing documents.

The training programme is offered the following categories to assist stakeholders in identifying themes that are most relevant to their interest:

- **Policy** - This category is suggested as a general introduction to drainage practice within Highways England and is offered to all stakeholders. It includes an introduction to Policy and K/PI's and relevant standards including DMRB Volume 4.2 documentation. Many of these standards are signposted for reference, and it should be noted that DMRB volume 4.2 is currently under revision, however the bulk of the changes to these documents is likely to be completed by 2020.

Standards, guidance and tools have been highlighted across the drainage process in Figure 2.

- **Data** – This category includes the mechanisms for getting data in and out of relevant systems. This section includes relevant introductory Highways Agency Drainage Data Management System (HA DDMS) documents and standards. While relevant to designers and maintenance planning, the prime focus of this intervention would be those responsible for Asset Data Management and is offered in support of an integrated approach to that discipline.
- **Asset Management** - This category includes contract data and all relevant advice notes that inform asset management (Asset Maintenance and Operational Requirements/Asset Support Contract/Asset Data Management Manual).
- **Environment** – This category includes all flooding and environmental elements associated with drainage. Inclusive of relevant HA DDMS information on priority assets, flooding, water quality assessments (Highways England Water Risk Assessment Tool - HEWRAT) and DMRB 11.3.10 on Road Drainage and the Water Environment.

The programme notes ‘inform’ and ‘training’ requirements for the roles highlighted, where:

- **Inform** = Basic awareness is required, and everyone highlighted should be informed of the material available. This level does not require training or feedback. This section is predominantly addressed by providing awareness of certain documents and procedures in the form of signposting, and links are provided to standards and policy documents.

This training is non mandatory but a recommendation based on what the DWT understand is required awareness of the roles noted and would aid in improving skills/knowledge.

For service providers this training is not compulsory as it is expected that they possess these skills and knowledge of DWT activities prior to undertaking work on Highways England’s behalf.

- **Training** = Training is proactive and will require an activity to be undertaken for example, a worksheet completed or a guidance document read. This level highlights that the role is required to do something to understand and be able to use a certain document, policy or procedure. *For example:* The HEWRAT assessment tool must be followed proficiently by experienced users of the tool, placing it in the ‘training’ category of the programme. The spreadsheet and user manual have been linked in the document to ensure the correct procedure is followed by all staff required to undertake training. The aim is not to reproduce existing training but to direct staff to information readily available.

Drainage Process:
Organisations, roles,
documentation and tools

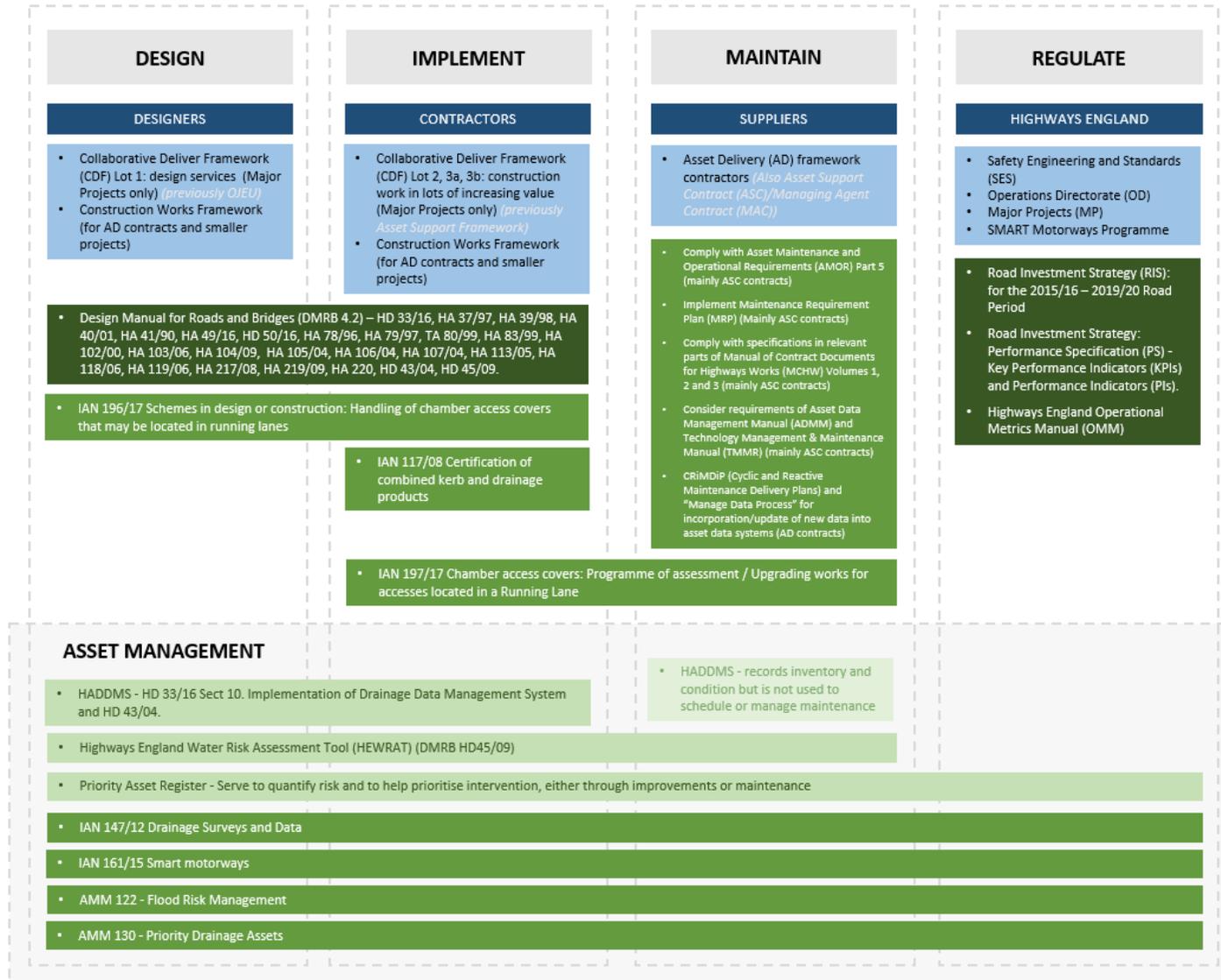


Figure 2: Policy, guidance, documentation and tools that exist across the drainage process for Highways England.