ESDAL PROJECT DATASHEET

The ESDAL project is an initiative of the Highways Agency. ESDAL stands for "Electronic Service Delivery for Abnormal Loads". ESDAL will be a one-stop web-based portal for assisted route planning and automated notification of abnormal load movements.

Who are we?

Serco Integrated Transport have been contracted to Design, Build and Operate the ESDAL system.

The ESDAL Helpdesk is a point of liaison between you and the project team, to ensure that your organisation gains the full value from the ESDAL project.

ESDAL will enable:

- The successful management of abnormal load movements
- An assisted route-planning tool and automation of the notification process
- A reduction in hidden bridge damage potentially arising from unknown or unplanned loading from abnormal loads
- The collation of a single national inventory identifying bridge structures
- A contribution to the e-government agenda
- Improved road safety and reduced congestion

Benefits of ESDAL:

- Improved customer service
- Better use of resources
- Reduced paperwork
- Elimination of duplicate and unnecessary notifications
- Reduced structural damage
- Relevant, local statistical analysis of usage and effect of abnormal loads

Project Phases:

**Phase 1**
A basic web-based route planning system providing access to contact details of all structure owning authorities and police forces who need to be notified of abnormal load movements. The system will allow hauliers to sketch a route online, and will then generate contact details for structure owners and police forces that need to be notified.

**Phase 2**
Notification through the ESDAL portal of ‘Special Order’ (SO) movements and Highways Agency route information for SO’s to structure owners. Structure Cautions will also be added at this point, if they are available to us.

**Phase 3**
Delivery of a 'one-stop' portal for the automated notification of all abnormal load movements. This forms a "virtual post service" so that all relevant structure owners and police are automatically notified. Once a movement has been finalised, the haulier is provided with a detailed contact list of authorities notified.

**Phase 4**
ICA’s will be launched in this phase. You will also be able to add constraint information and modify and update your contact and structure information.
More information:

For further information on the ESDAL project please contact:

The Helpdesk
Serco Integrated Transport

Tel: 01642 636789

Email: enquiries@esdal.com

Or visit our web site:

www.highways.gov.uk/esdal
BACKGROUND TO ESDAL – WHAT WILL IT DO?

ESDAL – Electronic Service Delivery for Abnormal Loads – is a project managed by the Highways Agency. It will deliver a more efficient way of managing the movement of abnormal loads in the UK, by streamlining the process of notifying an abnormal load movement, and maintaining an up-to-date database of contact and structure information.

The system will be web-based – all anyone will need is a PC with internet access.

The haulier will benefit from easier route identification. Once a route is planned, the haulier will get a detailed list of which authorities are required to be notified, which of those have structures affected by the proposed move and additionally which other owners have structures similarly affected and who will require notification. Up-to-date contact information will ensure the notification goes to the right person, first time. Once the haulier has completed his route and vehicle configuration in ESDAL, notifying all the relevant authorities will require just one click.

Structure owners and Police will benefit from a clear and accurate notification that gives full contact details, vehicle configuration and proposed route. The notification can be received using a clutter-free web inbox, reducing reliance on fax machines, and cutting out reams of paper every year. ESDAL will still be able to provide fax notifications in the usual way, if required, but the web inbox will provide many innovations to significantly improve the way that notifications can be managed.

- Detailed, street-level maps of proposed routes will be displayed, along with route overview maps.
- User registration means access to information relevant to you – particularly details of your own structures.
- Structures that may be unable to take the notified load will be flagged for your attention – speeding up the process of identifying a proposed route’s suitability. These are known as ‘Indicative Capacity Appraisals’ (ICAs) and are detailed later in this document.
- You will be able to add known constraints – roadworks, bridge strikes or hazards – to ESDAL. This means the system can provide even more detail to allow you to quickly and accurately advise hauliers whether a movement should be made.

The system will not display this information directly to hauliers; and the responsibilities for managing notifications will not change. Only you will be able to see and manage details of your structures and constraints.

**ESDAL will:**
- enable you to make decisions on notifications quickly and effectively
- improve working practice
- reduce clutter and paper use by cutting out faxes
- continue to send fax notifications if required
- display maps of proposed routes
- identify potential “problem structures” on a route through an ‘indicative capacity appraisal’ (ICA)
- enable you to add constraint information that may impact a route
- enable you to build a library of ‘preferred routes’

**ESDAL won’t:**
- change current business practice or affect responsibilities
ESDAL STRUCTURE DATA

To ensure that it is useful to everyone involved in the process of moving an abnormal load, ESDAL requires a large amount of data. The more data we can gather, the more effective the system will be, and the more people will benefit from the efficiencies and improved working practices that ESDAL can deliver.

To ensure that the notifications presented to you can cross-reference the structures that a route will use, we would like to include the readily available data that you have on each structure that you are responsible for. The majority of this data has now been collected, and we would like to keep this data as up to date as possible. We would prefer if these updates are sent at 6 month intervals, however updates can be sent at your discretion.

Below you’ll find a list of data elements that will ensure ESDAL is effective. We will work closely with you to make it as easy as possible for you to provide us with updates of this data in whatever format you have available.

The more detailed information we can gather, the more effectively the system will work, and we will assist with the collation where required.

**Data Elements**

We would like the following essential information for each structure:

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure Key</td>
<td>Your unique identifier for the structure</td>
</tr>
<tr>
<td>Location</td>
<td>A grid reference, which may be OSGR format or another co-ordinate pair</td>
</tr>
<tr>
<td>Owner</td>
<td>Contact details of the owner of the structure, who may also be the contact for abnormal load notifications</td>
</tr>
<tr>
<td>Category</td>
<td>The type of structure, for example Road Bridge, Elevated Road, Culvert, Level Crossing, from a pre-defined list of values.</td>
</tr>
<tr>
<td>ICA Option</td>
<td>An indication of which (if any) ICA option will be used for this structure. See section on ICA.</td>
</tr>
</tbody>
</table>

The following additional structure information would also be most useful:

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure Name</td>
<td>The name or identifier you use for the structure</td>
</tr>
<tr>
<td>Alternative Names</td>
<td>Any other names that are used</td>
</tr>
<tr>
<td>Managing Authority</td>
<td>Contact details for the nominated or delegated authority responsible for receiving abnormal load notifications</td>
</tr>
<tr>
<td>Retain Notifications</td>
<td>Option for the owner to continue to receive notifications if also delegated to a Managing Authority</td>
</tr>
<tr>
<td>Object Under</td>
<td>The road, railway or other path passing under the bridge</td>
</tr>
<tr>
<td>Object Over</td>
<td>The road, railway or other path passing over the bridge</td>
</tr>
<tr>
<td>Structure Length</td>
<td>The overall span of the structure – may be between bearing centrelines, deck joints or abutment faces.</td>
</tr>
<tr>
<td>Width Over</td>
<td>The minimum clear width between parapets</td>
</tr>
<tr>
<td>Width Under</td>
<td>The minimum clear width between kerbs and abutments where a route passes under the structure</td>
</tr>
<tr>
<td>Safe Vehicle Height</td>
<td>The maximum permissible height of a vehicle and load able to pass under the lowest part of the structure</td>
</tr>
<tr>
<td>Gross Weight Limit</td>
<td>The maximum permissible gross weight of vehicle and load able to pass over the structure</td>
</tr>
<tr>
<td>Axle Weight Limit</td>
<td>Maximum permissible single axle weight of vehicle and load able to pass over the structure</td>
</tr>
<tr>
<td>Height Envelope</td>
<td>The maximum permissible envelope through which a load may pass under the structure – for example, where a particular route path under the structure will allow a higher load than the specified height limit.</td>
</tr>
<tr>
<td>Structure Description</td>
<td>Any additional information which might help to clarify the structure’s type or location</td>
</tr>
</tbody>
</table>
**Bridge Heights**

ESDAL can store and make use of safe vehicle operating height information for structures. We wish to obtain this data so it can be loaded into the ESDAL database and be used to assist the management of abnormal load movements.

**Data Format**

There are a wide variety of formats that data is held in. We will accept data in whatever format you can provide to us – whether this is paper based, computer based or a combination of both. It will be our job to “cleanse” the data that you provide us with, so that it is suitable for use in ESDAL.

At the end of this process, the cleansed data will be available for your review through the Structure Owners Portal. This data can also be used in other applications that you may have.

**IPR**

Intellectual property rights for the data remain with the structure owner at all times. Any data collected by the ESDAL team will not be used for anything other than the ESDAL system without your prior written permission.
ESDAL INDICATIVE CAPACITY APPRAISALS (ICA’s)

As previously described, from Phase 4 of the project ESDAL will enable you to quickly identify whether there are any structures on a proposed route which may be unsuitable for the load. This will be achieved by comparing the data held for each structure that the route passes over with the load configuration that the haulier has provided.

Additionally, the Haulier will receive a “traffic light” indication of whether the route is likely to be agreed, based on the results of the ICA. This facility can be switched on and off depending on your preference. Notifications will still be made by the haulier, and received by you in the normal way, or through the ESDAL ‘inbox’. However, this process will cut down on the number of notifications that you will receive that are unlikely to be agreed.

What is an ICA?

Undertaking a full structural assessment in accordance with the Design Manual for Roads and Bridges (DMRB), or equivalent Standards, is a complex process that is dependent upon a broad array of structure-specific criteria. The judgement and knowledge of the assessing engineer are fundamental to gaining a realistic and safe structural assessment. It is therefore impossible to fully automate the assessment process, and ESDAL will not undertake full structural assessments.

It is, however, possible to develop numerical routines that can assist in establishing whether a proposed vehicle configuration can safely cross a particular structure. Such routines will be included within ESDAL, to provide an Indicative Capacity Appraisal.

An ICA will only be given if sufficient data for the structure is held in the system. You will be able to select whether the system automatically carries out an ICA for each of your structures. Additionally, a number of different appraisal methodologies will be available for you to choose from. You will be able to decide which appraisal methodology is most appropriate for each individual structure. For example, some methodologies will only be suitable for certain structure types such as masonry arches. The methodologies will be based on established approaches such as load-equivalence or influence-line techniques. Different methodologies will be more appropriate for different types of structure. Full details of the methodologies available within ESDAL will be provided, these are likely to include:

- Influence Lines
- Screening Assessment Method – (SV assessment rating as defined in BD86)
- Vehicle Weight Screening (Axle load over specified length, Maximum Axle Load or Gross Vehicle weight)

What data will allow an ICA to take place?

If you have enabled the ICA facility in ESDAL, then we would like geometric and articulation data, along with the results of the most recent full structural assessment. More data for each structure will mean more accurate ICA’s from ESDAL. Depending on the methodology enabled, these assessments could be based upon BD86 or BA16 requirements, limiting axle, or vehicle weight. For the most sophisticated influence-line based methodology, structure-specific influence line definitions will be required.
ESDAL Indicative Capacity Appraisals (ICA’s) - continued

The following information will enable an ESDAL ICA to be carried out:

- **Number of Spans**: The number of clear spans in the structure.
- **HB Rating**: This is required for ‘HB Load Equivalence’ ICA methodology.
- **SV Rating**: The rating of this structure relating to SV assessment.
- **HB to SV Conversion factor**: Conversion factor for converting a HB rating into a reserve factor for SV loading.
- **SV Reserve Factor with associated HA Loading**: A factor indicating the capacity of a structure to carry the defined assessment vehicle.
- **SV Reserve Factor without associated HA Loading**: A factor indicating the capacity of a structure to carry the defined assessment vehicle.
- **Influence Line**: The ‘x-y values’ used to plot an influence line. Used as part of an ICA for some load configurations.

The following information for each span of structures would enable an ICA to be provided:

- **Span Number**: A number which indicates the arrangement of spans (i.e. span order).
- **Structure Type**: Indication of the construction method for ICA purposes, for example: Masonry Arch, Continuous Span, Cable Stayed etc.
- **Span Length**: Length of the span.
- **Skew**: The acute angle between a line normal to the direction of the deck and the alignment of the abutment.
- **Articulation**: The method by which the structure and individual spans are supported.
- **Deck Material**: The construction material type for the structure span, for example: Reinforced Concrete, Concrete/Steel composite, Composite FPR material etc.
- **Foundations**: The foundation type for the structure span, for example: Pad, Spread/Strip, Pile Cap, Piles etc.

The following information for Bridge Arches would enable an ICA to be provided:

- **Arch Barrel Thickness**: The thickness of the Arch Barrel, measured from the face of the arch to the interior edge of the uppermost ring of stones or bricks forming the arch.
- **Barrel factor**: A factor used to describe the geometry of the barrel.
- **Condition factor for MEXE assessment**: A factor used to describe the overall condition of the structure.
- **Depth factor**: A factor used in relation to geometric properties of the structure.
- **Fill factor**: A factor used to describe the condition of the fill.
- **Joint Width factor**: A factor used to describe the condition of the joints between blocks on the structure.
- **Material factor**: A factor used to describe the construction material.
- **Mortar factor**: A factor used to describe the condition of the mortar.
- **Profile factor**: A factor derived from the geometric characteristics of the arch structure.
- **Span/Rise factor**: A factor derived from the geometric characteristics of the arch structure.
- **Depth of fill**: The depth of fill taken from the carriageway to the top of the arch ring.
- **Span of Arch**: The clear distance between the abutments from which the arch springs.
- **Rise of Arch Barrel at Crown**: The distance between the imaginary line linking the base of the arch and the top of the arch rise.
- **Rise of Arch Barrel at Quarter Points**: The distance between the imaginary line linking the base of the arch and the position one-quarter the distance out from the vertical centreline.
ESDAL Structure Cautions

Cautions allow specific information to be added to a structure, allowing information to be conveyed in the list of driving instructions that ESDAL produces for the haulier for each route. For example, you may wish to stipulate that no other vehicles cross a particular structure at the same time as an abnormal load which exceeds 150 tonnes. Cautions can be conditional, in that they can be activated if a certain weight or height of load is being proposed, and several cautions can be applied to a single structure. We can add this information to ESDAL if you currently have it in electronic format. You will also be able to maintain your own structure cautions in the ESDAL system. Where it has been provided, this information will be made available in the ESDAL system from Phase 4

<table>
<thead>
<tr>
<th>Caution Name</th>
<th>A short name which you use to identify the caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caution Location</td>
<td>Your structure Key and Span number, or other indication of where the caution applies</td>
</tr>
<tr>
<td>Caution Level</td>
<td>Indicates whether the caution applies to traffic travelling over or under the structure</td>
</tr>
<tr>
<td>Caution Type</td>
<td>Indicates whether the caution is conditional or unconditional</td>
</tr>
<tr>
<td>Gross Weight Condition</td>
<td>Gross Weight which, if the vehicle and its load equals or exceeds, activates the caution.</td>
</tr>
<tr>
<td>Vehicle Height Condition</td>
<td>Height which, if the vehicle and its load equals or exceeds, activates the caution.</td>
</tr>
<tr>
<td>Vehicle Length Condition</td>
<td>Length which, if the vehicle and its load equals or exceeds, activates the caution</td>
</tr>
<tr>
<td>Vehicle Width Condition</td>
<td>Width which, if the vehicle and its load equals or exceeds, activates the caution</td>
</tr>
<tr>
<td>Vehicle Speed Condition</td>
<td>Speed in miles per hour which, if the loaded vehicle cannot exceed activates the caution – i.e. activated if the vehicle configuration implies a slow vehicle</td>
</tr>
<tr>
<td>Axle Weight Condition</td>
<td>Weight which, if any axle of the loaded vehicle exceeds, activates the caution.</td>
</tr>
<tr>
<td>Caution Contact</td>
<td>The name of one or more contacts that should be made in the event of a caution being activated</td>
</tr>
<tr>
<td>Caution Text</td>
<td>This is the text which will be included in driver instructions when the caution is applicable</td>
</tr>
</tbody>
</table>